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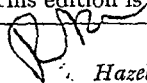
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## FOREWORD

THERE have been many single-volume encyclopaedias published during the past few years, but this book, we believe, is devised on an entirely new plan. It gives, in one volume, answers to innumerable questions that arise every day, and provides the ordinary man with those facts and figures which are essential to him both in his private and his public life. We are naturally unable to give all the information which an encyclopaedia in many volumes can contain, but the essential details are here, together with a mass of information that is not to be found in any other single book of reference.

Special attention has been paid to questions of the day ; statistical tables and diagrams are given, showing the latest figures for most of the large industries and countries of the world. Other features are surveys of the world's sciences, arts, literatures, and religions, geographical information, accounts of modern movements, historical events, sports and achievements, with biographies of men and women of importance in all the manifold spheres of human activity.

The illustrations are a special feature of the work, and have been chosen, not because they make the work look more attractive, nor because it was decided there must be so many illustrations on a page, but because each has a special interest, elucidates some important point, or is in other ways instructive. The more important maps are given in colour, and many others, including plans of large towns and special areas at home and abroad, are among the text illustrations. A colour plate of the flags of Great Britain, of the Empire, and of the principal countries of the world, has been added.

In order to be able to present this enormous amount of detail in one volume, we have had to use abbreviations throughout, but a glance at the list of Abbreviations on pp. vii-viii, and especially at the note that precedes it, will show the plan we have adopted.

The book has been compiled by a large staff of editors, each an expert in his own subject, and we would take this opportunity of thanking them for their care and patience.

The illustrations have been collected from numerous sources, and thanks are due to many corporations, private firms, and individuals who have freely given us permission to use their photographs or sketches. The graphs, diagrams, statistical tables, and very many drawings have been specially prepared for this book.

LAWRENCE H. DAWSON  
(*Editor-in-Chief*).

# ABBREVIATIONS

As has been mentioned in our Introduction, besides the abbreviations ordinarily employed in works of reference, we have made use of a number of contractions with the object of devoting our space to the best possible advantage for the reader; practically all of these are well known as "press-contractions," and they will in every case be readily understood both from the visual combination of letters and from the context. By way of example:—"acc.," "betw.," "gen.," "leg.," "pec.," "shld.," "thr.," stand for "according" or "account," "between," "general" or "generally," "legal," "peculiar," "should," and "through," respectively; and such terminations as "-ing," "-ion," "-ment" are frequently contracted, as in "containing," (or "contg.") for "containing," "mentn." for "mention," and "docmnt." (or "docmt.") for "document."

Contractions such as these are omitted from the following list, as also are a number of general abbreviations, such as those for the names of the months (Jan., Feb., etc.), Books of the Bible (Gen., Exod., etc.), the titles of Shakespeare's plays, service ranks (Col., Lieut., etc.), and designations of Orders, etc., as "K.C.M.G.," "C.H." Most of these latter, however, and a large number of other abbreviations are explained in the main body of the work; here we have confined ourselves mainly to those abbreviations that are used with a directional, not with a textual, purpose.

A main heading, when it recurs in the same article, is as a rule represented by its initial letter; thus:—"PIACENZA, . . . cap. of prov. P." reads, "PIACENZA, . . . the capital of the province of Piacenza," and similarly under "PICCADILLY"—"P. Circus, space terminating E. end of P. . . ." reads, "PICCADILLY CIRCUS, the space terminating the east end of Piccadilly. . . ."

Abb.	Abbey	blt.	built	dept.	département
abbr.	abbreviation	Bn.	Baron	disc.	discover, -ed, -er
Abp.	Archbishop	bor.	borough	dist.	district
A.D.	Anno Domini	bot.	botany		distinguished
aeron.	aeronautics	b.p.	boiling-point	disting.	distinguished; as distinguished from
agric.	agriculture	Braz.	Brazil, -ian		
Alban.	Albanian	Brit.	British	dram.,	drama, dramatist
alg.	algebra	Bt.	Baronet	dramat.	
alt.	altitude	bur.	buried	Dut.	Dutch
Am., Amer.	America; American	Byzant.	Byzantine	E.	East; Earl
		C.	Centigrade	eccles.	ecclesiastical
anat.	anatomy	Card.	circa (about)	econ.	economics
anc.	ancient	carp.	Cardinal	Ed.	Editor; edited
Angl.	Anglican	cas.	carpentry	educ.	education, -al; educated
ant.	antonym	Cath.	castle	E. Eng.	Early English
anthrop.	anthropology	Celt.	Catholic	e.g.	exempli gratia (for example)
antiq.	antiquity	cent.	Celtic	Egy.,	Egypt, -ian; Egyptology
appar.	apparatus	cf.	century; central	el.	element
appl.	applied to	Ch.	confer (compare)	elec., elect.	electricity
Arab.	Arabic	Chanc.	Church	embr.,	
arch.,		chem.	Chancellor	embd.	embroidery
archlt.	architecture	chf.	chemistry	Emp.	Emperor; Em-press; Empire
archæol.	archæology	Chln.	chief	Eng.	England; English
Arg.	Argentina	Chr.,	Chinese	engin.	engineering
arith.	arithmetic	Christ.	Christian	engr.	engraving; engraver
arrond.	arrondissement	Chrmn.	Chairman	entom.	entomology
Artill.	Artillery	C.-in-C.	Commander-in-Chief	erron.	erroneously
A.-S.	Anglo-Saxon			esp.	especially
asslm.	assimilated to	civ.	civilized	est.	estimated; estuary
Assyr.	Assyrian	Cl.	Class	estbd.	established
astrol.	astrology	classic.	classical	ethn.	ethnology
astron.	astronomy	C. of E.	Church of England	etym.	etymology
Athen.	Athenian	cogn.	cognate with	Eur.,	Europe; European
atm. pr.	atmospheric pressure	collect.	collective	Ev.	Evangelical
at. wt.	atomic weight	colloq.	colloquial, -ly	ex.	example
Austr.	Austrian	commere.	commercial	exec.	execution
Austral.	Australia, -ian	comp.	compound, -ed; compare	F	Fahrenheit
auth.	author	compar.	comparative, -ly	fam.	familiar, -ly; family
A.V.	Authorized Version	const.	constitution, -al	fem.	feminine; female
B.	battle	Copt.	Coptic	fig.	figurative, -ly
b.	born	Corn.	Cornish	fin.	finance
bact.	bacteriology	corresp.	corresponding to	Finn.	Finnish
B.C.	Before Christ	cr.	created		
Bd.	Board	crt.	court		
Belg.	Belgium, -ian	crystal.	crystallography		
bhpric.	bishopric	Ct.	Count; court		
bibl.	biblical	D.	Duke		
bibliog.	bibliography	d.	died		
biol.	biology	Dan.	Danish		
bldg.	building	dau.	daughter		

<b>fl., flor.</b>	<i>floruit</i> (flourished)	<b>mil., milit.</b>	military	<b>R.C.</b>	Roman Catholic
<b>F.-M.</b>	Field-Marshal	<b>Min.</b>	Minister	<b>ref.</b>	referring to
<b>ind., fndd.,</b>		<b>min.</b>	mining	<b>reg.</b>	region ;
<b>fndr.</b>	found, -ed, -er	<b>mod.</b>	modern		regular, -ly
<b>fol.</b>	following	<b>Moh.,</b>		<b>relig.</b>	religious ; religion
<b>For. Min.</b>	Minister for Foreign Affairs	<b>Moham.</b>	Mohammedan	<b>Repub.</b>	Republic
<b>Fr.</b>	France ; French	<b>Mongol.</b>	Mongolian	<b>res.</b>	residence, -dential
<b>freq.</b>	frequent, -ly	<b>m.p.</b>	melting-point	<b>resp.</b>	respectively
<b>gen.</b>	generally	<b>mus.</b>	music	<b>Rev.</b>	Revolution
<b>geog.</b>	geography	<b>myth.</b>	mythology	<b>revlnry</b>	revolutionary
<b>geol.</b>	geology	<b>N.</b>	North	<b>R.N.</b>	Royal Navy
<b>geom.</b>	geometry	<b>Nat.</b>	National ; nature ;	<b>Rom.</b>	Roman
<b>Ger.</b>	Germany ; German	<b>natat.</b>	natural	<b>Russ.</b>	Russian
<b>Gk.</b>	Greek	<b>Nat. hist.</b>	nation	<b>Ruth.</b>	Ruthenian
<b>G.O.C.</b>	General Officer Commanding	<b>naut.</b>	Natural history	<b>R.V.</b>	Revised Version
<b>Govt.</b>	Government	<b>Norw.</b>	nautical	<b>S.</b>	South
<b>Gr.</b>	Great ; Greek ; Greece		Norway ; Norwegian	<b>s.</b>	son
<b>g.-s.</b>	grandson	<b>N.T.</b>	New Testament	<b>Sc.</b>	Scotch
<b>H. Com.</b>	High Commis- sioner	<b>numis.</b>	numismatics	<b>sc.</b>	science
<b>Heb.</b>	Hebrew	<b>O.</b>	Order	<b>Scan.,</b>	Scandinavian
<b>her.</b>	heraldry	<b>obs.</b>	obsolete	<b>Scand.</b>	Scandinavian
<b>Hind.</b>	Hindustani	<b>oceanog.</b>	oceanography	<b>Scot.</b>	Scotland ; Scottish
<b>hist.</b>	history	<b>onomat.</b>	onomatopœic	<b>Script.</b>	Scripture ; scriptural
<b>hort.</b>	horticulture	<b>opt.</b>	optics	<b>sculp.</b>	sculpture ; sculptor
<b>h.p.</b>	horse-power	<b>orchest.</b>	orchestral		seapt.
<b>Hung.</b>	Hungary ; Hungarian	<b>organ.</b>	organic ; organization	<b>sevl.</b>	several
<b>hydr.</b>	hydraulics	<b>Orient.</b>	Oriental	<b>sing.</b>	singular
<b>ichthyol.</b>	ichthyology	<b>orig.</b>	original, -ly	<b>Slav.</b>	Slavonic
<b>i.e.</b>	<i>id est</i> (that is)	<b>ornith.</b>	ornithology	<b>Soc.</b>	Society ; Social, -ist
<b>ill.</b>	illustration	<b>O.T.</b>	Old Testament	<b>Sociol.</b>	Sociology, -logist
<b>Ind.</b>	India ; Indian	<b>P.</b>	Prince	<b>Sp.</b>	Spain ; Spanish
<b>internat.</b>	international, -ly	<b>paint.</b>	painting	<b>sp. gr.</b>	specific gravity
<b>introd.</b>	introducing ; introduction	<b>palæob.</b>	palæobotany	<b>surg.</b>	surgery
<b>Ir.</b>	Irish	<b>palæon.</b>	palæontology	<b>surv.</b>	surveying
<b>It.</b>	Italy ; Italian	<b>pathol.</b>	pathology	<b>Sw.</b>	Swiss
<b>Jap.</b>	Japan ; Japanese	<b>per., pers.</b>	person	<b>Swed.</b>	Sweden ; Swedish
<b>Jew.</b>	Jewish	<b>perh.</b>	perhaps	<b>Switz.</b>	Switzerland
<b>K., Kg.</b>	King	<b>Pers.</b>	Persia ; Persian	<b>sym.,</b>	
<b>Lab.</b>	Labour	<b>petrol.</b>	petrology	<b>symb.</b>	symbol
<b>lang.</b>	language	<b>pharm.</b>	pharmacy	<b>syn.</b>	synonym, -ous
<b>Lat.</b>	Latin	<b>phil.</b>	philosophy	<b>tech.</b>	technics ; technical
<b>lat.</b>	latitude	<b>philos.</b>	philosopher	<b>temp.</b>	temperature ; <i>tempore</i> (in the time of)
<b>legisl.</b>	legislature, -tive	<b>photog.</b>	photography		
<b>Lib.</b>	Liberal	<b>phys.</b>	physics	<b>terr.,</b>	territory, -orial
<b>Lit.</b>	literature ; liter- ary ; literally	<b>physiol.</b>	physiology	<b>territ.</b>	territory
		<b>pl.</b>	plural	<b>Teut.</b>	<i>Teutonic</i>
<b>Lith.,</b>		<b>P.M.G.</b>	Postmaster- General	<b>theol.</b>	theology
<b>Lithuan.</b>	Lithuania, -ian	<b>poet.</b>	poetry ; poetical	<b>tn.</b>	town
<b>long.</b>	longitude	<b>Pol.</b>	Poland ; Polish	<b>tot.</b>	total
<b>Ld.</b>	Lord	<b>polit.</b>	politics ; political ; politician	<b>trad.</b>	tradition, -al
<b>Luth.</b>	Lutheran	<b>pop.</b>	population ; popular	<b>tr., transl.</b>	translation, -lated, -lator
<b>LXX</b>	Septuagint	<b>Port.</b>	Portugal ; Portuguese	<b>trib.</b>	tributary
<b>M.</b>	Middle	<b>poss.</b>	possible	<b>trig.</b>	trigonometry
<b>M.A.</b>	Master of Arts ; Middle Ages	<b>posthum.</b>	posthumous	<b>trop.</b>	tropical
<b>mach.</b>	machinery	<b>prehist.</b>	prehistoric	<b>Turk.</b>	Turkey ; Turkish
<b>magn.</b>	magnetism	<b>Pres.</b>	President	<b>typog.</b>	typography
<b>Malay.</b>	Malayan	<b>prim.</b>	primitive	<b>U.S.A.</b>	United States of America
<b>man.,</b>		<b>Pr. Min.</b>	Prime Minister		
<b>manuf.</b>	manufacture	<b>prof.</b>	professor ; profession	<b>usu.</b>	usual, -ly
<b>mar.</b>	maritime	<b>prop.</b>	properly	<b>v.</b>	very
<b>Marq.</b>	Marquess	<b>prov.</b>	prosody	<b>Ven.</b>	Venetian
<b>math.</b>	mathematics	<b>prov.</b>	province	<b>vet.</b>	veterinary
<b>mechan.</b>	mechanics	<b>Pruss.</b>	Prussia ; Prussian	<b>vil.</b>	village
<b>med.</b>	medicine ; medical ; mediæval	<b>pseud.</b>		<b>vila., vilay.</b>	vilayet
		<b>pseudon.</b>	pseudonym	<b>Visc.</b>	Viscount
<b>metal.</b>	metallurgy	<b>psychol.</b>	psychology	<b>viz.</b>	<i>videlicet</i> (namely)
<b>metaph.</b>	metaphysics	<b>Q., Qn.</b>	Queen	<b>vol.</b>	volume
<b>met. bor.</b>	metropolitan	<b>q.v.</b>	<i>quod vide</i> (which see)	<b>W.</b>	West
<b>meteor.</b>	meteorology			<b>w.</b>	with
<b>Mex.</b>	Mexican	<b>R.A.</b>	Royal Acad- emician ; Royal Artillery	<b>wt.</b>	weight
				<b>yr.</b>	year
				<b>zool.</b>	zoology

**A**, 1st letter of alphabet; (chem.) symbol of argon; (logic) symbol of universal affirmative; (mus.) 6th note of scale of C major. **A** and **Ω** (alpha and omega, *g.r.*), the beginning and the end. **a**, the indef. article; abbr. for *anno* (in the *yr.*); (phys.) ampere. **@**, at (in quot. of prices).

**A 1**, first-class condition esp. in phr. *A 1 at Lloyd's*, in the classification of ships.

**A.A.A.**, abbr. Amateur Athletic Association.

**Aachen**: see AIN-LA-CHAPILLE.

**Aaland Islands**: see ALAND.

**Aalborg**, *tn.*, Jutland, Denmark, on S. bank of Limfjord; pop., 31,457; castle, 17th cent. houses, *bhprie.*; centre of grain and fishing industry.

**A. and M.**, abbr. (Hymns) Ancient and Modern.

**Anr**, or **Aare**, longest Swiss riv. (180 m.); rises canton of Berne; forms lakes of Brienz and Thun; passes Berne; joins Riv. Rhine opp. Waldshut (Baden).

**Aardvark**, African nocturnal mammal, the Cape ant-eater or ground-hog; lives on termites and other ants. *Order*, *Edentata*.



Aardvark

**Aard-wolf**, small hyena-like mammal of Africa; feeds on carrion, grubs, and termites.

**Aarhus**, 2nd largest *tn.* of Denmark; pop., 81,250, *chf.* port and *commer.* centre in penins. of Jutland.

**Anron**, (O.T.) elder bro. of Moses; first high priest, forerunner of Jewish priestly class. Set up Golden Calf on Mt. Sinai as object of worship; not permitted to enter Promised Land. **A.'s beard**, (*bot.*) popular name for *Hypericum calycinum* (St. John's wort).

**A.'s rod**, 1) (O.T.), one of 12 rods prepared for the 12 tribes and for A. or tribe of Levi during Israelites' sojourn in wilderness; rod of A. blossomed when placed before Ark, from wh. it was deduced that tribe of Levi was called to priesthood (Num. xiii). 2) (*bot.*) goldenrod (*Solidago virgaurea*), grows to 6 ft., small bright yellow flowers, leaves used in folk-medicine as a carminative; also, great mullein (*Verbascum thapsus*), grows to 6 ft., woody leaves, spikes of yellow flowers, used in folk-medicine as a cough cure.

**A.B.**, abbr. abbe-bellied rearm.

**Abaco**, Great and Little, two of Bahama Is.; pop. of Great A., 4,000.

**Abacus**, 1) upper part of a capital in architect. (see COLUMN); 2) simple form of calculating machine consisting of beads sliding on wires; now used by children.

**Abadan**, *isl.* (40 m. long), in delta of Shatt-el-Arab, Iraq, and *tn.* of same name (pop., 30,000); oil-refineries.

**Abaddon**, (O.T.) in Wisdom lit. synonym for Sheol (*g.r.*).

**A bas!** (Fr.), down with. . . .

**Abattoir**, slaughter house where animals intended for food are killed. In *Gr. Brit.* A.s have to be registered and licensed; the majority are municipally controlled, the private A. rapidly becoming extinct.

**Abba** (Aramaic: Father), manner of addressing God; title of *bps.* and patriarchs in Coptic, Syrian, and Abyssinian churches.

**Abbas I** (1813-54), Pasha of Egypt, grandson of Mehemet Ali; reactionary; murdered by slaves. **A. II** (1874-1923), Khedive of E., *g.-g.* grandson of Mehemet Ali; succeeded father, 1892; unfriendly toward Brit.; banished 1914.

**Abassides**, caliphs of Bagdad (750-1258); descended from Abbas, uncle of Mohammed; Haroun al-Raschid (786-809); nominal caliphs of Egypt (1258-1517).

**Abbazia**, watering-place on Gulf of Quarnero, Istrian Penins. It.; pop., 1,650.

**Abbe**, Cleveland (1838-1916), Amer. astron. and meteorologist.

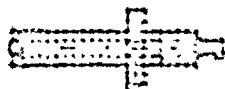
**Abbé**, title of respect given in France to a priest; also to ecclesiastics in minor orders.

**Abbeville**, *tn.*, N. France, on Riv. Somme; pop., 10,500; headqrs. Brit. lines of communication in World War.

**Abbey**, Edwin Austin (1831-1911), Amer. painter; illustrations of Robert Herrick's poems, 1882; *Mexico Mon.*, 1892; freer's illustrating quest of the Holy Grail, 1891-1901.

**Abbey**, society of celibate persons of either sex devoted to religion; also, place in wh.

such a society resides and church attached thereto. Monastic life originated in the East, disciples of arch-hermits or hermits following them to the desert as *hermits* living in huts grouped round these cells. In



Cross of the Abbey of St. Albans

the West system was developed by St. Benedict (A.D. 480) and spread rapidly throughout Europe. Benedictine monasteries were built as far as possible to one plan, as at St. Gall, Switz. (820). Most renowned A. of Mid. Ages was at Cluny, France (*see* CLUNIACS). Westminster Abbey (*q.v.*) was a Benedictine A., built accdg. to same plan.

**Abbey Theatre**, nat. Irish theatre in Dublin, fndd. by Miss A. E. F. Horniman, 1904; directed by W. B. Yeats (*q.v.*) and Lady Gregory; became centre of Irish literary movement; produced plays by J. M. Synge (*q.v.*), Lady Gregory, Padraic Colum, Lennox Robinson, Lord Dunsany, etc.

**Abbot** (fem. **abbess**), head of an abbey, monastery, or convent.

**Abbotsford**, resid. of Sir Walter Scott (*q.v.*), Roxburghshire, Scotland; situated on S. bank of Tweed, nr. Melrose.

**Abbott, Edwin Abbott** (1838-1926), Eng. schol. and educationalist. **A., Lyman** (1835-1922), Amer. divine, editor, and author.

**Abbreviators**, secretaries employed in the Papal Chancery.

**A.B.C. Powers**, name given (1914) to three principal Powers, S. America: Argentina, Brazil, Chile.

**Abd** (Arab.), prefix to names: servant e.g. Abdallah, "servant of God."

**Abd-el-Kader** (c. 1808-83), Arab. prince Bey of Mascara; led guerrilla warfare against Fr. in Algeria, 1832-47.

**Abdel Krim**, Moroccan chief; defeated Spaniards in struggle for possession of Rif country, 1921; surrendered to Fr., 1926.

**Abderahman**, five caliphs of this name: **A. I** (756-88), fndd. Caliphate of Cordova; **A. II** (822-52), **A. III** (912-61), **A. IV** (d. 1021), and **A. V** (d. 1023).

**Abderhalden reaction**, (med.) test for pregnancy dependent upon examination of blood-serum, devised by physiol., Emil Abderhalden (b. 1877).

**Abderites**, inhab. of Thracian tn. Abdera; proverbially foolish men of anc. times.

**Abdomen**, large cavity of the human body, extending from pelvis to diaphragm. Abdominal wall, of skin and muscle, is lined throughout by delicate and sensitive *peritoneum* (*cf.* PERITONITIS). A. contains digestive, reproductive and urinary organs. **Abdominal pregnancy**, development of ovum outside uterus in abdominal cavity.

**Abduction**, 1) (law) unlawful carrying off of person (esp. ward or young woman); 2) (anat.) muscular action of moving limb, etc., away from body, or from another limb or part, or (surg.) gaping, through shrinkage of edge of wound; 3) (log.) syllogism of wh. minor premise, and therefore conclusion, is merely probable.

**Abdul-Aziz** (1830-76), Sultan of Turkey, 1876; extravagant opponent of reforms;

deposed 1876 and d., prob. by suicide, 4 days later.

**Abd-ul-Aziz IV** (1880- ), Sultan of Morocco, 1894-1908; opposed to Fr. Sudan policy; supplanted by his bro., Mulai Hafid.

**Abdul-Hamid II** (1842-1918), Sultan of Turkey, 1876-1909; tyrannical, opposed to reform; champion of Islamism; deposed by Young Turks, 1909.

**Abd-ur-Rahman** (1830-80-1901), Amir of Afghanistan; grandson of Dost Mohammed Khan; leader in civil war, 1864; governor of Balkh; fled to Turkey; elected amir, 1880; settled frontier question with Sir Henry Drummond's mission, 1893.

**Abecedarians**, German Anabaptist sect of 16th cent.; claimed direct inspiration from God, that they had nothing to learn from the Scriptures, and that it was unnecessary and undesirable to learn to read.

**Abednego**, (O.T.) name given to Azariah, one of Daniel's companions in Babylon.

**Abel**, (O.T.) 2nd son of Adam, slain by Cain (Gen. iv).

**Abel**, Sir Fredk. Aug. (1827-1902), Eng. chemist; professor of chem., Royal Milit. Acad., 1851; chemist to War Department, 1854-88; pres. of Brit. Assoc., 1890; invented apparatus for determining flash-point of petroleum; *Modern History of Gunpowder*, 1866; *Electricity Applied to Explosive Purposes*, 1884.

**Abélard**, Peter (1079-1142), Fr. scholastic philos. and theol.; lover of Héloïse (later Abbess of Paraclete); declared heretic for his rationalistic interpretations of Chrn. dogmas.

**Abencerrages**, Moorish family predominant in Granada in 15th cent.

**Abeokuta**, tn., Nigeria, 65 m. N. of Lagos; pop., 38,000.

**Aber** (Celtic), "at the mouth of"; appears as prefix in many Scot. and Welsh place-names (e.g., Aberdour, Aberfeldy, Abertillery).

**Aberavon**, former munic. bor., Glam., S. Wales; now incorporated in Port Talbot.

**Abercarn**, urb. dist., Mon., Eng., 11 m. N.W. Newport (Mon.); pop., 21,000; coal and iron.

**Abercorn**, trading station, N. Rhodesia, c. 14 m. S. of L. Tanganyika; scene of surrender of Ger. forces under von Lettow-Vorbeck, Nov. 25, 1918.

**Abercrombie**, Lascelles (1881- ), Eng. poet, dramatist, and critic; *Interludes and Poems* (1908); *Theory of Poetry* (1924); *Twelve Idylls* (1928).

**Abercromby**, Sir Ralph (1734-1801), Brit. gen.; c. in-c. of Medit. exped., 1801; landed troops under heavy fire at Aboukir Bay; mortally wounded in battle.

**Aberdare**, urb. dist., Glam., S. Wales, 4 m. S.W. Merthyr Tydfil; coal mines; pop., 48,800.

**Aberdeen, George H. G.**, 4th Earl of (1784-1860), Brit. statesman, leader of Free Traders after Peel's death; Pr. Min., 1852-55.  
**A., John C. G.**, 1st Marqs. of (1847- ), Lord-Lieut. of Ireland, 1886-93, 1905-15, Gov.-Gen. of Canada, 1893-98, created Marqs. of A. and Temair, 1915; notable Liberal leader.

**Aberdeen**, the "granite city," royal burgh and co. tn., Aberdeensh., Scot., at mouth Riv. Dee; pop., 167,300; seaport, fishing centre; granite quarrying and polishing; univ. (1494); granite cathedral. **A. terrier**, or *Scotch T.*, a rough-coated, short-legged, prick-eared breed of terrier.



Aberdeen  
Castle Street, showing  
City Cross and Municipal Buildings

**Aberdeenshire**, maritime co., N.E. Scot.; 1,955 sq.m.; pop., 300,400; surface mountainous in interior (*Ben Macdui*, 4,296 ft.); rivs. Dee, Don (salmon fishing); grouse and partridge shooting; agric. in valleys; stock-raising; granite quarries; coast fisheries; cap., *Aberdeen*.

**Aberfeldy**, police burgh, Perthsh., Scotland, on Riv. Tay; pop., 1,500. Black Watch enrolled here, 1740. Burns associations.

**Abergavenny**, bor., Monmouthsh. Eng., on Riv. Usk; castle; holiday centre; pop., 8,600.

**Abergeldie Castle**, Aberdeensh., Scotland, royal residence, 2 m. E. of Balmoral.

**Aberglaslyn, Pass of**, defile, N. Wales, betw. Beddgelert and Portmadoc (Carnarvonsh.).

**Abernethy**, John (1764-1831), Eng. surgeon; chf. surgeon at St. Bartholomew's Hospital, 1815-27; *Surgical Observations on the Constitutional Origin and Treatment of Local Disease*, 1809.

**Abernation**, (astron.) angle betw. apparent and real position of a heavenly body, due to combination of speed of light and rate of motions of the earth thr. space; (biol.) deviation from type of a species (*q.v.*).

**Abertillery**, tn., Monmouthsh., Eng., 15 m. N.W. Newport; coal mines; pop., 32,000.

**Aberystwyth**, munic. bor., Cardigansh., Wales; seaside resort on Cardigan Bay; Univ. Coll. of Wales, Nat. Library; pop., 9,500.

**Abhorrrers**, name given to Eng. polit. party, 1679, who expressed abhorrence for those attempting to encroach on royal prerogative.

**Abiathar**, (O.T.) priest; ally and friend of David.

**Abigail**, (O.T.) wife of 1) Nabal, the Carmelite; 2) David. Generic term for lady's maid.

**Abijah**, (O.T.) Kg. of Judah (c. 900 B.C.); defeated Jeroboam, Kg. of Israel.

**Abimelech**, (O.T.) son of Gideon (*q.v.*); massacred all his bros. except youngest; became K. of Shechem; eventually slew himself (Judg. ix).

**Abingdon**, munic. bor. and agric. tn., Berksh., Eng., on Riv. Thames, 6 m. S. Oxford; remains of 7th cent. Benedictine abbey; pop., 7,200.

**Ab initio** (Lat.), from the beginning.

**Abiogenesis**: see SPONTANEOUS GENERATION.

**Abishag**, (O.T.) wife of David in his old age; see SHULAMITE.

**Abitibi**, lake and riv. S.E. Canada; lake shallow, c. 60 m. long; formerly used by Hudson's Bay Co. as canoe route. **Riv. A.** (200 m.), trib. of Riv. Moose.

**Abkhasia**, Soc. Soviet Repub., on Black Sea, protected by Georgia; 3,158 sq.m.; pop., 198,900; saddlery manufacture. Cap., *Sukhum-Kaleh*; pop., 18,400.

**Abiative**, case in declension of nouns of Lat. and certain other Indo-Europ. langs. expressing relatns. involving separation, instrumentality, etc., answering questions "whence?", "by whom?", "what with?", etc.

**Ablaut**, systematic vowel-change in words to show change in tense, etc., *e.g.*, drink, drank, drunk.

**Ablution**, (R.C.Ch.) the water and wine used by the priest in celebration of Mass to wash his thumb and index finger; ceremonial or symbolical washing.

**Abner**, (O.T.) general of Saul and, later, David; murdered by Joab (*q.v.*) in revenge for brother's death.

**Äbo**: see TURKU.

**Abolitionists**, advocates of suppression of slavery (*q.v.*). Used later of those who opp. regulation of prostitution (*q.v.*).

**Abomasum**, (anat.) the fourth stomach of ruminating animals, the true digestive stomach.

**Abomey**, tn., Dahomey, W. Africa; former cap.; pop., c. 18,000.

**À bon chat, bon rat** (Fr.), a good rat to a good cat; well matched; tit for tat.

**À bon droit** (Fr.), rightly, with justice.

**Ab origine** (Lat.), from the beginning, originally.

**Aborigines**, primitive inhabitants of a country (fabled to have sprung from the soil), or those in possession of it at time of its discovery; applied also to indigenous flora and fauna.

**Abortifacient**, any substance wh. induces abortion.

**Abortion**, *miscarriage*, premature ending of pregnancy within first 28 weeks. If miscarriage occurs naturally owing to illness (*e.g.*, death of foetus owing to syphilis), it is called *spontaneous miscarriage*; if caused



risers in the Rhaetian Alps, flows through the Valtellina and Lake Como (205 m.), from whence it is navigable.

**Addams**, Jane (1860- ), Amer. social worker and writer on sociology: *Twenty Years at Hull House* (1910), *Second Twenty Years* (1930), etc.; Nobel Peace Prize, 1932.

**Addax**, (zool.) N. African and Arab. antelope with spiral horns; abt. 3 ft. high; tufted forehead.

**Adder**, the common viper; small venomous snake common in many parts of Eng. and widely distributed throughout Europe. About 20 species of true vipers (*Viperinae*) distributed over greater part of Old World, e.g., *sand-viper*, S. and E. Europe; the dread *puff-adder* (q.v.) of Africa.

**Adder's tongue**, *Ophioglossum vulgatum*, fern so called from the shape of its fruiting spike.

**Addis Ababa**, cap. of Abyssinia; pop. c. 100,000 (4,000 Europ.); rly. (487 m.) to Jibuti. **Treaty of A. A.**, betw. Gr. Brit. and Abyssinia, 1902; settled frontier betw. Abyssinia and Sudan.

**Addison**, Joseph (1672-1719), Eng. essayist, poet, and statesman; *Spectator* (1711-14).

**Addison's disease**, descrbd. by Eng. doctor, T. Addison (1793-1860); a serious disease of suprarenal gland. Spec. characteristic: bronze-like tint in skin and mucous membranes.

**Addled Parliament**, The, 2nd parliament of James I; summoned, 1614; declined to grant supplies until Kg. redressed grievances. He refused, and the assembly was dissolved without passing a single bill.

**Adelaide**, Qn. (1792-1849), consort (1818-37) of William IV of England.

**Adelaide**, cap. S. Australia, on R. Torrens, 6 m. E. of Port Adelaide, on St. Vincent Gulf; the riv. separates city from suburb of N. Adelaide; univ., theol. coll., two public schools; Anglican and Rom. Cath. cathedrals; exports wheat, wool, copper, wine; pop. (incl. suburbs), 324,420.

**Adelboden**, health resort and winter sports centre (4,450 ft.) in Bernese Oberland, canton of Berne.

**Adeler**, Max, pseud. of American humorist, Charles H. Clark (1841-1915); *Out of the Hurly-Burly*, *Random Shots*, etc.

**Adelphi**, small dist. nr. Charing Cross, London, facing Riv. Thames, laid out by John and Robert Adam, 1768-70.

**Adelsberg**: see POSTUMIA GROTTA.

**Aden**, Brit. possession (since 1839) and fortified port, S. coast Arabia, on *Gulf of Aden* (separating Arabia from Somaliland); under Colon. Office but admin. by Govt. of

Bombay; peninsulas of *Aden* (with the tn., in volcanic crater) and *Little Aden* cover stretch of mainland (Sheikh Othman). Climate hot, rainfall scanty. Important coaling station, entrepôt trade. Aden includes hinterland protectorate (9,000 sq.m.), Perim, Socotra, and Kuria Muria Is. (qq.v.); pop. (incl. Perim), 54,900.

**Adenoids**, overgrowth of adenoid tissue wh. is normally present at back of nose.

**Adenoma**, tumour, or new growth, arising in connection with secreting glands; simulates tissue from wh. formed; slow in growth, seldom malignant.

**Adeodatus**, Pope (672-76).

**Adept**, term used by alchemists of those said to have fnd. "philos. stone"; one who is thoroughly efficient in anything.

**Ad eundem gradum** (Lat.), to the same degree; refers to permission in certain cases accorded to graduates of one university to take a corresponding degree in another university.

**Ad extremum** (Lat.), to the end; to extremities.

**Ad hoc** (Lat.), for this (specified) purpose.

**Ad hominem** (Lat.), to the man; personal appeal instead of reasoned argument or proof.

**Adiabatic process**, (phys.) takes place without transference of heat to or from the system from outside. **A. compression**, expansion, of a gas, as in sound waves.

**Adiaphorists**, German Protestants (1548) who regarded as matters of indifference such things as use of pictures, candles, surplices, Latin hymns, and vespers in R.C. Ch., which were held by Lutherans to be subversive of 'aith.

**Adige** (*Etsch*), riv., N. Italy, c. 245 m.; rises in Rhaetian Alps, flows past Merano, Bolzano, Trent, Verona into Adriatic Sea at Porto Fossone. Tribs.: Isarco, Noce, Avisio. Navig. below Bolzano.

**Ad infinitum** (Lat.), to infinity; endlessly.

**Ad interim** (Lat.), meanwhile, temporarily.

**Adipocere**, waxy or oily substance into wh. soft tissues of dead animal bodies are converted when exposed to moisture.

**Adirondacks**, mtn. group in N.E. of N.Y. State; highest peak, Mt. Marcy, 5,350 ft.; hunting, fishing; holiday resorts.

**Adit**, in mining, horizontal gallery (tunnel) driven from surface into side of hill, for the purpose of giving access to mine.

**Adjective**, word used to denote some quality in substantive to wh. it is accessory; indeclinable in Engl. but has deg. of comparison (q.v.).

**Adjective colours**, in dyeing, those wh. are mixed with a chem. base to make them fast.

**Adjust**, 1) make accurate, to gauge;



Addison

- 2) (mus.) to correct pitch of an instr.;  
3) (printing) to bring level with line of type.

**Adjutant**, (milit.) officer on H.Q. of unit (e.g. infantry batt.) below status of an infantry brigade (or equivalent), in charge (under his C.O.) of organization, training, discipline, etc.; assisted by regtl. sergeant-major. **A.-General**, head of "A" branch of the Staff (*q.v.*); member of Army Council (*q.v.*); under him are Directorates of Recruiting and Organization, of Personal Services (pay, promotion, discipline, army chaplains, etc.), and of Army Medical Services, etc.

**Adjutant bird:** see MARABOUT.

**Ad leones** (Lat.), to the lions; pop. cry directed agst. Christian martyrs in Rome.

**Adler, Alfred** (1870- ), Viennese physician and psycholog.; pupil of Sigmund Freud (*q.v.*), from whose sch. he seceded in 1912-13; *The Neurotic Constitution; Individual Psychology*. Cf. JUNG, CARL. **A., Hermann** (1839-1911), Heb. scholar; Chf. Rabbi Brit. Empire, 1891-1911.

**Ad lib.**, abbr. *ad libitum* (Lat.), at pleasure.

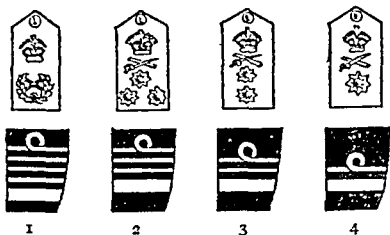
**Ad litem** (Lat.), for the action at law.

**Ad majorem Dei gloriam** (Lat.), to the greater glory of God; motto of the Jesuits.

**Admetus**, (Gr. myth.) Kg. of Pherae, Thessaly, husband of Alcestis who died for him; *Alcestis* of Euripides.

**Administration, Letters of**, (law) authority to administer property of person dying without will, or without naming executor; granted to widow, next of kin, or creditor, usu. on depositing sureties double value of estate.

**Admiral**, rank and title of senior naval officer commanding a fleet or squadron. In



Epaulettes and Sleeve Badges

1) A. of the Fleet 2) A. 3) Vice-A. 4) Rear-A.

Brit. Royal Navy rank has 4 grades: A. of Fleet; Admiral; Vice-A.; Rear-A. See OFFICERS, EQUIV. RANKS OF.

**Admiralty, 1)** Govt. dept. managing the Brit. Navy; board consisting of 3 Civil Lords of the A. (polit.) and 6 Sea Lords of the A. (naval); the First (Civil) Lord being a Minister and the First Sea Lord Chief of Naval Staff. 2) (fig.) command of the seas.

**Admiralty Islands**, group 40 Isls., N.E. of New Guinea, Ger. 1885-1914, now under

Austral. mandate; largest, Manus; total area, 880 sq.m.; pop. (cannibal Papuans) 13,000; coconuts, copra.

**Ad misericordiam** (Lat.), to pity; used of an appeal to the emotions in place of reasoned argument.

**Admix.**, abbr. administratrix (legal).

**Admr.**, abbr. administrator (legal).

**Ad nauseam** (Lat.), to (the point of) sickness or disgust, esp. of constant repetition.

**Adobe**, sun-baked brick used as building material, esp. by S.W. American Indians.

**Adolf of Nassau** (c. 1255-98), Ger. kg., succ. Rudolf of Habsburg 1292; deposed in 1298 after an unstable reign, and slain at battle of Gollheim.

**Adonai**, (Hebr. "Lord") name used in Hebr. script. for "Yahveh" ("Jehovah"), which was too sacred to be uttered or written.

**Adonijah**, (O.T.) 4th son of David; put to death by order of Solomon for desiring to marry Abishag (*q.v.*).

**Adonis** (Gr. myth.) youth beloved by Aphrodite (Venus) for his beauty. A dispute betw. Aphrodite and Persephone for his possession was settled by decision of Zeus that he should spend  $\frac{1}{2}$  of the year with each. Legend is symbolical of the decay and revival of nature in winter and spring.

**Adoption**, act by wh. an adult legally assumes parent. responsibility for a minor.

**Adoptionists**, sect of 8th cent. wh. maintained that Christ was Son of God only by adoption.

**Ador**, Gustave (1845-1928), Swiss statesm.; Pres. Red Cross Comm.; fndd Internat. Agency for Prisoners of War, Geneva, 1914, and organized internment of wounded prisoners of war. Pres. Swiss Federation 1918; Pres. Econ. and Financial Commission.

**Adour**, riv. in S.W. France; rises in W. Pyrenees, flows into Bay of Biscay, nr. Bayonne, 208 m.; navig. for 84 m. above estuary.

**Adowa:** see ADUWA.

**Adramyti** (*Edremid*), tn., vilayet Brusa, N.W. Turkey; pop., c. 6,000.

**Adrastus**, (Gr. myth.) Kg. of Argos; led expedition of the Seven against Thebes in futile attempt to restore his son-in-law Polynices, and the successful war of the Epigoni (descendants of the Seven); tragedy by Aeschylus.

**Ad rem** (Lat.), to the point; pertinent.

**Adrenalin**, internal secretion of the suprarenal glands wh. is set free in bloodstream, and stimulates nerve endings of sympathetic system; when injected hypodermically (under the skin) it produces a sensation of fright, accomp. by palpitation, pallor, dilated pupils, raised blood pressure, and other changes; used in medicine for treatment of attacks of asthma, wh. it quickly relieves.

artific., it is called *A.* Every miscarriage must be carefully watched by the physician owing to the danger of protracted hæmorrhage and subsequent infection. In Gt. Brit. none but a medical practitioner is allowed to resort to artif. *A.*, and then only to avoid danger of death or ill-health. Every other form of artif. *A.* is illegal and punishable with imprisonment.

**Ab ovo** (Lat.), "from the egg," *i.e.*, from the beginning.

**Aboukir, or Abukir**, port nr. Alexandria, Egypt; scene of destr. of Fr. fleet by England, 1798.

**About**, Edmond (1828-85), Fr. novelist, journalist, and dramatist; *Le Roi des Montagnes* (1856).

**Abacadabra**, magic formula used by Basilidian Gnostics to ward off diseases and misfortune; hence a spell or incantation.

**Abraham**, (O.T.) son of Terah, husband of Sarah; progenitor of Israelites; 1st Patriarch; received divine command to offer son, Isaac, as sacrifice, but his hand was stayed as reward for obedience (Gen. xxii); father of Ishmael by Hagar. **A.'s bosom** (fig.), abode of the faithful departed. **A. man**, lunatic (16th-17th cents.) licensed by Bethlehem Hospital to beg.

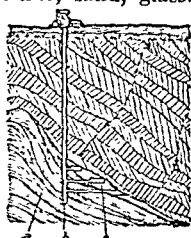
**Abraham**, William (1842-1922), "Mabon"; Welsh Lab. politician, M.P., and miners' leader.

**Abraham, Heights of**, elevated plain S.W. of Quebec, on Riv. St. Lawrence. Scene of defeat of Fr. under Montcalm, by Brit., under Wolfe, Sept. 13, 1759 (Seven Years' War), both generals being killed. Fr. evacuated Quebec and Canada fell into Brit. possession.

**Abraive**, substance of great hardness in form of sharp particles, either as powder or formed into block, wheel, or other suitable form. Used for removing material by grinding. Common *A.s.*: diamond, carborundum, corundum, emery, diamantine, sand, glass. Powder often used with wheel of soft mat. (copper, iron) wh. becomes "armed" with the *A.*, the particles being embedded in the metal.

**Abram salts**, saline deposits (sulphites of sodium, potassium, etc.) found, with rock salt, at Stassfurt (*q.v.*), Ger.; used in manuf. of artif. *a* Rock Salt, *b* Shaft, manures. See FERTILIZERS.

**Abraaxas**, word formed of Gr. letters which, as numerals, are equiv. to 365; mystic name used by the Basilidians, a Gnostic (*q.v.*) sect, of the Supreme Being as ruling 365 heavens. **A. gems**, gems engraved with this name, used as talismans.



Abram Salts  
*a* Rock Salt, *b* Shaft,  
*c* Potassium Salts

**Abbrégé** (Fr.), abridgment, short summary. **Abruzzi**, Luigi Amadeo, Duke of (1873-1933), explorer, scientist; ascended Mt. Elias, Alaska, 1897; Arctic exped., 1899-1900; commander in Ital. Navy, 1915-17.

**Abruzzi and Molise**, dept. of Italy, incldg. Aquila degli A., Campobasso, Chieti and Teramo; 6,390 sq.m.; with highest mt. range of Apennines (*Gran Sasso d'Italia*, 9,100 ft.); rough mt. country; pop., 1,512,000; wine, grain.

**Abalom**, (O.T.) David's son, rebelled agst. his father (II Sam. xv); caught by hair in an oak-tree during battle and slain by Joab.

**Abalom and Achitophel**, politic. satire in verse by Dryden (*q.v.*), 1681-82.

**Abscess**, (med.) local collection of pus in the tissues. **Cold A.**, usu. tuberculous; develops without signs of active inflammation in a gland or joint.

**Abscissa**, (geom.) transverse axis of the co-ordinates (*q.v.*).

**Absente reo** (Lat.), in the absence of the defendant; a legal term.

**Absinthe**, strong green liqueur, contg. 70% to 80% alcohol; made by redistilling alcohol in which wormwood (*absinthium*) and other aromatic or bitter roots have been soaked; its excessive use causes hallucinations and delirium.

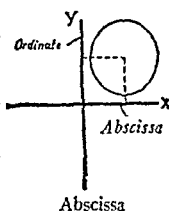
**Absit omen** (Lat.), may the (ill) omen be absent; said as a superstitious safeguard after unintentional reference to possible source of misfortune.

**Absolute**, in itself; unconditional, as opposed to relative. **A. music**, mus. composed and to be comprehended without being associated with extraneous, non-musical idea. **A. monarchy**, system of govt. in wh. head of State, usually hered., carries on Govt. personally or through his Ministers without const. limitation or div. responsibility. See AUTOCRACY. **A. pressure**, (phys.) pressure of liquid, steam, gas, etc., against a vacuum; usually given as excess over atmospheric pressure. **A. zero**, (phys.) the lowest possible temperature, (abt. -273° C), heat being completely absent; considered unattainable (Nernst's Theorem), but recently approached within fraction of a degree. See also HEAT; TEMPERATURE.

**Absolution**, 1) in Cath. practice, formal remission of sins by priest after confession (*q.v.*), based on John xx, 23; act of pronouncing such remission; regular form of words used for such remission; 2) (law) formal declaration of acquittal by the judge.

**Absolvitur** (Lat.), he is absolved, or acquitted.

**Absorption spectrum**, (optics) consists



of lines or bands in spectrum (*q.v.*) of white light (or wider range of electro-magnetic radiation) after it has passed through a substance. Very important test, *e.g.* of human blood, for carbon monoxide (which changes A.S.), in food analysis, etc.

**Abstinence**, 1) refraining from certain kinds of food and drink for hygienic, ritual, or other reasons. Fridays, Wednesdays in Lent and certain vigils are days of abstinence in R.C.Ch.; 2) total or partial abstinence from alcoholic liquors.

**Abstract idea:** *see* CONCEPT.

**Abt.**, Franz (1819-85), Ger. composer; songs.

**Abu-Bekr** (573-634), father-in-law of Mohammed, and first Mohammedan Caliph (632-34).

**Abu Klea**, battle of (Sudan), Jan. 17th, 1885. Brit. force of abt. 1,500, under Sir H. Stewart, was attacked by some 5,000 Mahdists, who were driven off, with abt. 150 Brit. killed, incldg. Col. Fred Burnaby.

**Abulfeda**, Ismail (1273-1331), Turk. histor. and geographer.

**Ab uno d'sce omnes** (Lat.), from one learn all; *i.e.*, if you know one of a class of people, etc., you should know them all.

**Ab urbe condita** (Lat.), from the foundation of the city (Rome) (753 B.C.), taken as starting point of Rom. Era.

**Abu Simbel** (or *Ipsambul*), place, Upper Egypt, on left bank of the Nile; 40 m. below Haffa; three rock-hewn temples; colossal figures of Rameses II.

**Abusus non tollit usum** (Lat.), abuse does not cancel use; *i.e.* does not justify abolition of a lawful custom.

**Abydos**, 1) tn., Asia Minor, on narrowest part of Dardanelles (Hellespont), opp. Sestos. From here the Persians, under Xerxes, crossed to Europe by bridge of boats (480 B.C.), and Leander swam nightly to visit Hero at Sestos. 2) Ruined city, Upper Egypt, cap. in 1st and 2nd dynasties.

**Abyssinia** (*Ethiopia*), empire in N.E. Africa, area *c.* 375,000 sq.m.; pop. *c.* 10 mill. (Hamitic-Galla and Somali Semitic-Abyssinian and Bantu).

Cap., Addis Ababa; port, Jibuti; chf. products: coffee, cotton, sugar, dates; min. wealth: iron, coal, copper, platinum, gold. Value of total for. trade, *c.* £5,500,000. Christian and united kgdom. under Kg. (Negus) from 4th cent.; Emperor Theodore lost Magdala in war with Eng., 1868; A. made an Ital. protectorate, Italy receiving Eritrea as a colony, 1889; Emp. Menelek defeated Ital. at Adowa, 1896; Empress Zaudita, 1917-30; Silassie I (Ras Tafari), 1930-; joined League of Nations, 1923.



Abyssinian Native

**Abyssinian**, *see* LANGUAGE SURVEY, *Ambharic*. **A.** (or *Ethiopian*) Church, early Christian Ch. outside Rom. communion; preserves many peculiar observances, chfily. through Jewish influence.

**Acacia**, 1) genus of trees of Mimosa tribe; 2) in Eng., locust-tree or false acacia, *Robinia*, graceful ornamental tree with sharp thorns on smaller branches; planted on lawns. Gum arabic is obtnd. from *A. arabica*; used in medicine princ. as a demulcent; in pharmacy as an excipient and to suspend in liquids insoluble drugs; and in confectionery as a pastille basis.



Acacia

**Academician**, member of an academy or society for promoting arts and sciences; specially of the Fr. Academy and the Royal Academy of Arts in London.

**Academy**, origly. school of philosophy fndd. by Plato (*q.v.*), so called after garden of Academus, near Athens, where his disciples assembled. Now, society formed for advancement of science or the arts, usu. having a certain official status. Among earliest A.s are those of Mid. Ages at Florence: **A. Pontaniana** (fndd. 1433), **A. Platonica** (fndd. by Cosimo de' Medici, 1442). In mod. times: **Académie Française**, establ. by royal letters patent 1635, under auspices of Card. Richelieu, to purify Fr. language and promote Fr. literature; discontd. at Fr. Revol.; revived in modified form 1796, restored 1816 to orig. form. Has 40 members, a chancellor, director, and permanent secretary. **Berlin A. of Science**, fndd. by Frederick I at instance of Leibnitz, 1700. **Leningrad A. of Science**, fndd. 1931, etc. *See also*, BRITISH ACADEMY; ROYAL ACADEMY; ROYAL SOCIETY.

**Acadia**, **Acadie**, name given by Fr. in 17th cent. to all Fr. possessions S. of St. Lawrence R.; later applied to Nova Scotia, New Brunswick, and part of Maine. Cap. of area, Port Royal, now Annapolis.



Acanthus

Leaf & Greek Ornament

**Acanthus**, 1) (bot.), genus of prickly plants found in S. Europe and Asia Minor; 2) *a* leaf, conventional representation of leaves of plant, esp. in capital of Corinthian column.

**A** (or *Alla*) **capella** (Ital.), (mus.) for voices alone, without instr. accompaniment.

**Acapulco**, largest Mex. port of Pac. Ocean; pop., 57,700.

**Acarnania** and **Aetolia**, dept., Greece; 2,920 sq.m.; pop., 220,100; cap., Missolonghi.

**Accelerando** (Ital.; abbr., **Accel.**), (mus.), with a gradual quickening of the pace.

**Acceleration**, rate of increase of velocity of moving bodies (centim. (ft.) per sec. per sec.).

**Accelerometer**, instrument for measuring acceleration; e.g., pendulum, suitably damped, which deflects when vehicle in which it is hung accelerates or slows down.

**Accent**, stressing of syllables in a word; sign indicating pronunciation of vowels, e.g. acute, grave, and circumflex, in French; pronunciation, tonal quality.

**Accentor**, genus of small birds, incldg. the hedge-sparrow.

**Acceptance**, (finan.) of a bill of exchange; acknldgmt. by drawee of obligation to pay the bill, consisting in his signature on the bill.

**A. business**, (finan.) accepting of bills of exchange on behalf of merchants by *acceptance houses* and joint-stock banks; import. element in financing of foreign trade; Lond. largest centre; in 18th. cent., Amsterdam was chf. centre. See DISCOUNT BUSINESS.

**Accessory after the fact**, one who, knowing a crime to have been committed, assists perpetrator. **A. before the fact**, one who assists in, or by his influence brings about, a crime.

**Accident**, 1) unexpected event, one occurring without design or apparent cause, esp. misfortune, injury, or disaster; 2) (philos.) property of thing not part of its essential nature; 3) (geol. and geog.) surface irregularity or diversity; 4) (her.) addit. but unessent. mark in escutcheon.

**Accidental**, (mus.) raises a note by a semitone (sharp #), or by a tone (double sharp ##), or correspondingly lowers it (flat b or double flat bb). A natural (n) contradicts the accidental sharp or flat.

**Accipitriformes**, order of birds including the birds of prey: vultures, buzzards, hawks, eagles.

**Acclimatization**, grad. adaptation of people, animals, vegetation to new environment, esp. with regard to climate; applied to race or individ. implies acquired partial or absolute immunity from effects of injurious conditions.

**Accolade**, ceremony of conferring knight-hood by touching the shoulder with a sword.

**Accommodation**, (physiol.) adaptation of lens of eye to focus objects near at hand; in the aged, A. performed with difficulty, and convex glasses are then required for reading.

**Accommodation bill**, *finance bill*, B. of exchange (q.v.), accepted by drawee to oblige drawer, without consideration for so doing; does not arise out of ord. commerc. transac., acceptor being actually guarantor for drawer who can present accepted B. for discount; acceptor expects drawer to meet pymt. at maturity of B.; if he does not, acceptor may be sued by holder. A. B.s are not regarded with such fav. in *discount market* (q.v.), as those based on genuine commerc. transacs. unless names of drawer and drawee are highly

esteemed; hence sometimes called *kites*, *windmills*, or *windbills*.

**Accordion**, expanding reed mus. instr. of concertina type, but longer and fitted with keyboard.

**Account**, record by figures of business transactions, usu. double-columned, rt. col. contng. credits (Cr.) and left debits (Dr.). **Bank a.**, an individual's or firm's deposits at and loans from a bank. See CURRENT and DEPOSIT ACCOUNTS. **Stock Exch. a.** period betw. 2 apptd. days (*settlement days*) per month for settlement of deals on Stock Exchange, in London usu. on alternate Thursdays.

**Accountant**, person qualified to supervise the keeping of books of account or to act as auditor (q.v.). In Gt. Brit., Inst. of Accountants was establd. 1870, and in 1880 incorptd. by Royal Charter as Inst. of Chartered Accountants in Eng. and Wales; membership, wh. is usu. obtd. after qualifictn. by serving under articles and passing examinations, entitles to designation *Chartered A.*; Fellows are entitled to use of letters F.C.A., Associates to A.C.A. The Soc. of Incorporated Accountants and Auditors has similar functions, as in the U.S.A. have the Amer. Soc. of Certified Public Accountants, and Amer. Inst. of Accountants.

**Accra**, seapt. and cap., Gold Coast Colony (q.v.); pop., 59,900.

**Accrediting**, formality by wh. newly apptd. ambassadors intro. themselves to head of State to wh. they have been sent, by means of documents (*credentials*) guaranteeing their identity.

**Accrington**, munic. bor., Lancs., Eng.; cotton mills; pop., 43,000.

**Accumulator**, 1) electric storage cell; 2) storage vessel for hydraulic power. **Steam a.**, for storage of steam for power purposes under high pressure.

**Accusative**, the objective case indicating direct obj. of a verb; answers qu. "*whom?*" or "*what?*"; e.g., I saw *him*.

**Ace**, the "one" on cards or dice. **Flying a.**, airman who has destroyed 10 or more enemy aircraft.

**Aceldama**, (N.T.) field of bloodshed or slaughter in Valley of Hinnom; scene of death of Judas Iscariot (Acts i. 19).

**Acephali** (Gr.: without a head), name given to various Christian sects in 5th and 6th cents., who rebelled agst. bps. or other heads of the Church, e.g., the Monophysites.

**Acetal**, colourless liquid  $\text{CH}_3\text{CH}(\text{OC}_2\text{H}_5)_2$  prepared by oxidizing ethyl alcohol with manganese dioxide and sulphuric acid, or by action of acetaldehyde on alcohol at 100° C; compound, with nutty after-taste, wh. develops in and modifies flavour of wine.

**Acetanilide**,  $\text{C}_6\text{H}_5\text{NH.CO.CH}_3$ , made by action of glacial acetic acid on aniline; com-

mon but dangerous ingredient (antifebrin) of headache powders.

**Acetate**, (chem.) a salt of acetic acid.

**A. of copper**: see VERDIGRIS.

**Acetic Acid**, ( $\text{CH}_3\text{COOH}$ ), organic acid, chief constit. of vinegar; prod. from alcohol by oxidation, formerly by "acetic" fermentation with vinegar bacteria, also by dry distillation of wood (wood-vinegar). **Pure a. a.**, glacial acetic acid; a chem. solvent (used to destroy warts). With metals it forms *acetate*; with alcohols, **A. ether**, fruit ether essence with a fruit-like scent, used for perfumes and sweets. **A. anhydride**, ( $\text{CH}_3\text{CO}_2\text{O}$ ), b.p.  $137^\circ\text{C}$ , organic reagent with great affinity for water.

**Acetone**,  $\text{CH}_3\text{COCH}_3$ , important solvent of cellulose derivatives (acetate, nitrate) and therefore a constituent of many cellulose paints and enamels.

**Acetylene**,  $\text{C}_2\text{H}_2$ , gas produced by action of water on calcium carbide (q.v.); burns with clear, brilliant flame; used for portable lamps and with oxygen for welding (q.v.). **A. lamp**, lamp in wh. A. gas is burnt at a spec. burner.

**A. welding**: see WELDING.

**Acetylides**: see CARBIDES.

**Acetylsalicylic acid**: see ASPIRIN.

**Achaean**, one of 4 chf. races of Gr. peoples, in Peloponnese; in Homeric poems, name for Greeks.

**Achaia**, or **Achaea**, part of Gr. prov. of Achaia and Elis, N. coast Peloponnesus, Greece. Formerly 1) whole of the Peloponnesus, under the Achaeans (q.v.); 2) N. coastal strip of Peloponnesus inhab. by Achaeans after Dorian invasion; 3) whole of the Peloponnesus again, as Rom. prov. of A. (146 B.C.). **A. League**, orig. confederation of 12 cities of A.; renewed 281 B.C., made powerful by Sicyonian general, Aratus; destroyed by the Romans 146 B.C.

**Achates**, friend of Aeneas in Virgil's *Aeneid* (q.v.); hence proverbial *fidus Achates*, from his loyalty and devotion.

**Achelous**: see ASPROPOTAMOS.

**Achernar**, 1st magnitude star, A in constellation Eridanus (q.v.).

**Acheron**, 1) name of sev. small rivs. in anc. geography; 2) Gr. river of the underworld.

**Acheulean culture**, divn. of Lower (Earlier) Palaeolithic (q.v.) Period, named after the gravel-beds at St. Acheul, nr. Amiens, France, where flint implements (hand-axes, flat oval implements, graving

tools, etc.) were found. Follows *Chellean Culture* (q.v.).

**A cheval** (Fr.), on horseback; stake across or on two numbers, as in roulette.

**Achi Baba**, hill (730 ft.) in S. of Gallipoli penin.; attacked by Brit. and Fr. in Dardanelles campaign, June-July, 1915.

**Achievement**: see HERALDRY; HATCHMENT.

**Achil Island**, isl. co. Mayo, Connaught, I.F.S.; largest off Irish coast (15 m. by 4); pop. 5,300. **Achil Head**, 2,190 ft.

**Achilleion**, palace on isl. of Corfu, form. in poss. of William II of Ger.; now Gr. casino.

**Achilles**, hero of *Iliad*, son of Peleus (q.v.; hence *Pelides*) and sea-goddess Thetis; vulnerable only in heel (*Heel of Achilles*).

**A. tendon**, named after Achilles; tendon of calf muscle; leads to back of heel.

**Achilles Tatius** (5th cent. A.D.), Gr. rhetorician and erotic author of Alexandria: *Leucippe and Cleitophon*.

**Achin** (*Aljeh*), dist. in N. Sumatra under Dut. gov.; 21,400 sq. m.; pop., 802,660; cap., Kota Raja, pop., 10,620. Tobacco planting and coal mines.

**Achmet** (*Ahmed*), Sultans of Turkey. **A. I** (1589-1617); first S. to observe internat. law; war with Persia. **A. II** (1643-95), war with Hungary. **A. III** (1673-1736), wars with Venice and Austria; poisoned in prison.

**Achromatic**, term applied to optical instruments (lenses) that affect (focus, etc.) light of diff. colours equally. A. lenses, made by combining flint-glass and crown-glass.

**Acidimetry**, measurement of acidity of liquids.

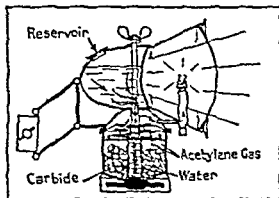
**Acids**, chemical compounds containing hydrogen replaceable by metals to form salts. Acids soluble in water are dissociated with formation of hydrogen ions (q.v.), concentration of which measures strength of acid; Acid solutions dissolve most metals with evolution of H gas. Mineral acid strong; organic acids, containing group  $-\text{COOH}$ , much weaker, many insoluble in water (e.g., fatty acids).

**Acirole**, tn., Sicily, dept. Catania, on E. coast; hot springs; pop., 35,000.

**Acis**, son of Pan, shepherd, lover of nereid Galatea; crushed to death by rival, Polyphemus the Cyclops; his blood was metamorphosed into Riv. A. (now Fiume di Jaci), Sicily.

**Ackworth**, parish, W. Riding, Yorks., Eng.; pop., 5,000; school of Society of Friends (1758).

**Aclinic line**, magnetic equator or line of no dip, at every place on which the earth's magnetic field (q.v.) is horizontal.



Acetylene Cycle Lamp



Achromatic Lens  
K) Crown-Glass  
F) Flint-Glass

**Acne**, pimples, freqly. on face, caused by inflammation of sebaceous glands.

**Acoemeti** ("Sleepless Ones"), order of Eastern Christian monks founded in Patriarchate of Gennadius (428-30), divided into 3 watches to ensure uninterrupted worship in their monastery; later known as *Studites*.

**Acolyte**, 1) one of the 4 Minor Orders; 2) server who assists priest at Mass; 3) fig., any assistant or devoted follower of another.

**A compte** (Fr.), on account.

**Aconcagua**, highest mt. of S. Amer. Andes, 23,000 ft.; Argent. territ. on Chilean frontier; extinct volcano.

**Aconite**, (bot.) genus of *Ranunculaceæ*, incldg. monkshood (*q.v.*), from wh. poisonous drug is extracted.

**Aconitine**,  $C_{34}H_{41}O_{11}N$ , alkaloid, poisonous active prin. of aconite. See *MONKSHOOD*.

**A conto** (It.), on account.

**Acorn**, 1) fruit of oak-tree; 2) (naut.) piece of wood employed to keep vane on mast-head.

**Acoustics**, science of the phenomena of sound. In mus., physical basis of tone relations, and conditions of their propagation, as in a building. Acoustical materials are used in bldg. to deaden transmission of noise thr. floors or walls, e.g., cork, felt, linoleum, wood fibre, etc.

**Acquit** (Fr.), receipted, discharged.

**Acree**, tn. in Syria; pop., 10,000. Scene of many struggles during Crusades, hence nickname, "Graveyard of Christendom."

**Acree**, measure of land, 4,840 sq.yd.; also in sense of *field* in spec. phrases, as *broad acres*, large landed property. **God's a.**, churchyard.

**Acridine**, basic substance ( $C_{13}H_9N$ ) in crude anthracene; causes sneezing when inhaled; ingredient in "electric snuff."

**Acridine**, (chem.) (trypaflavine,  $C_{14}H_9N_3Cl$ ) an acridine derivative used as an antiseptic for injection into blood-stream, killing trypanosomes (parasites of sleeping sickness); also used as yellow dye.

**Acrisius**, (Gr. myth.) Kg. of Argos, father of Danaë, and grandfather of Perseus, by whom he was killed in fulfilment of an oracle.

**Acrobat**, professional rope-walker, contortionist, tumbler, etc.

**Acroceraunia**, anc. name of Cape Glossa, Albania; notorious for dangerous rocks.

**Acrogen**, plant of Cryptogam class, having perennial stem whence fresh growths take place, as in ferns, mosses, etc.

**Acrography**, process of making printing-blocks from gelatine relief of photogr. negative mounted on revolving cylinder, round wh. a celluloid sheet is secured and furrowed automatically by tool to correspond with the relief.

**Acrolëin**,  $CH_2:CH.CHO$ , volatile irritant liquid prod. by partial decomp. of fats by heat. B.p.  $52^\circ C$ .

**Acromegaly**, (med.) disease characterized by abnormal permanent enlargement of the extremities (head, hands, and feet); due to changes in pituitary gland, and occurring usu. betw. ages of 25 and 40.

**Acropolis**, citadel of anc. Gr. town; at



Acropolis, Athens

Athens included the Parthenon, Propylaea, Erechtheum, and other temples, theatres, etc.

**Acrostic**, poetical composition in which the first, last, or other agreed letters of each line, when read successively in the order of the lines make a word or sentence; a puzzle constructed on this principle.

**Acroteria**, (archit.) pedestals at the corners and summit of pediments in Gr. and Rom. temples; freqly. carried large sculptured figures.

**Act**, (drama) division of play performed without fall of curtain, in wh. definite and coherent portion of drama is represented.

**Actæon**, hero in Gr. myth.; surprised Diana while bathing; was transformed into a stag and torn to pieces by his own hounds.

**Acta Sanctorum** (Lat., the deeds of the saints), any collected account of lives of Christian saints and martyrs; esp. that begun by the Bollandists (*q.v.*) in 1643, which now extends to 65 folio volumes.

**Actinic light rays**, radiation which has strongest chemical power; blue, violet, and ultra-violet (*q.v.*).

**Actinium**, radio-active chem. element, found in 1898 in pitchblende but not yet isolated: sym., Ac; at. wit., *c.* 230; at. no., 89.

**Actinometer**, formerly name applied to instrument for measuring heating effect of sunlight; now used for instr. measuring the actinic (chemical) power of radiation, as in photography (see *EXPOSURE-METER*), and from sources of ultra-violet light and X-rays.

**Actinomycetes**, ray-fungus, a vegetable parasite; causes *actinomycosis* (*q.v.*).

**Actinomycosis**, (med.) infectious disease caused by vegetable parasite; characterized by suppurating swelling of jaw; gen. acquired by chewing grasses infected with the ray fungus. Common among cattle; less common in man.

**Actinotherapy**, treatment of diseases by sunlight or artific. light; freqly. successful

in tuberculosis (rickets), lupus, acne, and many other diseases.

**Actinozoa**, (zool.) one of the classes of the Coelenterata, including the corals, sea-anemones, etc.

**Action, Quantum of:** see QUANTUM THEORY.

**Action-at-law**, proceedings in wh. 2 parties, with opposing interests, seek to gain decision of the court. Actions are civil or criminal. In former, restitution is sought for individual wrong; in latter, State punishes breach of its laws.

**Actio personalis moritur cum persona** (Lat. legal expression), a personal action dies with the person (involved).

**Actium**, promontory, Acarnania, Greece. at entrance to Gulf of Arta (Ambracian Gulf), opp. Prevesa; off A. Augustus defeated Antony and Cleopatra, 31 B.C.

**Active principles**, (chem.) definite chem. compounds wh. prod. therapeutic effects of vegetable drugs. Many can be isolated, or prep. synthetically, and admin. separately.

**Act of God**, unavoidable accident arising from natural causes, e.g., lightning, hurricane, flood, earthquake, etc. A spec. clause protecting shipowner agst. consequences of such occurrences is usu. incldd. in bill of lading (q.v.).

**Act of Parliament**, law enacted by Parl. as distinct from other forms of Eng. law. Cannot be altered except by another act, and validity cannot be questioned. See BILL, ORDER IN COUNCIL, BY-LAW.

**Acton**, Sir John E. E. Dalberg, 1st Bn. Acton (1834-1908), Eng. histor. and philosopher.

**Acton**, munic. bor., Middlx., Eng.; W. sub. London; pop., 70,500.

**Acts, Book of:** see APOSTLES.

**Actuary**, insurance expert on whose estimates of expectation of life, or degree of risk, insur. cos. base terms of policies and premium rates.

**Actum est** (Lat.), it is all over (with the State); the State is in danger.

**A.D.**, abbr. Anno Domini (Lat.), in the year of our Lord.

**Ad absurdum** (Lat.) (*reductio a.a.*), proof of a proposition by logical demonstration of the absurdity of its contradiction.

**Adagio**, (mus.) leisurely, slow.

**Adalia**, 1) Turk. vilayet on Medit. coast; area, 7,500 sq.m.; pop., 206,300; 2) cap. of the vil., pop., 17,600.

**Adam**, (O.T.) 1st man created by Yahveh and placed in Gdn. of Eden (Gen. i). **Second** (or **Last**) **A.**, Jesus Christ (I Cor., xv, 45).

**Adam**, Robert (1728-92), Brit. archit. (*Adelphi*, London) and furniture designer; his bros., John, James, and William, were also architects.

**Adamant**, name applied to any very hard

stone or mineral, esp. *diamond* (word derived from same Gr. root); also used metaph. to denote hardness of heart or firmness of purpose.

**Adam Bede**, novel by George Eliot (q.v.), 1859.

**Adamello**, a peak of Lombard Alps, 11,700 ft.; E. continuation of Bergamese Alps, N. of Lake Garda; granite quarries.

**Adamites**, name of var. sects worshipping in nude state, professing to revive Adam's orig. innocence. 1) 2nd-cent. Gnostic sect, Africa; 2) 12th-cent. sect, Antwerp; 3) 15th-cent. sect exterminated by Žizka, 1421.

**Adamnan**, Saint (624-704), Abbot of Iona; wrote *Life of St. Columba* and work on the Holy Places.

**Adam of Bremen** (fl. c. 1050-75), Ger. histor. and topographer; he mentions the journeys of the Norsemen to America (Vinland), c. 1000.

**Adams, George Burton** (1837-1925), Amer. histor.; ed. *Amer. Hist. Review*, 1895-1913.

**A., John** (1735-1820), 2nd Pres. of U.S.A. (1797-1801); previously leader of Independence movement.

**A., John Couch** (1819-92), Eng. astronomer; shares with Leverrier (q.v.) credit for discovery of planet Neptune (1846).

**A., John Quincy** (1767-1848), 6th Pres. of U.S.A. (1825-29); largely respons. for Monroe Doctrine (q.v.).

**A., Wm.** (d. 1620), Eng. navigator; 1st Englishman in Japan, where he lived for some years; rendered valuable services to Eng. and Dutch commerce.

**Adam's apple**, projecting thyroid cartilage of larynx.

**Adam's Bridge**, ridge connecting S. India (Rameswaram Isl.) and N.W. Ceylon (Mannar Isl.); ferry (causeway and rly. projected).

**A.'s Peak**, sacred mtn. S. Ceylon; 7,352 ft.; foot-shaped hollow, claimed as footmark of Adam, Buddha, or Siva.

**Adam style**, style in archit., furniture and interior decoration, orig. by Rbt. Adam, characterized by lightness, grace, and conventionalized floral, geomet. and ribbon-forms; tendency towards straight lines; subdued colour-tones.

**Adana**, vilayet and tn. on Medit. coast; area of vil. 6,250 sq.m.; pop., 227,750, of tn., 72,650; chf. centre for trade in cotton, fruit, sugar, grain.

**A.D.C.**, abbr., aide-de-camp.

**Ad Calendas Graecas** (Lat.), on the (non-existent) Gr. calends; i.e. never.

**Ad captandum vulgus** (Lat.), for winning the mob; applied to public action or policy calculated to gain popular favour.

**Adcock**, Arthur St. John (1864-1930), Brit. novelist and journalist; editor of *The Bookman* from 1923.

**Adda**, riv. of N. Italy; left trib. of Po;



rises in the Rhaetian Alps, flows through the Valtellina and Lake Como (205 m.), from whence it is navigable.

**Addams**, Jane (1860- ), Amer. social worker and writer on sociology: *Twenty Years at Hull House* (1910), *Second Twenty Years* (1930), etc.; Nobel Peace Prize, 1932.

**Addax**, (zool.) N. African and Arab. antelope with spiral horns; abt. 3 ft. high; tufted forehead.

**Adder**, the common viper; small venomous snake common in many parts of Eng. and widely distributed throughout Europe. About 20 species of true vipers (*Viperinae*) distributed over greater part of Old World, e.g., *sand-viper*, S. and E. Europe; the dread *puff-adder* (*q.v.*) of Africa.

**Adder's tongue**, *Ophioglossum vulgatum*, fern so called from the shape of its fruiting spike.

**Addis Ababa**, cap. of Abyssinia; pop. c. 100,000 (4,000 Europ.); rly. (487 m.) to Jibuti. **Treaty of A. A.**, betw. Gr. Brit. and Abyssinia, 1902; settled frontier betw. Abyssinia and Sudan.

**Addison**, Joseph (1672-1719), Eng. essayist, poet, and statesman; *Spectator* (1711-14).

**Addison's disease**, descrbd. by Eng. doctor, T. Addison (1793-1860); a serious disease of suprarenal gland. Spec. characteristic: bronze-like tint in skin and mucous membranes.

**Addled Parliament**, **The**, 2nd parliament of James I; summoned, 1614; declined to grant supplies until Kg. redressed grievances. He refused, and the assembly was dissolved without passing a single bill.

**Adelaide**, **Qn.** (1792-1849), consort (1818-37) of William IV of England.

**Adelaide**, cap. S. Australia, on R. Torrens, 6 m. E. of Port Adelaide, on St. Vincent Gulf; the riv. separates city from suburb of N. Adelaide; univ., theol. coll., two public schools; Anglican and Rom. Cath. cathedrals; exports wheat, wool, copper, wine; pop. (incl. suburbs), 324,420.

**Adelboden**, health resort and winter sports centre (4,450 ft.) in Bernese Oberland, canton of Berne.

**Adeler**, Max, pseud. of American humorist, Charles H. Clark (1841-1915); *Out of the Hurly-Burly*, *Random Shots*, etc.

**Adelphi**, small dist. nr. Charing Cross, London, facing Riv. Thames, laid out by John and Robert Adam, 1768-70.

**Adelsberg**: see POSTUMIA GROTE.

**Aden**, Brit. possession (since 1839) and fortified port. S. coast Arabia, on *Gulf of Aden* (separating Arabia from Somaliland); under Colon. Office but admin. by Govt. of

Bombay; peninsulas of *Aden* (with the tn., in volcanic crater) and *Little Aden* cover stretch of mainland (Sheikh Othman). Climate hot, rainfall scanty. Important coaling station, entrepôt trade. Aden includes hinterland protectorate (9,000 sq.m.), Perim, Socotra, and Kuria Muria Is. (*q.v.*); pop. (incl. Perim), 54,900.

**Adenoids**, overgrowth of adenoid tissue wh. is normally present at back of nose.

**Adenoma**, tumour, or new growth, arising in connection with secreting glands; simulates tissue from wh. formed; slow in growth, seldom malignant.

**Adedatus**, Pope (672-76).

**Adept**, term used by alchemists of those said to have fnd. "philos. stone"; one who is thoroughly efficient in anything.

**Ad eundem gradum** (Lat.), to the same degree; refers to permission in certain cases accorded to graduates of one university to take a corresponding degree in another university.

**Ad extremum** (Lat.), to the end; to extremities.

**Ad hoc** (Lat.), for this (specified) purpose.

**Ad hominem** (Lat.), to the man; personal appeal instead of reasoned argument or proof.

**Adiabatic process**, (phys.) takes place without transference of heat to or from the system from outside. **A. compression**, **expansion**, of a gas, as in sound waves.

**Adiaphorists**, German Protestants (1548) who regarded as matters of indifference such things as use of pictures, candles, surplices, Latin hymns, and vespers in R.C. Ch., which were held by Lutherans to be subversive of faith.

**Adige** (*Etsch*), riv., N. Italy, c. 245 m.; rises in Rhaetian Alps, flows past Merano, Bolzano, Trent, Verona into Adriatic Sea at Porto Fossone. Tribs.: Isarco, Noce, Avisio. Navig. below Bolzano.

**Ad infinitum** (Lat.), to infinity; endlessly.

**Ad interim** (Lat.), meanwhile, temporarily.

**Adipocere**, waxy or oily substance into wh. soft tissues of dead animal bodies are converted when exposed to moisture.

**Adirondacks**, mtn. group in N.E. of N.Y. State; highest peak, Mt. Marcy, 5,350 ft.; hunting, fishing; holiday resorts.

**Adit**, in mining, horizontal gallery (tunnel) driven from surface into side of hill, for the purpose of giving access to mine.

**Adjective**, word used to denote some quality in substantive to wh. it is accessory; indeclinable in Engl. but has deg. of comparison (*q.v.*).

**Adjective colours**, in dyeing, those wh. are mixed with a chem. base to make them fast.

**Adjust**, 1) make accurate, to gauge;



Addison

- 2) (mus.) to correct pitch of an instr.;  
3) (printing) to bring level with line of type.

**Adjutant**, (milit.) officer on H.Q. of unit (e.g. infantry batt.) below status of an infantry brigade (or equivalent), in charge (under his C.O.) of organization, training, discipline, etc.; assisted by regtl. sergeant-major. **A.-General**, head of "A" branch of the Staff (q.v.); member of Army Council (q.v.); under him are Directorates of Recruiting and Organization, of Personal Services (pay, promotion, discipline, army chaplains, etc.), and of Army Medical Services, etc.

**Adjutant bird**: see MARABOUT.

**Ad leones** (Lat.), to the lions; pop. cry directed agst. Christian martyrs in Rome.

**Adler, Alfred** (1870- ), Viennese physician and psycholog.; pupil of Sigmund Freud (q.v.), from whose sch. he seceded in 1912-13; *The Neurotic Constitution; Individual Psychology*. Cf. JUNG, CARL. **A., Hermann** (1839-1911), Heb. scholar; Chf. Rabbi Brit. Empire, 1891-1911.

**Ad lib.**, abbr. *ad libitum* (Lat.), at pleasure.

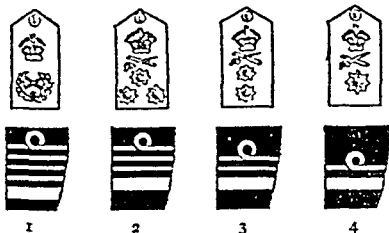
**Ad litem** (Lat.), for the action at law.

**Ad majorem Dei gloriam** (Lat.), to the greater glory of God; motto of the Jesuits.

**Admetus**, (Gr. myth.) Kg. of Phærae, Thessaly, husband of Alcestis who died for him; *Alcestis* of Euripides.

**Administration, Letters of**, (law) authority to administer property of person dying without will, or without naming executor; granted to widow, next of kin, or creditor, usu. on depositing sureties double value of estate.

**Admiral**, rank and title of senior naval officer commanding a fleet or squadron. In



Epaulettes and Sleeve Badges  
1) A. of the Fleet 2) A. 3) Vice-A. 4) Rear-A.

Brit. Royal Navy rank has 4 grades: A. of Fleet; Admiral; Vice-A.; Rear-A. See OFFICERS, EQUIV. RANKS OF.

**Admiralty**, 1) Govt. dept. managing the Brit. Navy; board consisting of 3 Civil Lords of the A. (polit.) and 6 Sea Lords of the A. (naval); the First (Civil) Lord being a Minister and the First Sea Lord Chief of Naval Staff. 2) (fig.) command of the seas.

**Admiralty Islands**, group 40 Isls., N.E. of New Guinea, Ger. 1885-1914, now under

Austral. mandate; largest, Manus; total area, 880 sq.m.; pop. (cannibal Papuans) 13,000; coconuts, copra.

**Ad misericordiam** (Lat.), to pity; used of an appeal to the emotions in place of reasoned argument.

**Admix.**, abbr. administratrix (legal).

**Admr.**, abbr. administrator (legal).

**Ad nauseam** (Lat.), to (the point of) sickness or disgust, esp. of constant repetition.

**Adobe**, sun-baked brick used as building material, esp. by S.W. American Indians.

**Adolf of Nassau** (c. 1255-98), Ger. kg., succ. Rudolf of Habsburg 1292; deposed in 1298 after an unstable reign, and slain at battle of Gollheim.

**Adonai**, (Hebr. "Lord") name used in Hebr. script. for "Yahveh" ("Jehovah"), which was too sacred to be uttered or written.

**Adonijah**, (O.T.) 4th son of David; put to death by order of Solomon for desiring to marry Abishag (q.v.).

**Adonis** (Gr. myth.) youth beloved by Aphrodite (Venus) for his beauty. A dispute betw. Aphrodite and Persephone for his possession was settled by decision of Zeus that he should spend  $\frac{1}{2}$  of the year with each. Legend is symbolical of the decay and revival of nature in winter and spring.

**Adoption**, act by wh. an adult legally assumes parent. responsibility for a minor.

**Adoptionists**, sect of 8th cent. wh. maintained that Christ was Son of God only by adoption.

**Ador**, Gustave (1845-1928), Swiss statesm.; Pres. Red Cross Comm.; fndd Internat. Agency for Prisoners of War, Geneva, 1914, and organized internment of wounded prisoners of war. Pres. Swiss Federation 1918; Pres. Econ. and Financial Commission.

**Adour**, riv. in S.W. France; rises in W. Pyrenees, flows into Bay of Biscay, nr. Bayonne, 208 m.; navig. for 84 m. above estuary.

**Adowa**: see ADUWA.

**Adramyti** (*Edremid*), tn., vilayet Brusa, N.W. Turkey; pop., c. 6,000.

**Adrastus**, (Gr. myth.) Kg. of Argos; led expedition of the Seven against Thebes in futile attempt to restore his son-in-law Polyneices, and the successful war of the Epigoni (descendants of the Seven); tragedy by Aeschylus.

**Ad rem** (Lat.), to the point; pertinent.

**Adrenalin**, internal secretion of the suprarenal glands wh. is set free in bloodstream, and stimulates nerve endings of sympathetic system; when injected hypodermically (under the skin) it produces a sensation of fright, accomp. by palpitation, pallor, dilated pupils, raised blood pressure, and other changes; used in medicine for treatment of attacks of asthma, wh. it quickly relieves.

**Adrian**, name of six Popes. **A. I** (772-795), renewed to Charlemagne Pippin's grant of 754 by which the Temporal Power was inaugurated. **A. II** (867-872); **A. III** (884-885); **A. IV** (1154-59), the only Eng. Pope, Nicholas Breakspear (b. end of 10th cent. at Abbot's Langley, nr. St. Albans, Herts, d. at Anagni, 1159); was in constant opposition to Frederick I (Barbarossa); Ireland granted by him to Henry II. **A. V** (July-Aug., 1276). **A. VI** (1522-23), formerly tutor to Charles V; in favour of reforms in the Church, but opposed to Luther.

**Adrian**, Edgar Douglas (1889- ), physiol.; Foulerton Prof. of Roy. Soc.; Nobel Prize (Med.), 1932.

**Adrianople**, *Edvine, Edrench*, 1) vilayet in Eur. Turkey, corresponding in pt. with anc. Thrace; area, 14,900 sq. m.; pop., 150,900; indus.: silk, dairy-farming; till 1923 Bulgar. and Gr.; 2) tn., cap. of vilay.; pop., 34,700; textiles, agricult. products, fruit, opium, attar of roses, dye (Turkey red).

**Adriatic**, **The**, arm of Mediterranean, betw. Ital. and the Balkan Peninsula; to 5,175 ft. in depth; ports: Trieste, Venice, Fiume, Brindisi.

**Adscripti glebae** (Lat.), bound to the soil; originally a class of Roman serfs.

**Adsorption**, adherence of gases, vapours, or dissolved substances to surface of solid bodies. Gas masks *adsorb* poisonous gases and vapours, usu. on charcoal powder.

**Adsum** (Lat.), I am present; here! (in answer to roll-call, etc.).

**Adullam**, **Cave of**, (O.T.) resort of David when an outlaw.

**Adullamites**, (polit.) small group seceding from a party, esp. the Liberals in opp. to Gladstone's 1866 Reform Bill.

**Adulteration**, falsification of substance by addition of inferior materials; applied spec. to food, drink, and the coinage. Brit. law concerning A. of food, etc., contained in *Sale of Food and Drugs Acts*, 1875, '79, '99, and in spec. acts relating to milk, cream, butter, and margarine. See **FOOD AND DRUGS ACTS**.

**Adultery**, sexual intercourse of a married person with one of opposite sex; one of the grounds of divorce.

**Ad unguem** (Lat.), to the nail; accurately, to a nicety.

**Adur**, riv. (20 m.), Sussex, Eng.; rises nr. Horsham; flows into Eng. Channel at Shoreham-by-Sea.

**Ad usum Delphini** (Lat.), orig., mutilated ed. of the classics for the use of the heir to the Fr. throne (Dauphin); hence, intended for immature intellects.

**Aduwa**, inland tn., Abyssinia, cap. prov. of Tigre; pop., 5,000; defeat of Italians by Menelik, 1896.

**Ad valorem duties**, duties levied on

value instead of weight of merchandise; Brit. *Ad valorem d.* charged on landed value; U.S. on f.o.b. port of embarkation value. See **CUSTOMS DUTIES**. **A. v. stamp**, one placed upon deeds or documents, fixed proportionately to the amount of any element of value expressed therein.

**Advance**, (finan.) to place at disposal of a person funds repayable at a later date, or goods to be pd. for later. **A. of a bank**, loan to customer; may be secured by deposit of securities, or loaned purely on reputation of borrower; rate of int. charged by Brit. jt.-stk. bk. usu. 1% above bk. rate, but with minim. of 5%; ratio of A. to deposits maintained at from 48-53%. In U.S. term loan is equiv. to *advance*.

**Advancement of Learning**, **The**, work by F. Bacon, 1605; expounds his inductive method of scientific research and estimates history, poetry, and natural philosophy as corresponding to man's memory, imagination, and reason, in wh. Bacon held all knowledge to have originated.

**Advent**, (eccles.) period immediately preceding Christmas and starting on *Advent Sunday*, i.e., the Sunday nearest (before or after) St. Andrew's Day (30 Nov.): intended by the Church as a season of preparation for the coming of Christ.

**Adventists**, Chris. sect, fndd. by Wm. Miller (U.S.A.), 1833; believers in the nr. approach of the second coming of Christ; sometimes called *Second Adventists*; a section of them are *Seventh Day Adventists*.

**Adverb**, indeclinable word qualifying verb, adjective, or other adverb.

**Advertising**, the spreading of information or propaganda, esp. for purpose of promoting sales, creating or increasing business, etc. In ancient world, was carried on by mural inscriptions and public criers; modern A. began with invention of printing. First adv. supplement in *London Gazette* (1666); improved transport and factory production in 19th cent. compelled manufcs. to seek wider markets for their goods through A. Principal modern forms are press A. and poster A., though many other media (special catalogues, films, electric-lighting displays, smoke-writing from aircraft, radio announcements, gift-schemes, etc.) supplement these. Modern newspapers derive bulk of their revenue from A., which is to a certain extent regulated by law; in Eng. societies (e.g., Scapa Society) have arisen to correct abuses of indiscriminate A., while many societies and associations look after the interests of advertising experts and of advertisers.

**Advice note**, (commerc.) statement of contents of a consignment.

**Advocaat**, liqueur composed of brandy, eggs, cream, and sugar.

**Advocate**, name given to a barrister in

Scot., the chf. Scottish legal officer being the Advocate General.

**Advocatus diaboli** (Lat.), advocate of the devil; in the R.C.Ch., prelate deputed to produce arguments against the canonization (q.v.) of a person.

**Adwoson**, right of presentation to a church or spiritual living; owner of right is the patron.

**Adzhar**, Auton. Soc. Sov. Rep. (since 1921 under protection of Georgian S.S.R.) on Black Sea; c. 500-700 sq.m. (boundaries undecided), pop., c. 132,000. Extensive orchards; eucalyptus, mulberry, bamboo; forests. Cap., Batum.

**A. E.**: see RUSSELL, GEO. WM.

**Aeacus**, (Gr. myth.) s. of Zeus, Kg. of the Myrmidons; after his death became one of the three judges of the Underworld.

**Aedile**, magistrate in anc. Rome; supervised games, food-supply, and city generally.

**Aedui**, (Rom. hist.) people of Gaul, living betw. Rivs. Loire and Saône; allies of the Romans.

**Aegades** or **Aegadean Islands**, group, W. of Sicily; considered by Samuel Butler (*Author of the Odyssey*) to be island kgdm. of Ulysses.

**Aegean**, The, pt. of Mediterranean betw. Balkan penins. and Asia Minor connected with S. of Marmora by Dardanelles; contains islands of Lemnos, Lesbos, Chios, etc.; about 7,400 ft. in depth. **A. civilization**, general name for Bronze Age civilization in Aegean Sea, including Minoan, Helladic and Cycladic (q.v.).

**Aegeus**, (Gr. myth.) Kg. of Greece, father of Theseus; threw himself into the sea in the mistaken belief that his son was dead; hence *Aegean Sea*.

**Aegina**, 1) *Gulf of*, see SARONIC GULF; 2) isl. 20 m. S. of Piraeus; area 40 sq.m. W. fertile; vines, almonds, figs, cotton; import. sponge fisheries; 3) cap., of isl., pop., 5,500.

**Aeginetan art**, early period of Gr. art, 6th cent. B.C. **A. marbles**, statuary from pediments of temple of Aphaea in Aegina (now in Munich).

**Aegir**, sea-god of Norse mythology.

**Aegis**, shield of Zeus and breastplate of Athena; hence: guard, protection.

**Aegistheus**, (Gr. myth.) murderer of Agamemnon, lover of Clytaemnestra; killed by Orestes.

**Aegospotami**, small riv. on Thracian Chersonesus (Gallipoli), flowing into the Hellespont; here Athenian fleet decisively defeated by Lysander 405 B.C., Peloponnesian War.

**Aegrot.**, abbr. *agrotat* (Lat.), he is ill: formula of excuse from duty thr. illness.

**Aelfric** (fl.1000), "The Grammarian,"

Eng. ecclesiastic and A.-S. author: *Homilies*, *Lat. Grammar*, etc.

**Aelia Capitolina**, Rom. colony fndd. c. A.D. 130 by Hadrian on ruins of Jerusalem. Temple to Jupiter built on site of ruined Jewish Temple.

**Aelian** (Claudius Aelianus, fl.210), Rom. rhetorician and author: *De Animalium Natura*, etc.

**Aeneas**, Trojan hero of *Iliad*, son of Anchises and Aphrodite; ancestor of Romulus.

**Aeneid**, Virgil's great Rom. national epic; relates wanderings of Aeneas after fall of Troy; based on tradition of A. as Roman hero.

**Aeolian harp**, stringed instr. producing musical notes when exposed to the wind.

**Aeolians**, one of 4 principal sub-div. of anc. Grks.; prob. orig. home, Thessaly.

**Aeolus**, (Gr. myth.) 1) Kg. of Thessaly, fndr. of Aeolic branch of the Greeks; 2) Kg. of the Aeolian isls. and master of the winds.

**Aepyornis**, extinct, large, wingless bird of Madagascar; abt. 13 ft. high, fossilized eggs found, 1 ft. long; related to moa (extinct) and apteryx of New Zealand.

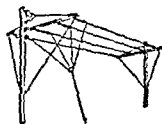
**Aequi**, tribe of anc. Italy, living in Latium, E. of Rome and N. of Hernici; hostile to Rome for first 3 cents. of city's existence; finally subdued c. 300 B.C., at end of 2nd Samnite War.

**Aerate**, to supply with gas (orig. air).

**Aerated bread** is made by mixing flour with water impregnated with CO<sub>2</sub> under pressure, whereby dough is raised when pressure is released and heat applied; a method of bread-making now abandoned. **Aerated waters**, usually contain CO<sub>2</sub> under pressure, which escapes as bubbles when pressure is released.

**Aere perennius** (Lat.), more enduring than bronze; quotation from Horace (q.v.).

**Aerial**, aerial wire or antenna used in wireless telegraphy to transmit or collect electrical waves whereby communication is set up betw. two stations; hgt. of receiving A. in Gt. Brit. limited to 100 feet.



Aerial

**Aerial roots**, roots which anchor an air plant (epiphyte) to its support.

**Aerodrome**, expanse of flat ground, clear of trees or obstructions, with facilities for aircraft to land and take off; gen. equipped with hangars (sheds). Illuminated at night.

**Aerodynamics**, branch of dynamics (q.v.) dealing with forces of air or gases in motion and resistance to bodies moving in air. See AVIATION.

**Aerograph**, instrument used for spraying liquid colours, esp. for colouring photo enlargements, etc., and by pottery and textile workers.

**Aerolite**, a meteorite (q.v.).

**Aeronautics**, science of flight, or navigation of the air. See AVIATION.

**Aeroplane**, heavier-than-air, power-driven flying machine. Consists mainly of fuselage (*q.v.*) and one or more planes or lifting surfaces (monoplane; biplane; triplane). *Ailerons* (*q.v.*) give lateral, adjustable attachments at tail of fuselage, longitudinal control. Motive power provided by one or more propellers driven by high-powered, multi-cylindered engines. Fuselage and wings (of wood in civil A.) are covered with specially varnished fabric. Steering effected by controls in cock-pit (see ELEVATOR; RUDDER-BAR). Under-carriage is fitted with wheels or floats for alighting respectively on land or water. Weight (with load) of modern A.s varies from 1,825 lb. (Tiger Moth) to 101,000 lb. (Ger. Flying-boat DO.X., with 10 motors); wing-spread from 29 ft. 4 in. to 157 ft. 5 in. See AMPHIBIAN; AVIATION; CONTROL-COLUMN; GLIDER; HELICOPTER, etc.

**Aerostat**, flying-machine lighter than air. **Aerostatics**, science dealing with equilibrium of elastic fluids, *e.g.*, air, gases; also of bodies moving or suspended in such fluids.

**Aeschines** (390-314 B.C.), Athenian orator; opposed award of golden crown to Demosthenes (*q.v.*) for public services, and was exiled after his defeat resulting from the latter's great speech *De Corona*.

**Aeschylus** (525-456 B.C.), Gr. dramatist; fndr. of Greek Tragedy: *The Persians*, *Prometheus Bound*, *Agamemnon*.



**Aesculapius**, **Asklepios**, class. god of medicine; usu. depicted with a club or staff entwined with a serpent.

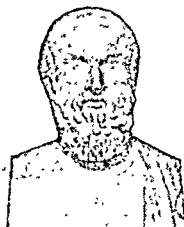
**Aesir** (pl.), *chf.* gods of Norse mythol. dwelling in Asgard (*q.v.*); include Odin, Thor, Baldur, Niord, Frey, Tyr, Bragi, Heimdal, Hod, Vidar, Ull, Forseti, Loki.

**Aesop** (c. 620-564 B.C.), Gr. fabulist; thrown down precipice by priests of Delphi for uttering witty blasphemies.

**Aesthetics**, orig., the science of perception by the senses; now commonly applied to appreciation and criticism of art, the discovery of its principles, and establishment of its canons. **Aesthete**, one who sets an exaggerated value on the beautiful as such.

**Aestivation**, 1) (zool.) summer sleep in state of suspended animation of some animals, corresponding to hibernation or winter sleep; 2) (bot.) arrangement of parts of flower in unexpanded bud.

**Aes triplex** (Lat.), three-fold bronze, stout defence; quotation from Horace (*q.v.*)



Aeschylus

with reference to the courage of the first man who committed a frail bark to the cruel sea.

**Aet.**, **Aetat**, abbr. *anno aetatis suae* (Lat.), in the year of his (her) age; aged.

**Aethelbald**: see ETHELBALD.

**Aethelbert**: see ETHELBERT.

**Aethelred**: see ETHELRED.

**Aetheling**, (A.-S.) lit., "one of noble descent"; a title accorded to members of the royal family, especially that of Wessex.

**Aethelred**: see ETHELRED.

**Aethelstan**: see ATHELSTAN.

**Aëtius**, Flavius (d. 454 A.D.), Rom. gen., last defender of W. Rom. Empire; deftd. Attila at B. of Châlons, 451.

**a.f.**, (mus.); abbr. *al fine* (It.), to the end.

**Affaire** (Fr.), transaction, business; **a. de cœur**, love affair; **a. d'honneur**, duel.

**Affettuoso**, (mus.) with feeling.

**Affidavit**, sworn, written declaration of facts.

**Affiliation**, 1) reception of person or body into a society or corporation, as member, branch, etc.; 2) (law) determination of paternity of illeg. child.

**Affinity**, (chem.) tendency of dissimilar substances to combine to form new compounds.

**Affirmation**, solemn declaration admitted in case of a witness who has conscientious objections to taking an oath.

**Afforestation**, systematic planting of trees; converting of open land into forest (*q.v.*).

**Afghanistan**, kingdom, Asia, bounded N. by Turkmen, Uzbek, and Tadjik repubs., W. by Persia, S. by Baluchistan, and E. by N.W. Frontier Prov.; c. 245,000 sq.m., pop., c. 8,000,000 (nomads, Afghans, Persians, Tadjiks, and Uzbeks; mainly Mohammedans); languages, Persian and Pushtu. Surface mountainous; high plateaux betw. spurs of *Hindu Kush* and *Sulaiman Mtns.*; *chf. rivs.* (none navig.); *Amu Darya* (Oxus) in N., *Hari Rud* in W., *Kabul* in E., *Helmand* in S.; few roads; caravan route over *Khaiber* (Khyber) Pass from Peshawar to Kabul, Kandahar, and Herat; agric. in valleys (cereals and fruit); fat-tailed sheep, horses, goats, cattle; undeveloped minerals include copper, lead, iron, coal. Divided into five provs. of Kabul, Herat, Kandahar, Afghan Turkestan, and Kataghan-Badakhshan; *chf. tns.*, *Kabul* (cap.), Kandahar, Herat; *chf. exports*: timber, silk, wool, goat-skin coats, carpets, cattle, hides. In 1928, the *Amir* of A. King Amanullah, after having attempted to introduce extensive reforms, was deposed; present ruler, Nadir Shah.

**Afghan Wars**, 1) 1839-55; undertaken by Gt. Brit. to restore rightful ruler of Afghanis-



tan, and to prevent Russ. and Pers. from obtaining too great an influence; 2) 1878-80; result of violation of agreement of 1872 whereby A. was decl. beyond Russ. sphere of influence. During this war Gen. Sir F. (Lord) Roberts made his famous march from Kabul to Kandahar.

**A fond** (Fr.), to the bottom; thoroughly.

**A fonds perdu** (Fr.), with lost capital: applied to investment with risk of total loss.

**A fortiori** (Lat.), all the more; by or from the stronger (reason).

**Africa**, Gr. *Libya*, third largest continent; extends S. from Mediterranean through both tropics, the Equator crossing its centre. Separated from Europe by Strait of Gibraltar, from Asia by Suez Canal, Red Sea, and Gulf of Aden, and bounded on S.E. by Indian Ocean and on W. by Atlantic. Greatest length, c. 5,000 m.; greatest breadth, c. 4,500 m.; est. area, 11,270,000-11,950,000 sq.m. Coast-line uniform and little indented, with few islands (largest Madagascar). Interior a series of vast tablelands, S. plateau averaging 3,500 ft., N. plateau 1,800 ft. abv. sea-level; elevated plains of E. Africa divided by great rift valleys. Geol. structure uniform, unfolded exc. in N.W. The *Atlas* Mts. (15,000 ft.) bound the desert tableland of the Sahara; on or near Equator several peaks (some extinct volcanoes) rise above the snow-line: *Kilima Njaro*, 19,700 ft., *Mt. Kenya*, 17,000 ft., *Ruvenzori*, 16,800 ft.; in the W. is the volcanic *Mt. Cameroon* (13,350 ft.), and in the S.E. the *Drakensberg* chain (10,800 ft.); Kalahari Desert in S.W. Principal rvs.: Nile, flowing into Mediterranean; Zambezi and Limpopo (Ind. Ocean); Orange R., Congo, Niger, Gambia, Senegal (Atlantic). Connected with basins of Nile, Congo, and Zambezi is the great lake system, incl. Victoria, Tanganyika, Mweru, Bangweulu, Nyasa; in central Sudan is Lake Chad. Approx. 75% of surface either desert or grassy steppe; dense forest in equatorial region (Sierra Leone to Congo basin); Mediterranean flora found in the Atlas Mts. and the Cape, with countless varieties of grasses. Cotton, indigo, tobacco, and cereals grown in Egypt and the Sudan, coffee in Somaliland, Kenya, and Liberia; palm-oil and rubber in the forest regions. The fauna include the lion, panther, leopard, hyaena, jackal, elephant, rhinoceros, giraffe, hippopotamus and crocodile; antelopes, monkeys, zebras; camel characteristic of the N. and ostrich of the S. desert. Pythons and venomous snakes abound; among insect pests are the tse-tse fly and mosquito. Climate sub-tropical in N. and S. (S. Africa being almost temperate); rainfall abundant in Congo basin and Sudan, practic. non-existent in Sahara and Kalahari deserts.

**POLITICAL DIVISIONS:** *Brit. Poss.* (incl. pro-

tectorates and mandated territories, 37% of area): Union of S. Africa, with Swaziland, Basutoland, Bechuanaland, and Rhodesia; Nigeria, Gold Coast, Sierra Leone, Gambia; Nyasaland, Zanzibar, Uganda, Kenya; Brit. Somaliland; Anglo-Egypt. Sudan; various islands (incl. Mauritius); and the mandated territories of Tanganyika and S.W. Africa. *Fr.* (35% of area): Algeria, most of Morocco, Mauritania, Senegal, Fr. Guinea, Ivory Coast, Dahomey, Togoland (mandated), Fr. Sudan, and Fr. W. Africa (Sahara); Fr. Equatorial Africa, Fr. Somaliland, Madagascar. *Portug.*: Portug. W. Africa (incl. Angola and Benguela), Portug. Guinea, Mozambique. *Belg.*: Belgian Congo. *Sp.*: Part of Morocco (Span. Zone and Ifni); Rio de Oro (with Canary Is.), Rio Muni, Fernando Po. *Ital.*: Libya (Tripolitania, Cyrenaica), Eritrea, Ital. Somaliland. *International*: Tangier. *Independent*: Egypt, Abyssinia, Liberia. Pop., c. 143,000,000, in 3 main groups: *Hamites* (see HAMITIC PEOPLES), *Semites* (descendants of Asiatic immigrants), in N., and *Negroes* in S. and Sudan. The Negroes comprise Bantus (incl. Zulu-Kafirs), Hottentots (incl. Namaqua), Sudanese Negroes (Senegambia and Upper Guinea), and Pygmies. Madagascar is populated by Malays. There are c. 3,000,000 whites (mainly in S.).

**EXPLORATION AND COLONIZATION:** Anc. Egyptians invaded Somaliland c. 2,400 B.C.; Phoenicians circumnavigated Africa c. 600 B.C. (Herodotus) and the Carthaginians later, Hanno exploring the N.W. coast c. 300 B.C.; no further records until the Arab invasions of the 12-15th cents. A.D.; Bartholomew Diaz discovered C. of Good Hope, 1488; Vasco da Gama doubled the Cape, 1497-98; in 16th cent. Portuguese, Dutch, and Eng. settled on the coasts; the African Assoc. fndd. 18th cent. (travels of Mungo Park); in 19th cent. the interior explored (Barth, Peters, Livingstone, Speke, Grant, Baker, Burton, Stanley, Emin Pasha). The Dut. settlers in S. Africa formed themselves into independent republics 1852 and 1854 (see SOUTH AFRICA). After 1876 the Brit. pushed from S. to N. and the Fr. from W. to E., meeting at Fashoda (q.v.) in 1898. Ger. activities from 1884 onwards received a set-back after the World War, when all her colonies were handed over to mandatories of the League of Nations.

**African Company**, formed 1588 for purpose of trading betw. Eng. and Africa; chartered, 1618; forts along Gold Coast ruined by rival Dutch merchants, resulting in war with Holland, 1664-65, and Dutch retention of conquests. **Royal A. C.**, chartered by Chas. II, 1672, erected forts and had trade monopoly (slaves and gold) until 1700. **A. C. of Merchants**, incorpd. 1750, and subsidized by Govt., specialized

in slave trade until its abolition, 1807; Company dissolved, 1821. Its forts are the foundation of Brit. Gold Coast Colony.

**Afridi**, indep. warlike Pathan tribe; N.W. frontier of Brit. India.

**Afrikaner**, descendant of white (mainly Dutch) immigrants, born in S. Africa.

**Aft**, (naut.) stern portion of ship. Term "fore and aft" often used to indicate portions of structure running parallel to centre line of ship.

**After-birth**: see PLACENTA.

**After-damp**, deadly mixture of carbon monoxide and carbon dioxide present after colliery explosions.

**After inspection**, (commerc.) term implying immunity of seller from liability for shortages wh. buyer may ascertain after thorough examination of purchase.

**Aftermath**, (agric.) after-grass, grass that grows after hay has been mown.

**A.-G.** abbr. 1), attorney-general; 2) (Ger.) *Aktiengesellschaft*, joint-stock company.

**Ag**, hem. symbol of silver (*argentum*).

**Agā** (Turk.), lord, or other high person; applied to Turkish milit. commanders and generally to persons of wealth and position.

**Agadir**, port, Morocco, N. Africa; pop., c. 6,000; gun-boat "Panther" sent there (1911) by Ger. Govt. as protest against Fr. policy.

**Agag**, (O.T.) Kg. of Amalekites; conquered by Saul, who preserved his life in defiance of Divine command; slain by Samuel.

**Aga Khan**, Sir Mohammed Shah (1875- ), spiritual head of the Ismailiah Moslems; desc. from Prophet through his dau. Fatima; K.C.I.E. and 1st cl. chf. of the Bombay Presidency; in Eng. a prominent racehorse owner.

**Agamemnon**, legendary Kg. of Mycenae, Gr. leader in Trojan wars; killed by his wife Clytaemnestra (*q.v.*) on his return.

**Agape**, love-feast eaten by early Christians before celebration of Eucharist (*q.v.*).

**Agapemonites**, members of a conventual establishment called the "Abode of Love," founded 1846 at Charlinch, Somerset, by H. J. Prince, a clergyman of the C. of E.; later flourished at Clapton under leadership of Rev. T. H. Smyth-Pigott; now at Spaxton, Somerset. A. claim to exercise spiritual contemplation, and to live in spiritual wedlock.

**Agapetae**, virgins of early Mediaev. ch. who professed to live in spiritual love with celibate monks; suppressed by Lateran Council (1139).

**Agapetus**, name of two popes: **A. I** (535-36), collab. with Cassiodorus in fndg. library of eccl. authors. **A. II** (946-55), attempted to reform papacy.

**Agar-agar**, Japanese isinglass; a gelatinous substance prepared from certain sea-

weeds; used in medicine to promote peristalsis (*q.v.*); also used in bacteriology as a culture medium.

**Agarics**, gill fungi, family which includes toadstools and mushrooms. Some are edible, but many are poisonous. The common mushroom is *Psalliota campestris*. The genus *Amanita* contains some of the deadliest fungi known. *A. phalloides* is known as the *Death Cap*. The *Agaric*



**Fly a.** (*A. muscaria*) is very poisonous. **Agassiz**, Alexander (1835-1910), Amer. zoologist, oceanographer and scientist; fndd. zoolog. station at Newport, R.I., U.S.A.

**Agate**, semi-precious variegated, very hard stone; a variety of chalcedony (*q.v.*); also a burnishing instrument tipped with agate.

**Agatha**, St., of illustrious Sicilian family; martyred under Decius, 251. Commem., 5th Feb.; represented crowned and veiled, bearing a clasped book and palm or pair of pincers.

**Agatho**, St., Pope (678-81), ordered 6th Œcumenical Council at Constantinople at wh. Monothelite heresy condemned; restored St. Wilfred to his bhpri. at York.

**Agathocles** (361-289 B.C.), tyrant of Syracuse; twice banished for attempting overthrow of oligarchical party; made himself master of Syracuse, 317 B.C.; continued war against Carthage; besieged Carthage, 306, but was completely defeated; fled to Sicily, where he took title Kg. of Sicily.

**Agave**, American aloe, large genus of tropical American amaryllidaceous plants. Has fleshy leaves. Some species have never been known to flower, and others flower at very long intervals. From various varieties are obtained sisal (*q.v.*), and a liquor wh., when fermented, is known as *pulque* (*q.v.*).



Agave

**Agave**, cap. dépt. Lot-et-Garonne, France; pop., 23,550; cathedral.

**Agent**, one authorized to act for another (country, business firm, or individual) generally; e.g., **Brit. a.**, an official in charge of Brit. interests in a given region; or particularly, e.g., **shipping a.**, one acting only in shipping matters. **A.-general**, repres. of certain Brit. Dominions in London.

**Agent provocateur**, one who assists the police by inciting others to break the law in order that they may be arrested.

**Age of discretion**, age above wh. young persons may contract a binding marriage; in Gt. Brit. now 16 years.

**Agésilas II** (d. 360 B.C.), Kg. of Sparta; succeeded half-brother Agis II, 399 B.C.; aided Asiatic Grks. against Persia, 396;

deftd. Tissaphernes and Pharnabazus, 395; won battle of Coronea, 394; reduced Acarnanians, 391; crossed with Lacedæmonian army to Egypt, 361.

**Agglutinant** (or **Agglutinative**) **Language**, lang. formed by addit. of indep. syllables, which retain own meaning and form, to root-words, e.g. Turkish, Hungarian, Finn.-Lapp. etc.

**Agglutination** of bacteria, blood corpuscles, and other small organisms; their adhesion in clumps when suspended in a liquid, on addition of various agents, e.g., blood serum from animal immunized against particular bacillus. Supposed agents in serum are called **agglutinins**.

**Aggregation**, state of, (phys.) solid, liquid or gaseous condition of a substance.

**Aghrim** (**Aughrim**), Battle of, during Eng. Revolution, Wm. III and Gen. Ginkell deftd. Fr. and Irish under James II and St. Ruth, July 12, 1691.

**Agincourt**, Fr. vil. nr. Calais (q.v.); scene of Eng. victory over Fr., 1415.

**Agio**, diff. betw. value of paper and metallic money, or betw. weight value of worn coins and their face or nominal value.

**Aglaia**, one of the Three Graces (q.v.).

**Agnaill**: see HANGNAIL.

**Agnates**, in Roman law, male descendants of same forefather; in dynastic inher., next in success. to throne after direct line.

**Agnes**, St., martyred at age of 13 in persecution of Diocletian, c. 303. Commem., 21st Jan.; represented with lamb, or a protecting angel, or standing on a flaming pyre.

**Agnosticism**, a state of not knowing, applied esp. to the position of one holding that proof of the existence or non-existence of a Deity is unattainable; doctrine that, in knowledge, it is impossible to go beyond the sphere of sense-perception.

**Agnus Dei** (Lamb of God), symbolical name given to Christ by John the Baptist (John i. 29); prayer in the Mass; cake of wax stamped with figure of lamb, blessed by the Pope.

**Agogics**, interpretation of tempo in mus., as in *tempo rubato*.

**Agora** (Gr.), market-place; trading, political, and social centre of anc. Gr. city.

**Agoraphobia**, fear of open spaces. See PHOBIA.

**Agouti**, small S. Amer. and W. Ind. rodent; nocturnal; injurious to sugar-canes.

**Agra**, cap. Agra dist. and division, United Provs. of Agra and Oudh, on R. Jumna; famous for Taj Mahal (q.v.) and other fine buildings; univ.; pop., 229,800.

**Agra and Oudh**: see UNITED PROVINCES.

**Agram**: see ZAGREB.

**Agrarianism**, term used for disputes and legislation with reference to inequitable distribution of land-ownership. **Agrarian**

**Laws** were introduced in ancient Rome by Tiberius Gracchus (q.v.), decreeing equal division among the people of lands gained by conquest. Later the term was used for popular agitation for division among the people of lands of rich, e.g., in Ireland c. 1870. **Agrarian League** formed in Germany, 1893, betw. landowners and peasants for promotion of farming interests.

**Agricola**, Gnaeus Julius (37-93), Rom. statesman and soldier; served in Britain under Suetonius Paulinus; apptd. quaestor in Asia, 63; commanded 20th legion in Brit., 70; governor of Aquitania, 74-76; subdued Brit. to northern boundaries of Argyll and Perth, 78-84; recalled to Rome, 84. **A's Wall**, chain of forts to resist incursions into Eng. of Picts and Scots, erected by Agricola; 1st wall from Tyne to Solway Firth, second from Forth to Clyde. Former was rebuilt by, and named after, Emp. Hadrian (q.v.).

**Agricultural census**, made in order to ascertain amt. of agric. prodn. and of labour and power employed to produce it; 1st census in U.S.A., 1850; in Gt. Brit., 1908; world A.C., 1929-30, by Internat. Inst. of Agriculture (q.v.). **A. co-operation**, co-op. enterprise in agr. in Gt. Brit. divided into 3 groups, viz., *Produce Societies* (marketing members' produce), *Requirement Societies* (supplying members with seed, implements, etc.), and *Service Societies* (reaping, threshing, etc., for members). In U.K. (1929) there were 291 prod. soc. (40,000 mems.), 374 req. soc. (85,500 mems.), and 849 serv. soc. (165,600 mems.); in U.S.A. (1928) there were 11,000 agr. co-op. soc., with 3 mill. members. See CO-OPERATION. **A. education**, in Gt. Brit., included for parliamentary grants in Technical Instruction Act, 1889; now provided in agric. depts. and research institutes attached to Cambridge, Durham, Leeds, Reading, Aberdeen, Edinburgh, and Glasgow univs.; in agric. colleges (e.g., Wye, Kent); and in experimental farms provided by some county councils. **A. machinery**, mechanical appliances to expedite work of Agric. in its various branches (driven by steam, motor or electric power); used in cultivation (ploughing, harrowing, raking, sowing, etc.), harvesting (mowing, binding, etc.); for threshing, chaff- and root-cutting; in the dairy (churns, separators, milking-machines); in sheep-shearing and horse-clipping and in traction. Widespread use of machinery has resulted in greatly incrsd. production. **A. research**, study of chem. nature of soil, rotation of crops, artif. manures, animal- and plant-breeding, etc. Earliest experiments in Gt. Brit. made by Lawes and Gilbert, who establd. experimental station at Rothamsted (1843), now most important of Empire. Modern Brit. experimtl. stns. at Univs. of Oxford and



Cambridge; Imp. Coll. of Science, London; Aberdeen; Reading; Woburn; etc.

**Agriculture**, art and theory of cultivating the soil for food crops (grasses, cereals, vegetables, fruit, and roots), to wh. are often added the rearing of stock (esp. cattle for dairy purposes and fattening) and general farming. Industry involves considerable capital, and is conducted on scale varying from small acreages in rural counties to vast farms in prairie districts of America and Australia. In Mid.A. the farmer was tenant of the manor (*q.v.*); later came the yeoman freeholder; enclosure of land led to large estates divd. into farms; introduction of root crops (early 17th cent.) developed cattle fattening; inventions and new methods in 18th and 19th cents.; increase of pop. (esp. in tns.), rlys., and foreign competition all contributed to development; chambers of A., societies, and unions protect interests of Agriculture. **International Institute of A.**, fndd. at a convention in Rome (1905). Aims at collecting, examining and publishing statist., tech., and econ. data relating to all branches of agric. and to current market-prices, wages, etc.; also issues information as to diseases of crops and possible preventive measures. Inst. is subscribed to by 74 diff. countries, represtg. over 98% of world population; headquarters in Rome. **Minister of A. and Fisheries**, member of Brit. Govt. charged with encouraging production and facilitating marketing for agric., hort., and fisheries products, also supervision of tithes, common lands, diseased animals, etc.

**Agrigento**, *Girgenti*, 1) prov. in S. Sicily; area, 1170 sq.m.; pop., 430,000; mt. country; 2) cap. of prov.; pop., 30,000; seaport; sulphur mining; anc. Gr. settlement; prosperous in 6th and 5th cents. B.C.

**Agrimony** (Stickwort), *Agrimonia eupatoria*, herb grows abt. 18 in. high, covered with hairs and with yellow flowers used in folk med. as a tonic, etc.

**Agrippa, Herod, I** (c. 10 B.C.-A.D. 44), grandson of Herod the Great; Kg. of Judea; persecuted Christians. His son, **A., H., II** (c. 27-93), prince of Chalcis, 48; Kg. of N. Palestine, 52; sided with Romans in conquest of Jerusalem; before him St. Paul pleaded his cause at Caesarea.

**Agrippa, Marcus Vipsanius** (62-12 B.C.), Rom. gen. and s.-in-law of Emp. Augustus, undertook great survey of the Empire. **A. von Nettesheim** (1486-1535), better known as Cornelius A., Ger. physician and magician, cabalistic writer.

**Agronomy**, science of management of land and productn. of crops.

**A.G.S.S.**, abbr. American Geographical and Statistical Society.

**Agulhas, Cape**, southernmost point,

Africa, with lighthouse. **A. Bank**, a shallow in vicinity.

**A.H.**, abbr. *anno Hegirae* (Mohammedan chronology); see HEGIRA.

**Ahab**, (O.T.) Kg. of Israel (875-853 B.C.); son and successor of Omri; husband of Jezebel (*q.v.*).

**Ahasuerus**, (O.T.) Kg. of Persia; identified with Xerxes (485-465 B.C.), prominent charac. in Bk. of Esther.

**Ahaz**, (O.T.) Kg. of Judah (735-719 B.C.); formed alliance with Assyria.

**Ahaziah**, (O.T.) Kg. of Judah (843-842 B.C.); mortally wounded in rising led by Jehu (*q.v.*). **A.**, Kg. of Israel (853-852 B.C.).

**Ahithophel**, (O.T.) adviser of David; deserted to Absalom; slew himself on finding his advice neglected.

**Ahmadnagar**, or **Ahmednagar**, dist., Bombay, India; 6,600 sq.m.; pop., 731,600.

**A.**, cap. of dist.; pop., 49,900; cotton, silk, brass, and copper goods.

**Ahmed**: see ACHMET.

**Ahmedabad**, or **Ahmadabad**, tn., prov. of Bombay, India; pop., 310,000; architectural treasures include several famous mosques and tombs; manuf. silk, cotton, paper, gold, silver, pottery.

**Ahoy!** (naut.) call (usu. at sea) to attract attention.

**Ahriman**, personification of Evil in dualistic Zoroastrian relig. See ORMUZD.

**A huis clos** (Fr.), with closed doors; legal term applied to a case heard *in camera*, with the general public excluded.

**Ahwaz**, tn., Persia, on Riv. Karun; commercial centre in 12-13th cents.; transshipment sta. of Anglo-Persian Oil Co.; pop., c. 15,000.

**A.I.**, abbr. American Institute.

**A.I.A.**, abbr. 1) Amer. Institute of Architecture; 2) Associate of Instit. of Actuaries.

**A.I.C.E.**, abbr. Associate of Instit. of Civil Engineers.

**Aid**, (mediaeval) grant of money by feudal tenants to their lord for a special purpose, e.g., payment of his ransom. Agreement to contribute to *Aids* was part of terms under which feudal tenants held land. See FEUDALISM.

**Aida**, opera by Verdi, 1871.

**Aidan**, St. (d. 651), the "Apostle of the North"; Brit. bp. of Lindisfarne; apptd. from Iona to re-Christianize Northumbria; buried at Lindisfarne; commem. 31st August.

**Aide-de-camp**, abbr. A.D.C., personal orderly officer of a general, governor, or viceroy; arranges journeys, social functions, attends to personal and semi-official corresp., etc. **A.D.C. to the King**, honour accorded to disting. officers of high rank.

**Aide-mémoire** (Fr.), aid to the memory; memorandum.

**Aiguille**, sharp peak of a mountain, formed by splitting up of ridges at summit.

**Ailanthus**, or **Tree of Heaven** (*Ailanthus glandulosus*), Chinese tree with decorative leaves; often seen in English gardens and parks.

**Ailerons**, adjustable flaps attached to ends of main plane of a flying machine; used in preserving balance and for lateral control.

**Ailly**, Pierre d' (1350-1420), Fr. card. and philos., a nominalist like Occam (q.v.); his *Imago mundi* (Image of the World), 1410, incited Columbus to his explorations.

**Ailsa Craig**, rocky islet, 1,110 ft. high, in Firth of Clyde, Scot.

**Ain**, dépt., E. France, 2,245 sq.m.; pop., 316,000; E. mntnous., W. flat; cap. Bourg; hemp, vines, grain, sheep, poultry, silk factories, timber. **Riv. A.**, trib. of Rhone, rising in Jura range.

**Ainé** (m.) **ainée** (f.) (Fr.), elder, senior; cf. CADET.

**Ainsworth**, William Harrison (1805-82); Eng. novelist; *Crichton* (1837), *Old St. Paul's* (1841), and many historical novels.

**Aintree**, vill., Lancs, Eng., 5 m. north of Liverpool; race-course (Grand National Steeplechase).

**Ainu**, or **Aino**, N. Jap. race resembling prehist. Eur. peoples derived from prehist. peoples of Centr. Asia; hunters and fishers.

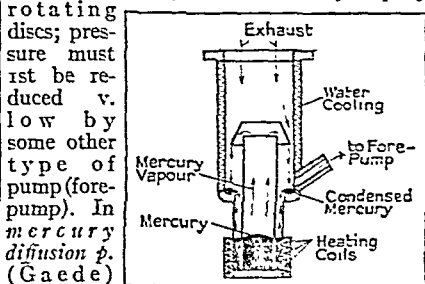
**Air**, mixture of gases forming earth's atmos.: abt. 21% oxygen and 78% nitrogen (with 0.03-0.06% carbonic acid, 0.9% argon and traces of neon, krypton, xenon, helium). Air can be liquefied, then boils at 191° C; 1 litre of air (gaseous) weighs 1.293 grams.

**A.-bladder**, in fishes, swim-bladder; air-sac formed by outgrowth from alimentary canal, wh. enables fishes to sustain their equilibrium. **A. Chief-Marshall**, rank in Roy. Air Force, equiv. to Admiral, or General.

**A. Commodore**, rank in Roy. Air Force, equiv. to Commodore (naval), or Colonel Commandant in Army. **A. Council**, governing authority of Roy. Air Force, incldg. Sec. of State for Air (Pres.), Under-Sec. (vice-Pres.), Chf. of the Air Staff, Air Member for Personnel, Air Member for Supply, Dep. Chf. of Air Staff, and a secretary.

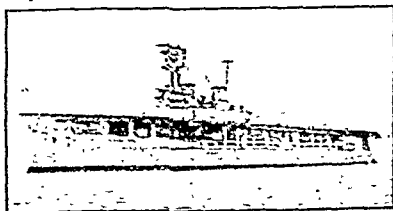
**A. embolism**, stoppage in an artery owing to presence of an air-bubble. **A.-gun**, light weapon using compressed air to propel the projectile. **A.-lock**, (phys.) obstruction to the flow of liquid in a tortuous pipe under low pressure, caused by part of the pipe becoming filled with air. **A. Marshal**, rank in Roy. Air Force, equiv. to Vice-Adm., or Lieut.-General. **A. Ministry**, dept. of Brit. Govt. administered by the Air Council (6 members), presided over by the Sec. of State for Air. Responsible for the Roy. Air Force (q.v.), also for research and for civil aviation. **A. plants** (epi-

phytes), plants deriving their nourishment from moisture in air; not parasitic, but supported by other plants to wh. they cling by aerial roots (q.v.). **A. port**, aerodrome (q.v.) where a regular passenger and freight service is maintained. Provided with customs and passport offices, repair workshops, stores, etc. **A.-pump**, (phys.) for exhausting gases from closed spaces such as electric lamps, etc. **Piston A.-P.** invented by Guericke (1635); solid or mercury piston sucks the gas into the cylinder, wh. is then closed by a valve, gas being forced out on return stroke of piston. In *water injector A.-P.* a rapid jet of water sucks the gas out of space to be exhausted. In *molecular A.-P.* (Gaede) gas is carried by rapidly rotating discs; pressure must be reduced v. low by some other type of pump (fore-pump). In *mercury diffusion p.* (Gaede) gas is carried by a stream of mercury vapour from boiling mercury; a fore-pump is also necessary; mercury is continually condensed and used again. **A.-screw**, large propeller (q.v.) with 2-4 blades working in the air; on aeroplanes (q.v.), hydroplanes, etc. **A. speed**, (aeron.) speed relatively to surrounding air; may be very different in amount and direction from speed relatively to ground. **A. Vice-marshal**, rank in Roy. Air Force, equiv. to Rear-Adm., or Major-General.



Mercury Diffusion Air-Pump

**Aircraft carrier**, naval ship carrying aeroplanes and (Gt. Brit.) personnel of the



Aircraft Carrier

Fleet Air Arm of the Roy. Air Force (q.v.). Specially constructed with funnels on one side to give a long runway for aircraft landing. Fitted with lifts and aeroplane catapults. The A.C. "Saratoga" of the U.S. Navy can carry 72 aeroplanes.

**Aird**, Sir John (1835-1911), Brit. engineer; responsible for removal of Crystal

Palace (*q.v.*) from Hyde Park to Sydenham; constructed waterworks at Amsterdam, Bahia, Berlin, Calcutta, Copenhagen, Moscow, Pará, Simla, etc.

**Airdrie**, police burgh, Lanarksh., Scotland; pop., 26,000; coal and iron, textiles; first Scots Free Library (1854).

**Aire**, riv., Yorks., Eng., trib. of Ouse, flows past Leeds; length 70 miles.

**Airedale terrier**, powerfully built dog with rough coat; largest breed of terrier.

**Airfoil**, surface suitably shaped so that when it is moved through air it experiences the maximum of reaction, with minimum of wasteful resistance to motion; e.g., aeroplane wing.

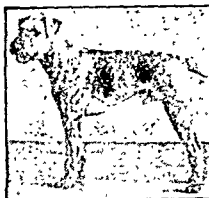
**Air Force**: see ROYAL AIR FORCE. **A.F. Cross**, decoration (instit. 1918) awarded to officers and warrant officers for acts of courage or devotion not in presence of the enemy; ribbon, red and white diagonal stripes (illustr., s. v. MEDALS).

**Airship**, aircraft deriving buoyancy from gases (lighter-than-air). Earliest A.s were in form of spherical body inflated by gas, floating free in air; see BALLOON. In modern construction, A.s are chfly. *dirigible*, i.e. equipped with motive power and capable of being steered; they have long cigar-shaped bodies made of impermeable fabric and inflated by hydrogen or helium (*q.v.*) gas. *Non-rigid* types have small air-bags (see BALLOONET) inside fabric-covering to maintain its shape. Larger A.s are *semi-rigid* or *rigid*, i.e. stiffened by aluminium keel or complete framework. Engine cars usu. suspended beneath body and accommodation for crew, passengers, etc., incorp'd. in body. First rigid dirigible designed by Ger. Count v. Zeppelin (1900); improved types used by Ger. in World War; the "Graf Zeppelin" crossed Atlantic, 1928. Brit. Govt. constructed 2 large A.s in 1929 (R.100, R.101); R. 100 crossed from Eng. to Montreal (Aug., 1930); R. 101 destroyed nr. Beauvais, Fr., on flight to India (Oct., 1930). See AVIATION.

**Airy**, Sir George Biddell (1801-92), Eng astronomer; Lucasian prof., Cambridge, 1826; Plumian prof. and director of Camb. Observatory, 1828; director of Greenwich Observatory, and Astronomer Royal, 1835; pres. of Royal Soc., 1871-73.

**Aisle**, (archit.) side division or bay of church, adjoining the nave.

**Aisne**, 1) dépt., N. France; 2,866 sq.m.; pop., 489,500, comprising parts of former Ile de France and Picardy; chf. tn., Laon; 2) left trib. of the Oise (174 m.), rising in the



Airedale Terrier

Argonne; scene of much fighting (inclgd. 3 important battles) in the World War.

**Aistulf**, or **Astolf** (749-56), Kg. of the Lombards; opposed Pope Stephen III; overthrown by Pepin, Kg. of the Franks.

**Aitx**, *eyol*, small isl. in river; esp. in Thames.

**Aix**, **Aix-en-Provence**, cap. of dept. of Bouches-du-Rhône, France; anc. Rom. *Aquæ Sextiæ*; pop., 35,000; univ.

**Aix-la-Chapelle**, *Aachen*, city, Prussia, cap. of dist. (1,222 sq.m.; pop., 688,585) in Rhine Prov. on Dut. and Belg. frontiers; pop., 155,200; cathed. with tomb of Charlemagne; spa (warm salt and sulphur springs); cloth, coal, iron. Roman origin; coronation tn. of Ger. kgs. 813-1531, incorp. in Pruss. 1815. *Congress of Aix-la-Chapelle*, 1818, provided for evacuation of France by allied troops.

**Aix-les-Bains**, health resort, Savoie, France; pop., 12,000; alum and sulphur hot springs.

**Ajaccio**, fortif. cap. Corsica (*q.v.*), in Mediterranean; pop., 23,400; birthplace of Napoleon I; winter health resort.

**Ajalon**, **Vale of** (modern **Yalu**), valley, Palestine, N.W. Jerusalem, where, at Joshua's bidding, during the battle with the Amorites, the sun and moon stood still (Joshua. 12).

**Ajanta**, vil., Hyderabad, India; Buddhist cave-dwellings and halls (frescoes).

**Ajax** (Gr., *Aias*), heroes at Troy: 1) son of Telamon; 2) captain of the Locrians. Also, name of tragedy by Sophocles.

**Ajmer-Merwara**, prov., Centr. India, within Rajputana; 2,700 sq.m.; pop., 560,300; cap., **Ajmer** (pop., 114,000).

**A jour** (Fr.), to the daylight; term used of jewels so set as to be exposed to the maximum; also in archit. of openwork style in various kinds of decoration.

**Akaba**, **Aqaba**, port on Gulf of Akaba, in N.E. pt. of Red Sea, under govt. of Palestine; trading centre of Hedjaz.

**Akbar**, Jellaladin Mohammed (1542-1605), the Great Mogul; fndd. Empire in India; recd. envoys from Qn. Elizabeth.

**Akeman Street**, anc. highway betw. London and Bath, of which the Strand formed the beginning; prob. used in Roman period.

**Akenside**, Mark (1721-70), Eng. doctor and poet; physician to Christ's Hospital, 1759, and to Qn. Charlotte, 1761: *Pleasures of the Imagination*, 1744.

**Akershus**, 1) Norwegian province (Fylker); 2,025 sq.m.; pop., 207,448; 2) fortress in Oslo, built 1299.

**Akhenaton**: see IKHNATON.

**Akiba**, Joseph Ben, rabbi, executed A.D. 135 for complicity in revolt of Bar Kochba (*q.v.*).

**Akka**, black pygmy race in forests of

Centr. Africa; about  $4\frac{1}{2}$  ft. in height; negroid features; nomadic hunters.

**Akkad**, (anc. geogr.) dist. N. Mesopotamia; included cities of Babylon, Kish, Opis. See SUMER.

**Akkerman**: see CETATEA ALBA.

**Akron**, tn., Ohio, U.S.A.; pop., 255,950; univ.; manuf.: rubber, oatmeal, matches, stoneware.

**Aksakov**, Sergei Timofeyevich (1791-1859), Russian auth.: *Family Chronicles*.

**Al**, chem. symbol of aluminium (q.v.).

**Ala.**, abbr. Alabama.

**À la** (Fr.), in the manner of. **À la carte**, according to choice from bill of fare. **À la française**, in the French manner.

**Alabama**, ("Cotton," "Lizard," or "Yallerhammer" State) State of U.S.A.; 51,998 sq.m., pop., 2,400,000; cap. Montgomery; port: Mobile; manuf. centre: Birmingham (q.v.); cotton, maize.

**Alabaster**, finely crystallized gypsum (q.v.), a soft, white, semi-transparent stone, capable of receiving a high polish; used for making vases, hanging lamps, etc.

**À la bonne heure** (Fr.), *lit.* in the good hour; fortunately; excellent!

**Ala-Dagh**, Turkish range of mountains in Armenia and Asia Minor; highest point 9,850 ft.

**Aladdin**, character in *Arabian Nights* (q.v.), son of poor widow who, through finding a magic lamp, won a fortune and the Caliph's daughter.

**Alai**, mntn. range in Kirghiz, Asia; Kaufmann Peak, 23,000 ft.

**Alameda**, tn., California, U.S.A.; pop., 35,050; residential dist. 6 m. fr. San Francisco; shipyards, pottery.

**À la mode** (Fr.), in the fashion, fashionably.

**Aland Islands**, group of isls., 550 sq.m.; in Gulf of Bothnia, conceded to Finland, 1921; pop., 27,100; neutral by agreement with League of Nations; cheese, butter, cattle, salt meat, fish. **Aland**, largest isl. of A. group (247 sq.m.); cap., Mariehamn; pop., 1,600.

**Alani**, a Sarmatian race; 406, invaded Spain in company w. Vandals; 418, conq. by Western Goths.

**Alaouites**: see LATAKIA.

**Alaric** (d. 410), Kg. of West Goths; invdd. It., 400 and 408; sacked Rome, 410.

**À la russe** (Fr.), in the Russian fashion; of dinner at which the dishes are handed round, not carved and served from the table.

**Alas.**, abbr. Alaska.

**Ala-Shan**, sandy desert, Inner Mongolia, S. part of Gobi Desert.

**Alaska**, peninsula, extreme N.W. of N. America, betw. Pacific and Arctic oceans; 570,900 sq.m.; pop., 56,000; volcanic mntns. (*McKinley*, 20,300 ft., highest in N. America); salmon fishing; sealing; gold in Klondike

Vall. on Yukon Riv. Sold to U.S.A. by Russia for \$7,200,000 (£1,440,000) in 1876.

**Alassio**, watering-place, Ital. Riviera, dept. Liguria; pop., 6,000.

**A latere** (Lat.), from the side; designation of the highest rank of Papal Legates.

**Alava**, most shn. of 3 Basque prov. of Sp.; 1,175 sq.m.; pop., 100,000; cap., Vitoria.

**Alb**, long white vestment with girdle and tight sleeves, worn by celebrant at Mass over cassock and under chasuble.

**Alba Julia**, Karlsburg tn., Transylvania, Rumania; on Riv. Maros; pop., 12,680; Orthodox and R.C. bhprics.; wine, fruit, grain. **A. Longa**, anc. cap. of Lat. League, said to have been fndd. 300 years bef. Rome; destroyed in 8th cent. B.C.

**Alban**, St. (d. c. 285), Brit. protomartyr; monastery of St. A. fndd. in his honour by Kg. Offa, c. 795; commem. 22 June (R.C.). 17 June (Ch. of E.)

**Alban Hills**, range, Italy, 12 m. S.E. Rome; *Mons Albanus*, 3,120 ft.; Lakes Albano, Nemi.

**Albani**, (Lajeunesse) Dame Emma (1852-1930), Fr. Canadian soprano; début in opera at Messina (1870).

**Albania** (*Shqipëria*), kingdom, Balkan Penins., on Adriatic, bounded N. and E. by Yugoslavia, S.E. by Greece; 10,800 sq.m., pop., 1 mill. (mainly Moslems); mountainous (to 8,500 ft.); chf. rvs. Drin Devoli, Viosa; L. Scutari on N. W., L. Ochrida on E. frontier; agric., tobacco,

stock-raising, timber; rly. (22 m.) under construction from chf. port, Durazzo (Dures), to cap. Tirana; largest tn., Scutari. Under Rom. rule when invaded by Goths in 4th and 5th cent.; reconquered by Justinian, 535; invaded by Serbs in 7th, by Bulgars in 9th cent.; under Byz. rule, 1014-1204; Serb. 14th, Turk. 15th cents.; independent, 1912; repub., 1924; kgdm., 1928.

**Albanian**: see LANGUAGE SURVEY (*salem languages*).

**Albany**, **Dukes of**, title 1st bestowed on Robert Stewart by his bro. Robert III of Scotland, 1398; extinct, 1425; revived for Alex. Stewart, 1458; again extinct at death of his son, 1536; revived for Ld. Darnley, passing to his descendants James VI and I to James II; re-created (as D. of York and Albany) for Ernest Augustus, bro. of Geo. I; again for Frederick, bro. of Geo. III; title of D. of A. bestowed on Prince Leopold, youngest son of Qn. Victoria, 1881 (d. 1884); passed to his posthum. son, Arthur Chas. Edward, Duke of Saxe-Coburg, who was deprived of his Brit. titles, 1917.

**Albany**: see BREADALBANE.

**Albany**, 1) cap. of New York State, U.S.A.; pop., 127,000; port on Hudson Riv.; manuf. textiles, chemicals, paper. Fndd. by Dutch,



1614. 2) Tn., W. Australia, on King George Sound; seapt.; pop. 3,980.

**Albany**, The, famous block of bachelor flats off Piccadilly, London; former residence of Duke of York and Albany, 2nd son, of George III; converted into flats, 1804; notable residents: Byron, Macaulay, Canning, Bulwer-Lytton, Gladstone, etc.

**Albatross**, sea-bird frequenting trop. and sub-trop. seas; remarkable for wide expanse of wing (10-12 ft.) and sustained, graceful flight; yellowish-white plumage barred with black. Breeds in islands of sthn. oceans, assembling in vast numbers.



Albatross

**Albedo**, (astron.) extent of power of a body to reflect light, e.g., A. of the moon is 0.07, that being the proportion of the sun's light which it reflects.

**Albemarle**, George Monk, 1st Duke of (1608-70), Eng. gen. and adm.; cong. Scot. for Cromwell, 1652; deftd. Dutch, 1653 and 1666; restored order after Fire of London, 1666.



Albemarle

**Albeniz**, Isaac (1860-1909), Sp. composer: "Iberia" Suite.

**Alberich**, (myth.) dwarf; guardian of the Nibelungen treasure; owner of the magic hood; overcome by Siegfried.

**Alberni**, tn. and port, Vancouver Isl., at head A. Canal; western terminus of Canadian Pacific Railway.

**Alberoni**, Giulio (1664-1752), card. and statesman; negotiated marriage Philip V and Eliz. Farnese; prime min., Spain, 1715-19.

**Albert I** (1875- ), Kg. of the Belgians; m. Elisabeth, dau. of D. Charles Theodore of Bavaria.

**Albert I** (c. 1250-1308), Kg. of Germany, 1298.

**Albert**, Kg. of Saxony (1828-1902),

1866 fought agst. Prussia;

1870 victorious at Gravelotte.

**Albert III**, Achilles,

Hohenzollern, (1414-86),

elector of Brandenburg; in

1473 by family ordinance

provided agst. partition of

electorate.

**Albert** (Hohenzollern, 1490-

1545), abp. of Magdeburg, elector of Mainz;

his sale of indulgences through Tetzel was at-

tacked by Luther and influenced course of

Reformation.

**Albert I**, The Bear, (c. 1100-

70), margrave of Brandenburg, formed by

from province of Nordmark, acquired in

King Albert  
of Belgium

**III**, The Bold, D. of Saxony

(1443-1500), built fortress at Meissen (*Albrechtsburg*). **Albert** of Hohenzollern (1490-1568), last grand-master of Knights of Teutonic Order, 1st D. of Prussia (1525). **Albert** (1819-61), D. of Saxe-Coburg-Gotha; Prince Consort of Qn. Victoria.

**Albert**, Eugen d' (1864-1932); pianist and composer; opera: *Tiefland*.

**Albert**, tn., dept. Somme, France, on Riv. Ancre; devastated in World War.

**Alberta**, prov., W. Canada; 255,285 sq.m.; pop., 631,900; Rocky Mts. in W., prairie in the S.; chief rvs.: Saskatchewan, Peace; agriculture, ranching; several national parks; cap., Edmonton; largest tn., Calgary.

**Albert Hall**, large hall in London, built

in form of

amphithe-

atre, in mem-

ory of Prince

Consort (*see*

ALBERT), and

opened by

Qn. Victoria,

1871. Inside

measure-

ment, 200 ft.

by 160 ft.; ac-

commodates

abt. 10,000 persons.

Used for concerts,

political meetings,

balls, etc. The organ,

with

9,000 pipes, is one of the largest in the world.

**Alberti**, Leone Battista (1404-72), Ital.

archit., painter, auth., and musician.

**Albertine line**, younger branch of roy.

family of Saxony, desc. from Albert, D. of

Saxony (1443-1500). *See* ERNEST NE.

**Albert Medal**, Brit. award for bravery in

saving life; 1st cl., gold; 2nd cl., bronze; in-

stituted for actions at sea, 1866; extended

to acts ashore, 1877; conditions of award

amended, 1905. Ribbons have blue-and-white

(*sea*) and crimson-and-white (*land*) vertical

stripes.

**Albert Nyanza**, lake, Uganda, Africa,

borders Belg. Congo; 100 by 22 m. (1,650

sq.m.); Riv. Nile flows into lake as Victoria

or Somerset Nile and leaves it as Bahr-el-

Jebel. Discovered by Baker, 1864.

**Albertus Magnus**, St. (1193-1280), Ct.

of Bollstadt, philos. and theologian. *Doctor*

*universalis*; canonized 1931.

**Albi**, cap. dept. Tarn, France; pop.,

29,020; cathedral.

**Albigenses**, sectaries named from the tn.

Albi, in S. France; numerous in 13th cent.;

precise doctrine uncertain; condemned by

Pope (1119 and 1139); Simon de Montfort

conducted crusade (1209) agst. them; prac-

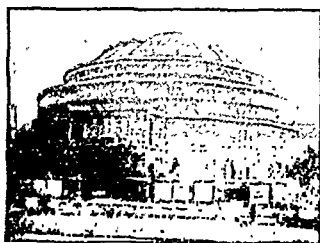
tically exterminated by 1244.

**Albino**, person or animal unable to form

pigment (*q.v.*), therefore having pale skin,

white hair, reddish pupils; albinism common

in rabbits, more rare in man.



Albert Hall

**Albion**, anc. Celtic name for England.

**Albite**, a white feldspar (*q.v.*), a silicate of aluminium and sodium.

**Alboin** (d. 573), Kg. of the Lombards; destroyed kgd. of the Gepidae, 566; m. Rosamunda, dau. of slain Kg. Cunimund; forced her to drink from her father's skull; conquered Italy, south to Riv. Tiber; murdered by Rosamunda.

**Albuera**, Battle of, 1811, defeat of Fr. by Eng. and Spaniards; named after vill. in Spain 12m. S.E. of Badajoz.

**Albumins**, group of naturally occurring simple proteins (*q.v.*), coagulated by heat, soluble in water. Found in white of egg, blood-serum, etc. **Albuminoids**, proteins found in animal connective tissue and bones; very insoluble. Among them are *keratin* (chief constituent of hair, hoof, nails), *collagen* (tendons), and *elastin*. **Albuminuria**, presence of albumen in the urine; occurs in nephritis (*q.v.*).

**Albuquerque**, Afonso d' (1452-1515), Port. navigator, soldier and administrator; add. Port. supremacy in India 1503-11.

**Albuquerque**, largest tn. of New Mexico, U.S.A.; pop., 26,600; port on Rio Grande; wool, sheep, and cattle mkts.; lumber indust.; unct. Santa Fé Rly. system.

**Albumum**, the living sapwood of a tree. *see* DURAMEN.

**Alcaeus** (c. 611-580 B.C.), Gr. lyric poet; inventor of *Alcaic* verse.

**Alcalde** (Span.), mayor of a tn. and justice of the peace; formerly applied to various judicial officers.

**Alcantara**, Order of, Span. milit. order, add. 1156.

**Alcantarines**: *see* OBSERVANTINES.

**Alcazar** (Arab.), castle or palace.

**Alcestis**, (Gr. myth.) died for her husband Admetus; was rescued by Heracles (*q.v.*) from underworld. Also name of play by Euripides.

**Alchemy**, mediaev. forerunner of mod. chemistry, chf. objects of wh. were the discovery of the "philosopher's stone" (fabled to transmute base metals to gold) and the 'elixir of life' (a supposed drug conferring perpetual youth).

**Alcibiades** (c. 450-404 B.C.), Athenian gen. and politic.; pupil of Socrates; commdd. Athenian League (420-418); victory of Cyzicus (410); defeat at Notium (407); took refuge Phrygia; murdered.

**Alcinous**, in Homer's *Odyssey* Kg. of the Phaeacians in isl. of Scheria.

**A.L.C.M.**, abbr. Associate London College of Music.

**Alcmaeon**, (Gr. myth.) s. of Amphiaraus; took part in war of the Epigoni agst. Thebes; killed his mother on his return; killed by his father-in-law Phegeus.

**Alcman** (c. 620 B.C.), Spartan lyric poet; considered the fndr. of Doric lyric poetry;

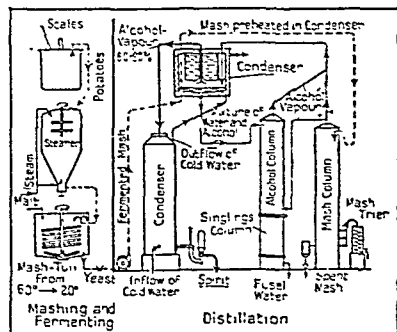
composed love-songs, hymns, paeans and processional; only fragments of his work are extant.

**Alcmene**, (Gr. myth.) wife of Amphi-tryon, beloved of Zeus, mother of Heracles.

**Alcock**, Sir John Wm. (1892-1919), Brit. aviator; R.N.A.F. 1914; 1st transatlantic aeroplane flight, 1919, with Lt. (Sir) A. W. Brown: *see* AVIATION (Table).

**Alcoforado**, Marianna (1640-1723), Portuguese nun; entered convent at 16; fell in love with Noël Bouton, later Marquis de Chamilly; wrote five letters, pubd. anonym. in Paris in a Fr. transl., 1669; Engl. transl.: *Letters of a Portuguese Nun*, 1903.

**Alcohol**, (chem.) ethyl alcohol,  $C_2H_5OH$ , chief intoxicating constituent of wines, beers, spirits, in which it is produced by action of yeast in fermenting dextrose. Obtained pure by distilling any fermented liquor, also synthetically from acetylene. Industrial and power A. made from vegetable starch (potatoes, grains), cellulose (wood, vegetable refuse), molasses, etc., all of which



Manufacture of Ethyl Alcohol

are converted into dextrose (starch being converted by malt, cellulose by action of dilute acid under pressure), and fermented by yeast. In production from potatoes, these are weighed, steam-cooked, mashed with malt, which converts starch to maltose, and finally to dextrose, fermented by addition of yeast; mixture is finally distilled, vapour being led to fractionating column (*see* DISTILLATION) or "patent still," where it is condensed. By-products: Residuals of potato as cattle food; fusel oils for making synthetic flavourings, etc. *Uses*: As solvent in industry (spirits of wine, industrial spirit), mixed with petrol and benzol as power-spirit, "denatured" (*see* METHYLATED SPIRIT) as fuel for domestic lamps, etc. **Absolute A.**, pure alcohol, free from water.

**Alcoholism**, (path.) morbid condition due to excessive or long-continued consumption of alcohol, leading to serious disease of heart, kidneys, arteries, liver and nervous system, even to insanity or *delirium tremens* (*q.v.*),

Treatment by withdrawal of supplies, by removal of temptation; psychotherapy; improvement of circumstances, etc. The offspring of alcoholics may suffer from epilepsy, mental deficiency, etc.

**Alcoran:** see KORAN.

**Alcott**, Louisa (1832-88), Amer. author: *Little Women* (1868).

**Alcove**, 1) recess within a room; 2) (geol.) hollow formed by water in face of rock strata.

**Alcuin** (735-804), Eng. prel. and schol., counsellor to Charlemagne.

**Alcyone**, 1) (Gr. myth.) dau. of Aeolus, changed into a kingfisher; 2) (astron.) 3rd magnitude star,  $\eta$  of Taurus in the Pleiades. See *PL.*, ASTRONOMY, N.C.H., B.

**Aldan**, riv. in S.E. Siberia, largest trib. of Riv. Lena; 1,725 m.; from late May to Oct. navig. for 750 miles.

**Aldebaran**, bright red 1st magnitude star,  $\alpha$  of Taurus in the Hyades; see *PL.*, ASTRONOMY, N.C.H., B.

**Aldeburgh**, munic. bor., E. Suffolk, Eng.; pop., 2,500; commercially important in 16th cent.; birthplace of George Crabbe.

**Aldehyde**, formed by oxidation of an alcohol; contains group -CHO. A.s are import. reducing agents. See FORMALDEHYDE.

**Aldenharn**, parish, Herts, Eng., 2 m. N.E. Watford; grammar school (1597).

**Alder**, catkin-bearing tree of the genus *Alnus*, of little value commercially.

**Alderman**, in A.-S. times governor of a province. Later, principal member of a guild, and so, with development of municipal govt., magistrate of city or borough or co-opted member of County or Borough Council. A. of City of London holds office for life; elsewhere for 6 years.

**Alderney**, northernmost of Channel Is., 10 m. from Fr. coast; 3 sq.m.; pop., 1,500; cap., St. Anne.

**Aldersgate**, ward and street of City of London, Eng., name of wh. derived from former gate in city wall, demolished 1761. Milton lived for a time at corner of Maidenhead court, A. Street.

**Aldershot**, munic. bor., Hants, Eng.; milit. camp (est. 1855); annual tattoo; pop., 34,300.

**Aldgate**, ward of City of London, Eng.; also street connecting Fenchurch St. with Whitechapel.

**Aldhelm**, St. (c. 656-700), Brit. bhp. of Sherborne, a kinsman of Kg. Ina; founded monasteries, built and repaired churches, and was the father of Anglo-Latin poetry. Commem., 25th May.

**Aldine Press**, press establd. by Manutius Aldus, at Venice, c. 1490; issued small octavo or duodecimo editions of Gr., Latin, and

Italian classics, printed in specially designed cursive or italic type, throughout the 16th century.

**Aldrich**, Thos. Bailey (1836-1907), Amer. poet, novelist, journalist; editor of *Every Saturday*, 1870-74; author of *Wyandham Towers*, 1889; *The Sisters' Tragedy*, 1891; etc.

**Aldus:** see MANUTIUS.

**Aldwych**, crescent-shaped thoroughfare of W.-Central London, Eng., uniting Kingsway to the Strand (*q.v.*). Built (1899-1924) on site of a network of narrow streets. Name derived from the Danish settlement formerly situated there.

**Alea jacta est** (Lat.), the die is cast; the decision has been made; orig. from a saying of Caesar when about to cross the Rubicon (*q.v.*).

**Alecto**, one of the Eumenides (*q.v.*).

**al. ed.**, abbr. *alia editione* (Lat.), in another edition.

**Alekhine**, Alexander (1892- ), Russ. chess master; world champion 1927.

**Alemán**, Mateo (1550-1610), Sp. auth.; *Guzmán de Alfarache*, 2 pts., 1599-1604.

**Alemannic**, see LANGUAGE SURVEY, W. Germanic. Spoken in S. Baden, Württemberg, W. Bavaria, Ger. Switzerland, and Alsace.

**Alemtejo**, prov. S. Portugal; 9,200 sq.m.; pop., 576,000; rivs., Tagus, Guadiana.

**Alençon**, cap. dépt. Orne, N. France; pop., 16,050; manuf. linen, lace, etc.

**Alençon, House of**, Fr. countship and duchy, 14th-16th cents, appanage of Ho. of Valois. Countship created 1268, by Louis IX, for son, Peter, and later held by Ch. I of Valois, Ch. II, and Ch. III. John, nephew of Ch. III and companion of Joan of Arc, became D. of A., 1414. Last holder of title, Ch. IV, husband of Margaret of Valois, sister to Francis I, killed at Pavia, 1525, when duchy annexed by Crown.

**Point d' A.:** see LACE.

**Aleph**, 1st letter of Heb. alph.  $\aleph$ ; also represents number 1.

**Aleppo**, *Haleb*, cap. of Fr. Syria, at intersect. of trade routes of Euphrates, Tigris, and Bagdad Rly. with Syrian Rly.; pop., 200,000; textiles, hides, fruit, oil, dyes.

**A. button**, (med.) contagious boil; a tropical disease.

**Alessandria**, 1) dept. Piedmont, N.W. Italy; 1,960 sq.m.; pop., 755,600; 2) city, cap. of dept., on Riv. Tanaro; pop., 82,000; cathed., citadel; commercial centre; rly. junct.

**Aletsch Glacier**, Switz., largest Eur. glacier; 50 sq.m.; S. of Jungfrau in Bernese Alps.

**Aleut-Eskimo:** see LANGUAGE SURVEY, Arctic languages.

**Aleutian Islands**, chain of c. 150 volcanic isls., 1,090 m. long, betw. Alaska and Kamchatka; discovered by Bering (1741); owned



Alder

by U.S.A. since 1867; prevailing fogs; pop., c. 1,000; Russian-speaking Eskimos; fishing and sealing; chf. port, Unalaska.

**Alewite**, small food-fish, found esp. in tidal estuaries of N. Amer. rivers.

**Alexander**, 8 popes of this name, of whom the most import., historically, are: **A. II** (1061-73), opposed Emp. Hy. IV over investitures; attempted to enforce clerical celibacy.

**A. III** (1159-81), opposed Emp. Fred. I, who estab. 3 antipopes; ordered 3rd Lateran Synod (11th Ecumenical Council). **A. VI** (1492-1503), attempted to increase temporal power of papacy and to find great heredit. dominion for his family; father of Cesare and Lucrezia Borgia; ordered exec. of Savonarola (q.v.); poisoned; *see also* BORGIA.

**Alexander: A. the Great** (356-323 B.C.),

Kg. of Macedon; created a vast empire, penetrated India to the Indus; fndd. Alexandria in Egy. and spread Gr. civilization throughout the East (*Hellenism*).

**A. I**, Pavlovich (1777-1825), Tsar of Russia 1801, attempted reforms; allied with Prussia and Austria agst. Napoleon; fndd. Holy Alliance; opening of the period of reform. **A. II**, Nicolaevich (1818-81), Tsar of Russia 1855; abol. serfdom, effected reforms, granted autonomy.

After Pol. insurrection (1863) opposed Pan-slavism and Nihilism. Triple Alliance with Austr. and Pruss., 1873; war with Turkey, 1877; assassinated. His s., **A. III**, Alexandrovich (1845-94), Tsar 1881; opposed constitutional reforms; approved Pan-slavism; Russianized Finland; friendly to France.

**A. I**, Kg. of Serbia (1876-1903), m. Draga, lady of the court; both assassinated at Belgrade. **A. I** (1888- ), Kg. of Yugoslavia, son of Peter (Karageorgevitch), Kg. of Serbia; as pr. regent (1914-18) united Serbia, Croatia, and Montenegro; succd. his father, 1921.

**Alexander Nevski**, St. (1210-63), Russ. national hero; prince of Novgorod, Grand Duke of Vladimir; deftd. Swedes on Riv. Neva, 1240, and Livonian Knights on Lake Peipus, 1242.

**Alexander Severus**, *Marcus Aurelius* (204-22-35), Rom. emp.; adopted by his cousin, Elagabalus; conducted campaign against Germans on Rhine, 235; killed in mutiny by his soldiers.

**Alexandra** (1844-1925), statue in London. Qn. consort of Kg. Edw. VII (q.v.); eldest dau. of Kg. Christian IX of Denmark; m. Edw.,



Alexander the Great



Queen Alexandra: statue in London.

1863; crowned with him, 1902; inaugurated (1912) annual flag day ("Alexandra Day," in June to raise funds for hospitals, etc.

**Alexandra Palace**, Muswell Hill, N. London. Opened 1873 as exhibition bldg., similar to Crystal Palace (q.v.), on smaller scale; became public property and placed in hands of trustees (1901). On outbreak of World War used first as asylum for war refugees and, later, as internment camp for enemy aliens. In the grounds is A. Park race-course.

**Alexandretta**, tn., N. Syria, cap., of *sanjak* of A. (*see* SYRIA); port of Aleppo; pop. 15,000.

**Alexandria**, 1) anc. cap. of Egypt on N.W. of Nile Delta; pop., 573,000; port handles 80% of Egypt's trade; founded by Alex. the Great (331 B.C.); 2nd largest tn. of antiq., famous for trade; lighthouse (on Isl. of Pharos) and library. Under Arab and Turk. control, 600 to 1882, when bombardment followed by British occupation of Egypt. Importance nullified in 1498, by discovery of trade route to India round Africa; besieged by Napoleon, 1798-1801; Nationalist disturbances, 1919-21. 2) Seaport, Virginia, U.S.A.; pop., 24,150; on the Potomac Riv.; manuf.: refrigerator cars, glass, clothing and silk. Home of Robert E. Lee; at Marshall House (an 18th-cent. bldg.) first fatality of Civil War occurred.

**Alexandrian Codex**, important MS. of Bible, 5th. cent., written in Gr. uncials, prob. at Alexandria; orig. contained whole of O. and N. Testaments, with Psalms of Solomon and I and II Clement, now partially mutilated; given to Charles I (1628) by Cyril Lucar, patriarch of Constantinople; now in Brit. Museum. **A. Library**, largest of antiquity; fndd. by Ptolemy I (322-285 B.C.); burnt during Caesar's siege of Alexandria. **A. School**, group of philos. in Alexandria, 1st cents. B.C. and A.D.; sought to combine the teachings of Plato with oriental mysticism (*see* PHILO THE JEW). The Neo-platonists (2nd and 3rd cents. A.D.) developed similar doctrines.

**Alexandrite**, a precious stone, dark green with red reflections; a variety of chrysoberyl.

**Alexandropol**: *see* LENINKAN.

**Alexandroupolis** (*Dedeagatch*), seaport. W. Thrace, Greece, on Aegean; pop., 13,200; exports tobacco. Bulg. before World War.

**Alexis**, Mikhailovich (1629-76), 2nd Romanov Tsar; conq. Siberia and Ukraine.

**Alexius**, name of 5 emperors of the Eastern Roman Empire, of whom the most important are: **A. I**, *Comnenus* (1048-81-1118), usurped throne from Emp. Nicephorus; defended empire against Petchenegs, Turks, and Normans; life (*Alexiad*) written by dau. Anna Comnena. **A. II**, *Comnenus* (c. 1168-80-83), deposed and strangled by



Andronicus. **A. V.**, *Dukas Murtzuphlos* (d. 1204), usurped throne of **A. IV.**, 1204; attacked by Crusaders; captured; tried and executed for murder of **A. IV.** **456, N**

**Alfalpa.** See LUCERNE.

**Affieri**, Ct. Vittorio (1749-1803), It. dramatic, epic, and lyric poet.

**Alfonso**, name of 13 Span. Kgs., of which the most important are: **A. X.**, the Wise (1221-84), Kg. of Castile; his code of laws the basis of Span. jurisprudence. **A. XIII** (1886- ), posthum.

son of **A. XII** (1857-74-85), Kg. of Spain from birth till deposition, 1931; m. (1906) Pcess. Victoria of Battenberg, cousin of Kg. George V.

**Alfred the Great** (849-901), Kg. of Wessex (871) and overlord of England; subdued Danes; fndd. Eng. constitution, legal code, and sea-power. **A. Jewel**, gold ring of Saxon workmanship, bearing legend *A. had me made*, found at Athelney (q.v.), 1693; now in Ashmolean Mus., Oxford.

**Alfreton**, urb. dist., Derbysh., Eng.; pop., 21,200; coal, iron, pottery.

**Algae**, (bot.) lowly organized plants, not differentiated into root, stem, or leaf; include the seaweeds and similar weeds found in stagnant or slow-flowing fresh water.

**Algarve**, *Faro*, prov., S. Portugal; 1,937 sq.m.; pop., 292,000; agric., orchards, fisheries.

**Algäu**, *Allgäu*, S.W. portion of Bavaria and Swabia. *Algäu Alps*, betw. Iller and Lech, over 8,500 ft.; chf. tns., Kempten and Oberstdorf; fertile pasturage; tourist centre.

**Algebra** (Arab.), branch of mathematics dealing with relations and properties of numbers by means of symbols.

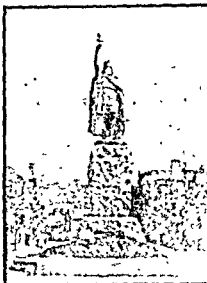
**Algeciras**, port in S. Spain on Bay of Gibraltar; pop., 14,000; winter resort; whale and other fisheries; landing-place of 1st Arabs in Europe, 711. **A. Conference**, betw. the Europ. Powers (1906), to regulate affairs of Morocco.

**Algenib**, 3rd magnitude star,  $\gamma$  in constell. of Pegasus; see PL., ASTRONOMY, N.C.H., *H.*

**Algeria**, Fr. colony, N. Africa, bounded by Mediterranean on N., Morocco on W., Tunis on E., and Sahara on S. Divided into *N. Algeria* (depts. of Oran, Algiers, Constantine; 80,200 sq.m.; pop., 5,980,000) and *S. Algeria* (territories of Ain Sefra, Ghardaia, Tou-



Ex-Kg. Alfonso XIII



King Alfred Statue at Wantage, Berks

gourt, Saharan Oases; 767,400 sq.m.; pop., 574,600). Inhabts. chfly. Berbers (920,800 Europeans). In N. are wooded *Tell Atlas* and *Saharan Atlas Mts.* (av. height 3,000 ft.), enclosing steppe region (with shallow lakes or *Shotts*). Crops include wheat, barley, tobacco, cotton; exports wine, cereals, olive oil, phosphates; rlys. 3,040 m.; chf. tns., *Algiers* (cap.), Oran, Bona (all ports), and Constantine. A. includes anc. Numidia and part of Mauretania; under successive rule of Carthaginians, Romans, Vandals, Arabs; Berber kgdms. 13th-16th cents.; partly occupied by Spaniards, 1510-29; Turk. rule (1518-1830) coincided with activities of Alg. pirates; French since 1830.

**Algiers**, cap. of Algeria, on Mediterranean; pop., 226,220; fortified port; seat of Fr. colon. govt.; university.

**Algoa Bay**, S. coast Cape Prov., S. Africa; landing place of Bartholomew Diaz, 1488, and of Brit. emigrants (1820), who fndd. Port Elizabeth.

**Algol**, 2nd magn. variable star  $\beta$  in constell. Perseus (q.v.). See PL., ASTRONOMY, N.C.H., *B.*

**Algoma**, tn., Canada, prov. Ontario, on N. Channel, Lake Huron; cap. co., A.; mines of silver, nickel, platinum, copper, iron.

**Algonkian Systems:** see PROTEROZOIC SYSTEMS.

**Algonquin**, or *Algonkin*, group of N. Amer. Indians of the Ottawa valley and the St. Lawrence tributaries; also the language spoken by these.

**Al-hakim** (d. 976), Caliph of Cordova, 961-76; collected large library; patron of literature and learning; fndd. mosques, hospitals, and colleges.

**Alhambra**, Moorish palace near Granada,



Alhambra

Spain; finest example of Arab. archit. of Mid. Ages.

**Ali**, 1) Ali ibn Abu-Talib of Mecca (602-60), nephew, adopted s. and s.-in-law of Mohammed; venerated by the Shiites, who make pilgrimages to his tomb at Kufa; Caliph, 656. 2) **A.**, Pasha of Janina (1741-1822), despotic Gov. of Albania, Epirus, Thessaly, and S. Macedonia.

**Alias** (Lat.: otherwise), an assumed or alternative name.

**Alibi** (Lat.), proof of presence elsewhere at time of a given occurrence.

**Alicante**, tn., S.E. Sp., on Mediterranean; pop. 64,000; wine, esparto grass, fruit; winter health resort.

**Alidade**, a ruler carrying sights, used in plane-table surveying (*q.v.*).

**Aligarh**, 1) dist., United Provs., Brit. India; 1,950 sq.m.; pop., 1,110,000; 2) cap. of dist.; pop., 67,000; Mohammedan univ.; anc. fort (captured from Mahrattas, 1803).

**Alimony**, (law) provision made for support of a woman out of her husband's income, after divorce or legal separation.

**Alington**, Cyril Argentine (1872- ), Dean of Durham, 1933; headmaster of Eton Coll., 1916-33, and of Shrewsbury, 1908-16; select preacher to Univ. of Oxford, 1909-10; chairman of Headmasters' Conference, 1924-25; *Eton Fables*, 1921; *The Count in Kensington*, 1926; *Elementary Christianity*, 1927; etc.

**Aliphatic series**, (chem.) org. compounds in wh. constituent atoms or groups of atoms are linked together in chains, as opposed to ring structure of aromatic compounds.

**Aliquant part**, any part of a number by which it cannot be divided without a remainder (as 5, of 12).

**Aliquot part**, (math.) any part of a number by wh. it can be evenly divided (as 5 of 15). **A. Tones**, (mus.) harmonics (*q.v.*), over-tones.

**Alisma plantago**, perennial plant, grows on banks of rivers and ponds. Violet-coloured flowers, broad leaves. **A. natans**, floating water-plantain, white flower with yellow spot. **A. ranunculoides**, the lesser water-plantain, narrow tapering leaves.

**Alison**, Sir Archibald, 1st Bt. (1792-1867), Brit. lawyer and historian; sheriff of Lanarkshire, 1835; *History of Europe* (10 vols.), 1833-42; and a continuation, 1852-59.

**Aliwal**, vil., Punjab, Brit. India, on Riv. Sutlej. Battle of A. (1st Sikh war), defeat of Runjoor Singh by Sir Harry Smith, 1846.

**Aliwal North**, (4,000 ft.) tn. and spa, Cape Prov., S. Africa, on Orange Riv.; sulphur springs; pop., 6,500; named in honour of Sir Harry Smith, Gov. Cape Colony, 1847-52, and victor of Aliwal (*q.v.*). **A. South**: see MOSSEL BAY.

**Alizarin**,  $C_{14}H_6O_2(OH)_2$  red dye, glucoside of which occurs in madder-root; first dye to be synthesized commercially from coal-tar (W. H. Perkin).

**Alkali**, (chem.) base forming a salt with an acid; forms OH ions (*q.v.*) when dissolved in water; the stronger the A. the greater concentration of OH ions. **Caustic A.s** are the hydrates of the alkali metals; alkaline earth metals form alkaline hydrates, either soluble or insoluble in water. Liquid am-

monia is also alkali. **A. metals** are sodium, potassium, lithium, rubidium and caesium; soft, and decompose on contact with water, forming hydrogen and a caustic alkali. **A. earth metals**, beryllium, magnesium, calcium, strontium, barium, radium; so called because the hydroxides of calcium, strontium, and barium dissolve in water to form alkaline solutions (lime water).

**Alkalimetry**, measurement of the amount of acid required to be added to liquids to render them neutral. In scientific terms, the alkalinity is measured by  $P_h$  value (*q.v.*).

**Alkaline earths**, general designation of the oxides of barium, calcium, strontium, and sometimes magnesium.

**Alkaloids**, (chem.) definite org. nitrogenous substances, forming active princ. of cert. vegetable drugs, wh. combine as bases with acids to form salts; gen. poisonous; e.g., nicotine, cocaine, morphine.

**Alkanet**, name orig. applied to root and leaves of shrub *Lawsonia alba*, Eastern al-kanna; Eur. alkanna, *Anchusa tinctoria*, yields "false" alkanet (Fr. *orcanette*), a red dye now used only for synthetic wines and cosmetics.

**Alkekengi**: see WINTER CHERRY.

**Alkmaar**, tn., Holland, prov. N. Holland; pop., 27,300; butter and cheese trade.

**Allah**, (Arab.) name for God in Islam.

**Allahabad**, cap., United Prov., Brit. India, at confluence of the Ganges and the Jumna; pop., 183,900; centre Hindu pilgrimage; annual relig. fair.

**Alleghany Mountains**, U.S.A.; part of Appalachian system (*q.v.*); extend through Pennsylvania, Maryland, Virginia, and W. Virginia, rising to 4,000 ft. in S.; important coal seams; traversed by roads and railways.

**Allegory**, figurative representatn. of an idea.

**Allegro**, (mus.) lively, quick. **Allegretto**, rather lively.

**Alleluia, Hallelujah** (Heb.), "Praise ye Jehovah!" the ending of some of the O.T. Psalms, hence called "A. Psalms"; used in Christian Ch. as pious interjection of praise.

**Allen, Jas. Lane** (1849-1925), Amer. novelist: *A Kentucky Cardinal*. **A., Wm.** (1532-94), Eng. cardinal; princ. of St. Mary's Hall, 1556; fled to Louvain, 1561; fidd. seminary at Douai, 1568; created cardinal by Sixtus V.; leader of Span. party among Eng. Catholics; implicated in many plots against Elizabeth.

**Allen, Lough**, lake, counties Leitrim and Roscommon, I.F.S.; formed by Riv. Shannon; 10 m. long, 1-4 m. wide.

**Allenby** of Megiddo and Felixstowe, Edmund H. H., 1st Visct. (1861- ); Brit.



Allenby

F. M., comm. in France, 1914-17, G.O.C. Egy. and Palestine, where he conducted victorious campaign, 1917-18, capturing Jerusalem, 9 Dec., 1917. Brit. High Comm. in Egy., 1919-25.

**Allenstein**, 1) prov. in E. Prussia; 4,450 sq.m.; pop., 540,257; 2) cap. of prov.; pop., 38,100; saw-mills, match-factories, breweries.

**Allentown**, tn. in Pennsylvania, U.S.A.; pop., 92,550; on the Lehigh R., 55 m. N.W. of Philadelphia; manuf. silk, furniture, mining machinery. Treslev Park game preserve: buffalo, elk, and deer.

**Allergy**, excessive sensibility of the body to certain substances, e.g., grass-pollen, mushrooms, animal hair, shellfish, and other foods. Among allergic ailments are asthma, hay-fever, nettlerash, migraine, eczema, etc.

**Alleyn**, Edw. (1566-1626), Eng. actor; served with Earl of Worcester's players, Earl of Nottingham's (Ld. Admiral's) company, and Ld. Strange's players; blt. *Fortune Theatre*, 1600, with Henslowe; fndd. Dulwich College.

**Allier**, 1) dept., centr. France; 2,850 sq.m.; pop., 373,924; agric., mineral deposits and springs (Vichy); cap., Moulins; 2) river, France, trib. of Loire, rises in Cevennes, 236 miles.

**Alligator**, large aquatic reptile frequenting the rivers of tropical countries.

**Chinese a.** (*A. sinensis*) does not attain to a great size; has unwebbed front toes and thin bony armour plates on under surface of body. The **Giant a.** of N. Amer. has the front toes webbed; carnivorous, feeding on fish and small mammals; female buries her eggs, which may number 100, in the midst of decaying vegetable matter to hasten process of incubation.



Alligator

**Alligator pear**: see AVOCADO PEAR.

**Allingham**, Wm. (1824-89), Irish poet: *Irish Songs and Poems* (1887).

**Alliteration**, repetition of same letter or sound at beginn. of syllables in close succession; characteristic of O. Teutonic poetry: "Apt alliteration's artful aid."

**All-mains set**, radio receiving set, valve filaments and anodes of which are fed by the electric light mains. Consists of filter against ripple, rectifier, and transformer (in case of alternating current). See CURRENT, ELECTRIC.

**Alloa**, police burgh, Clackmannansh., Scot.; pop., 13,300; textiles, breweries, distilleries.

**Allocution**, (R.C.Ch.) solemn address by Pope to cardinals in secret conclave.

**onge**, 1) leaf attached to a bill of for purpose of endorsement

(*q.v.*); 2) Fr. name for a wig with long, full curls, first worn at Ct. of Louis XIV.

**Allopathy**, system of treatment of disease by drugs producing effects dissimilar to those of the disease. Orthodox medical treatment; see HOMŒOPATHY.

**Allotment**, share or portion assigned to a person. 1) (Eng. law) Small agric. holding ( $\frac{1}{4}$  ac. to  $\frac{1}{2}$  ac.); also, small plot of land (up to 40 poles) leased for cultivation of vegetables and fruits under Small Holdings and Allotments Act (1908); this Act was extended during World War to include leasing of waste ground in towns. Under the Allotments Act (1925), holder is entitled to 6 months' notice to vacate his land. See also SMALL HOLDING. 2) (Finan.) Apportionment of shares, stocks or bonds to persons who have applied for them.

**Allotropy**, (chem.) occurrence of same element in diff. forms (allotropic modifications), having diff. chem. and phys. properties (e.g. phosphorus—red and yellow).

**Alloway**, vil., Ayrsh., Scot., 2 m. S. Ayr; birthplace Robt. Burns.

**Alloys**, formed by melting metals together; have diff. properties from those possessed by component metals, e.g. they are often harder, stronger, and more fusible. Often used in indus.: brass, bronze, light alloys of aluminium and magnesium with copper, tin, zinc, etc., also steel (alloy of iron and carbon). A. of mercury are called *amalgams*. Constitution of an alloy, usu. composed of sev. var. of microscopic crystals, is determ'd. by *metallography* (*q.v.*).

**All Saints Day** (Nov. 1st), Christian festival observed, in Western Calendar, since c. 731.

**All Souls Day** (Nov. 2nd), R.C.Ch. commemoration of faithful departed in Purgatory; inaug., 998.

**All Souls College**, Oxford; fndd. 1437 by Henry Chicheley, archb. of Canterbury. Contains only four undergraduates—remainder thus constituting a society of graduates.

**Allspice**, berry of *pimento* (*q.v.*), so called from taste, wh. resembles combination of spices; used as seasoning.

**All the Talents Administration**, ironical name given to Brit. administration formed by Lord Grenville, 1806; incldd. Fox, Erskine, Fitzwilliam, Ellenborough, and Sidmouth.

**Alluvium**, matter derived from natural waste of rocks, carried away by running water, gradually deposited elsewhere to form new soil.



Allonge

**Alma**, river, Crimea, Russia; battle of, Eng. and Fr. victory over Russians, 20 Sept., 1854.

**Almadén**, tn., Ciudad Real, Sp., in Sierra Morena; pop., c. 8,000; import. mercury mines, worked by Romans and Moors, yearly output, c. 1,200 tons, nearly one-third of world's yearly production.

**Almagro**, Diego d' (1475-1538), Span. soldier; with Pizarro, conquered Peru, 1524-34.

**Alma Mater** (Lat., foster-mother), term applied by a person to univ., coll. or school at wh. he was educated.

**Almanac** (Arab., *al manak*, reckoning), register of days, weeks, months of year, of Ch. festivals and saints' days, of astronomical phenomena, etc.; also a year-book.

**Al-Mansur**, or **Abu Jafar** (712-75), 2nd Abbasid Caliph, fndd. Bagdad, 764. **Al-M.**, **Abu Moham.** (939-1002), regent of Cordova; encouraged science and literature.

**Almanza** (*Almansa*), tn., E. Spain, prov. Albacete; pop., 12,600. Scene of defeat of Brit., Portuguese, and Spaniards by Fr., under D. of Berwick, 1707.

**Alma-Tadema**, Sir Lawrence (1836-1912); Eng. artist; R.A., 1879. Painted scenes from class. Grk. and Rom. life. *Tarquinius Superbus* (1867).

**Almeria**, 1) marit. prov., S. Spain; 3,360 sq.m.; pop., 379,400; grapes, oranges, esparto; gold, silver, lead, zinc; 2) cap. of prov., on Bay of A.; cathed.; old fort; harbour; pop., 51,300.

**Almohades**, Moham. dynasty in N. Africa and Sp., 12th and 13th cents.

**Almond**, S. European tree of order Rosaceae, cultivated in Eng. for its flowers; also its fruit and seed. **Sweet a.**, dried ripe fruit of *Prunus Amygdalus dulcis*,

a tree cultivated in S. Italy, S. France and Spain. **Bitter a.**, from *P. Amygdalus amara*, chfly. from Morocco and Sicily; contains a proportion of hydrocyanic acid.

**A. milk**, a toilet lotion prepared from sweet almonds.

**A. oil**, obtd. by pressure from sweet or bitter almonds; clear, pale-yellow fluid used externally for chapped skin, internally as a laxative.

**Almoner**, eccles. official attached to royal court or noble mansion with duty of distributing alms; official on financial staff of hospital or charitable organization who enquires into means of beneficiaries.

**Almoravides**, Arab. dynasty in N. Africa and Sp., 11th and 12th cents. A.D.

**Almshouse**, privately endowed establmt. for care of aged or indigent persons. In Gt. Brit. under gen. supervision of Charity Commission (q.v.).



Almond Tree, Fruit

**Alnwick**, mkt. tn., on R. Aln, Northumb., Eng.; pop., 6,900; *Alnwick Castle* (D. of Northumb.); port at **Alnmouth** 4 m. S.E.

**Aloes**, genus of tropical liliaceous plants with succulent leaves; the dried liquid obtained from leaves of var. species (Barbadoes, Cape, Curaçao, Socotrine, Zanzibar, etc.) is used in med. as a strong purgative (active principle, Aloin). **A. wood**, fragrant aromatic wood of *Aquilaria agallocha*, tree indigenous to Assam.

**Alopecia**: see HAIR.

**Alot**, inland tn., E. Flanders, Belgium; former cap. of Austr. Flanders; pop., 38,400; linen-bleaching; centre hop-growing district.

**Alpaca**, 1) domesticated Peruvian llama; 2) very thin light cloth made from A. wool, oft. mixed with silk or cotton; simil. cloth made from mohair, with silk or cotton admixtures.

**Alpes**, three dépts., S.E. France, on Ital. frontier: **Hautes-A.**, 2,184 sq.m.; pop., 88,000; mtn. pastures; cap., *Gap*; **Basses-A.**, 2,698 sq.m.; pop., 88,300; barren in N., orchards and vineyards in S.; cap., *Digne*; **A.-Maritimes**, on Mediterr. coast; 1,442 sq.m.; pop., 435,300; perfumes, olive oil, pottery; cap., *Nice*.

**Alpha**, 1st letter in Gr. alphabet, α. **A. Rays**, atoms of helium, charged positively, thrown off at high velocities by radioactive elements (q.v.) when decomposing. They split up other atoms on striking them. See TRANSMUTATION OF ELEMENTS. **A. and Omega**, (N.T.) 1st and last letters of the Gr. alphabet; hence Beginning and End; symbol. name for God in Bk. of Revelation.

**Alphabet**, series of conventional symbols, each indicatg. single sound or combination of sounds, arr. in order; from Gr. letters *Alpha* and *Beta*.

**Alphege**, St. (c. 954-1012), Brit. abp.; became abbot of Bath; bp. of Winchester; abp. of Canterbury; taken prisoner by Danes, 1012; refused to pay ransom; murdered; commem. Apr. 19th.

**Alphonsine tables**, astronomical tables, compiled by Arab and Sp. astronomers, c. 1250; so called from Alfonso X of Castile, who financed and prefaced the work.

**Alphonso**: see ALFONSO.

**Alpine chough**, yellow-billed bird, member of crow family; found in mountainous districts of Europe.

**Alpine Club**: see MOUNTAINEERING.

**Alps**, highest mountain system in Europe; extends (c. 700 m.) in curve from Mediterranean (Riviera), betw. France and Italy, and through Switzerland and Austria, to W. Hungarian frontier. Formed mainly in Tertiary period; outer ranges, limestone and dolomite; centre, gneiss and mica schist. Chf. Europ. watershed; highest peaks, *Mont Blanc*, 15,780 ft.; *Monte Rosa*, 15,200 ft.;

glaciers descend to 4,000 ft.; vegetation up to 6,200 ft.; snow-line c. 9,150 ft. Ranges separated by deep riv. valleys (many lakes in Switzerland and N. Italy). Divided into Western, Central, and Eastern Alps (*qq.v.*). Chf. passes, Mont Cenis (France-Italy); St. Gotthard (Switzerland); Great St. Bernard, Simplon, Splügen, Stelvio (all Switzerland-Italy); Brenner (Austria-Italy); most of them pierced by rly. tunnels. Flora include gentian, edelweiss, saxifrages; fauna: chamois, antelope, mountain hare, golden eagle.

**Alruna**, plant-root bearing some fancied resemblance to the human form (e.g., mandrake) and hence used by superstitious for divining, etc.

**Alsace** (Ger., *Elsass*), French territory on Fr.-Ger. frontier and left bank of Rhine; low-lying plain, div. into dépts. of Haut-Rhin (Upper A.) and Bas-Rhin (Lower A.); fertile horticultural land, hills covered with vineyards; potash and min. oil deposits; textile indus. Tns., Mulhouse, Colmar, 3,200 sq.m.; pop., 1,200,000. A. orig. Celtic; from 58 B.C. Rom.; c. A.D. 200-496 Alemannic, then Frankish, becoming part of Empire. Seizure of Metz, Toul, and Verdun by Henry II of France, 1552. Between 1648 and 1697 came entirely under Fr. rule, though princes of the Empire and free cities retained certain rights until Fr. Revolution. Annexed with Lorraine, 1871, to Ger. Empire as an Imperial Territory, "Reichsland," not treated as a federal state; restored to Fr. 1918, after World War. **A.-Lorraine**, general designation for terr., W. Europe, surrendered by France to Ger. in 1871 and restored to France after World War. Comprises Alsace and part of Lorraine (*q.v.*).

**Alsatia**, 17th-cent. name of sanctuary for malefactors betw. Fleet St. and Thames in Whitefriars dist., London; abolished, 1697.

**Alsatian**, large wolf-like dog with smooth coat and pointed ears; form. used in Ger. to protect sheep from wolves and as a police-dog.

**Al seg.**, (mus.) abbr., *al segno* (It.), to the sign.

**Alsen**, isl., in Little Belt; 124 sq.m.; pop., 32,000; Dan. till 1864, then Pruss.; returned to Denmark, 1920; cap., *Sonderborg*.

**Alta.**, abbr., Alberta.

**Altai**, 1) mts. on Russ.-Mongol. frontier; highest point *Byelukha*, 15,000 ft.; 6 glaciers; source of: 2) Riv. Altai. Gold, silver, precious stones, copper; orig. inhabts., Calmucks, Mongols, etc.; now Russ. intermixture.

**Altaic language**: see LANGUAGE SURVEY, *Ural-Altaic Languages*.

**Altair**, 1st magn. star,  $\alpha$  of constell. *Aquila* (*q.v.*). See PL., ASTRONOMY, N.C.H., G.

**Altamira**, cave, Santander, N. Spain, nr. of Santillane del Mar; here were disc.

in 1879 the *Altamira Frescoes*, prehist. paintings of bisons, etc., belonging to Aurignacian and Magdalenian cultures (*qq.v.*).

**Altar**, orig. raised structure for sacrifice to a deity; structure on which elements



High Altar, Westminster Abbey

consecrated in Eucharist; communion table.

**A.-piece**, (archit.) decorative panel at back of altar; usu. adorned with bas-relief or painting; esp. magnificent in 15th-cent. churches.

**Altazimuth**, astronomical instrument attached to telescope for observing simultaneously the altitude and azimuth of a star, and thus fixing its exact apparent position.

**Altcar**, par., Lancs., 9 m. S.W. Southport; rifle range; coursing (Waterloo Cup).

**Altdorfer**, Albrecht (c. 1480-1538), Ger. artist and architect.

**Altenburg**, cap. of duchy of Saxe-Altenburg, Ger., situate nr. R. Pleisse; pop., 42,570; woollen goods, cigars, grain, cattle; castle; techn. coll., school of agriculture.

**Alter ego** (Lat.), one's second self; an intimate friend.

**Alternating current**, elec. current rapidly altering in direc., with corresponding change of voltage. Frequency for light and power gen. 50 *alternations* p. sec. **A. C. dynamos**, gen. with rotating fields and fixed armature; acc. to arrangement of coils in armature 2-phase A.C. or 3-phase A.C. for long-distance transmission (high tension). See DIRECT CURRENT; ELECTROLYSIS.

**Alternator**, (elec.) dynamo (*q.v.*) producing alternating current.

**Althæa**: see MARSHMALLOW.

**Althing**, legislative assembly of Iceland; originated in 10th cent.; present form dates from 1873, when Iceland was granted a constitution by Denmark; consists of 42 members, in two houses (14 and 28), who are elected by all men and women over 25 years.

**Althorp Park**, seat (Earl Spencer), Northants, Eng., 7 m. N.W. Northampton; picture gallery. On W. side of park is church of Great Brington (see BRINGTON, GREAT).

The Althorp library, formerly here, now in Rylands Lib., Manchester.

**Altimeter**, instr. by which height above sea-level is indicated. Used on aeroplanes and in mountaineering. See ANEROID BAROMETER.

**Altitude**, (astron.) angular height in degrees of a star above the astron. horizon (*q.v.*).

**Alto**, lowest female voice (commonly called contralto); boy's voice; male falsetto (counter-tenor); the viola, a tenor violin; clef giving C on the middle line, used chiefly for viola.

**Alton**, 1) mkt. tn., Hants; breweries, paper mills; pop., 6,000; 2) tn., Illinois, U.S.A., on Mississippi Riv.; pop., 30,200; hardware, glass, agric. machinery.

**Altona**, tn. on r. bank of Elbe, Schleswig-Holstein, Ger.; pop., 242,800; Danish, 1640-1864, now pt. of Hamburg; docks; indust.: iron fdries., machine factories, brewing, flour-milling.

**Altoona**, tn. in Pennsylvania, U.S.A.; pop., 82,950; coal-mining; manuf. locomotives and rly. cars. Scene of mutiny of northern "Loyal War Governors" to pledge support to Lincoln, 1862.

**Alto-relievo**: see HIGH RELIEF.

**Altrincham**, urban dist., Cheshire, Eng., 8 m. S.W. Manchester; pop., 21,400; residential and manuf. tn.; engineering, market-gardening.

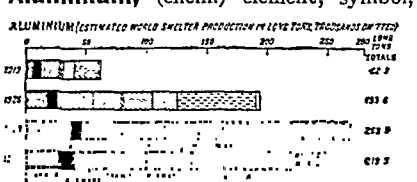
**Altruism**, conduct wh. has for its motive the well-being or good of others.

**Alum**, double sulphate of aluminium and potassium or ammonium; used in dyeing and tanning; also medic. as a haemostatic.

**Alumina**, aluminium oxide,  $Al_2O_3$ , occurs as colourless mineral corundum, and coloured by traces of impurities as ruby, sapphire, and amethyst. Emery is impure form, used as abrasive.

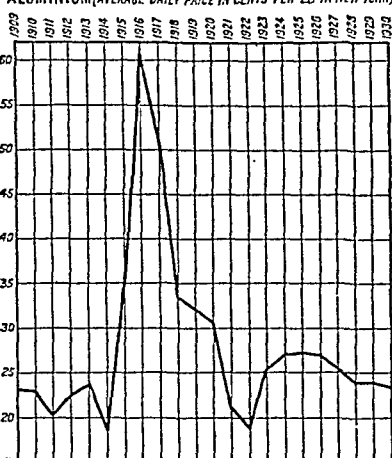
**Aluminate**, (chem.) aluminium hydroxide combined with alkalis; sodium aluminate,  $NaAlO_2$ , used for purifying water.

**Aluminium**, (chem.) element; symbol,



Al.; at. wt. 26.97; light, ductile metal; sp. gr. 2.7, m.p. 660° C; occurs only in combination as silicate (kaolin, *q.v.*), fluoride, or oxide as in bauxite. Used for cooking utensils, aeroplane, airship, and motor parts, gen. as an alloy with harder metals. Production of A. throughout the world, and esp. in Ger., has

ALUMINIUM (AVERAGE DAILY PRICE IN CENTS PER LB IN NEW YORK)



Enormous rise of prices in early years of war came before great inflationary period, owing mainly to sudden increase of demand for aeroplane construction, etc. Production has since kept pace with demand, reaching peak in 1920; U.S.A. produces about one-third.

become of increasing econ. importance. See HÉROULT FURNACE.

**Alumnus**, one who has been educated at a given school, college, or university.

**Alums**, double sulphates of aluminium, iron, chromium, or similar metal, and alkali metal, ammonium, or similar radicle. **Common** or **Potash a.**  $KAl(SO_4)_2 \cdot 12H_2O$ , used in various processes: e.g., dyeing, tanning; in medicine as astringent. **Burnt a.**, same salt freed from water by heating. Other alums are **Iron a.**,  $NH_4Fe(SO_4)_2 \cdot 12H_2O$ , **Chrome a.**,  $KCr(SO_4)_2 \cdot 12H_2O$ , **Ammonium a.**,  $NH_4Al(SO_4)_2 \cdot 12H_2O$ .

**Alva**, Ferdinand A. de Toledo, D. of (1508-82), Span. general; Gov. of Netherlands, 1567-73.

**Alverstone**, Richd. Everard Webster, 1st Visct. (1842-1915); Brit. lawyer; attorney-general, 1885-92, 1895-1900; repres. Gt. Brit. in Bering Sea arbitration, 1893; in Brit. Guiana-Venezuela boundary arbit., 1898; in Alaska boundary, 1903; apptd. Ld. Chf. Justice, 1900; retired, 1913.

**Alwar**, 1) native state, Rajputana agency, Brit. India; 3,220 sq.m.; pop., 701,200; 2) cap. of state; pop., 45,000; temples, palaces.

**Alyssum**, (bot.) genus of rock-plants (*Cruciferae*), with hairy leaves and clusters of white or yellow flowers.

**A.M.**, abbr., 1) *Artium Magister* (Lat.), Master of Arts; 2) *Alpes Maritimes* (Fr.); 3) *ante meridiem* (Lat.), before noon.

**Amadeus, Lake**, shallow salt lake, S.W. of Northern Territory, Australia, at foot of Macdonnell Mts.; no outlet.

**Amadis**, hero of mediaeval romances of chivalry.

**Amalekites**, (O.T.) nomadic race, descendants of Amalek, grandson of Esau; perpetual enemies of Israelites until subdued by Saul (I Sam. xiv).

**Amalfi**, port, Gulf of Salerno, Italy; pop., 6,000; inundated, 1343, devastated by earthquake, 1930; fishing, soap, paper, and macaroni manufacture.

**Amalgam**, alloy of mercury with other metals; e.g., with gold (for stopping teeth).

**Amalgamate**, in gen., to mix completely; with mercury, to coat surface with metal, e.g., zinc, in batteries.

**Amalings**, or Amals, Gothic and Ostrogothic roy. dynasty; fl. until extinction of male line in Theodoric the Great, 536.

**Amalthaea**, (Gr. myth.) a goat, the nurse of Zeus; (Rom. legend), Sibyl who sold Sibylline Books to Tarquin; (astron.) minor star in constellation Auriga; see Pl. ASTRONOMY, N.C.H., B.

**Amanullah Khan** (1892– ), Kg. of Afghanistan, 1919; depos. 1928.

**Amara**, 1) tn., Iraq, on Riv. Tigris, 120 m. below Kut-al-Amara; taken by Brit. from Turks, 3 June, 1915; 2) tn., Anglo-Egypt. Sudan, on W. bank Riv. Nile; ruined temples.

**Amaranth**, genus of plants which includes cockscomb (*A. cristatus*), Love-lies-bleeding (*A. caudatus*), etc.

**Amasis II** (569–525 B.C.), Kg. of Egypt; cultivated friendly relations with Greeks.

**Amateur**, one who follows an occupation for amusement, not profit, or engages in sport, games, etc., without payment. Ant.: *professional*.

**Amati**, It. family of violin-makers, 16th and 17th cents., at Cremona.

Antonius, & Hieronymus Fr. Amati  
Cremonen. Andrea fil. F. 1630

Amati Violin Label

**Amatol**, high explosive; mixture of ammonium nitrate and trinitrotoluene.

**Ammaurosis**, partial or total loss of sight. A term generally applied to blindness brought about by causes other than organic lesions of the eye.

**Amazon**, longest riv. of S. Amer. (3,500



Amazons, Greek Vase Painting

m.); rises as *Marañon* in Peruvian Andes, from wh. it issues in rapids; navigable for 2,700 m. before emptying itself by means of delta, 125 m. wide and full of islands, into Atlantic; more than 200 tribes; volume of water c. 27,000 cu.yds., with speed of 1½ m. per. hr.; greater pt. of A.'s course through Brazil. territory.

**Amazons**, legend. Scythian race of women soldiers; fought before Troy under their Queen, Penthesilea (*q.v.*).

**Ambala, Umballa**, 1) dist., Punjab, Brit. India; 1880 sq.m.; pop., c. 600,000; 2) cap. of dist.; pop., 76,400; milit. cantonment.

**Ambassador**, representative of a Great Power at a foreign court, ranking above a min. plenipotentiary; by international law his person is inviolate, his official residence extra-territorial, and he is entitled to direct access to the head of the State to wh. he is accredited.

**Amber**, fossilized gum of conifers of early geolog. periods. Sometimes opaque; found on *Amber Coast* (Pillau to Cranz, in Baltic).

**Ambergris**, excretion of sperm whale (intestinal); used in perfumery.

**Amble**, easy gait of horses, etc., both feet on one side being lifted together.

**Ambleside**, vil., Westmorland, Eng., Lake Dist., 1 m. N. of head of Windermere; tourist centre; pop., 2,400.

**Amboina**, 1) Dut. isl., most important of Moluccas (*q.v.*); 386 sq.m.; pop., 115,000; 2) cap. of A. and of the Moluccas; pop., 12,000; exports: cloves, copra, amboina wood; 3) Dut. residency, Moluccas, comprising isls. of Amboina, Ceram, etc., and parts of Dut. New Guinea; 76,600 sq.m.; pop., 400,100. **Massacre of A.**, extirpation of Eng. settlers by Dutch, 1623; commem. in Dryden's tragedy, *Amboyna* (1673).

**Ambrose, St.** (340–397), one of fathers of Latin ch., Bp. of Milan; champion of Catholics against Arians and pagans; author of many famous hymns, and Ambrosian ritual; *Te Deum* (*q.v.*) doubtfully ascribed to him. Commem., Dec. 7th.

**Ambrosia**, (Gr. myth.) the food of the gods.

**Ambrosian chant**, form of plain-chant introd. by St. Ambrose, later superseded by Gregorian chant, exc. at Milan, where it is still in use. **A. liturgy**, one of most ancient liturgies, adapted and adopted by St. Ambrose. **Ambrosians**, followers of Ambrose, Fr. Anabaptist, who claimed (c. 1559) to have received Divine revelation surpassing that of Holy Scripture.

**Ambulance**, conveyance for taking the sick and wounded, either in civil or military life, to hospital; also a moving milit. hospital. Following the example given by the St. John Ambulance Association (*q.v.*), *A. Corps*

have been organized in most of bigger Eng. towns, also by the various local govt. bodies and police forces. *See also* ROYAL ARMY MEDICAL CORPS.

**A.M.D.G.**, abbr. *ad maiorem Dei gloriam* (Lat.), to the greater glory of God; motto of the Jesuits.

**Âme damnée** (Fr.), lost soul; person wholly dominated by another's personality.

**Ameer, Amir, or Emir**, title used in the East to denote lord and applied to various dignitaries; in Afghanistan it signifies sovereign lord and is assumed by ruler. Orig. meant naval or milit. commdr.; Eng. *admiral* is a derivative.

**Amen** (Hebr.), interjection, So be it!, uttered at end of prayer, etc.

**Amende honorable** (Fr.), formal public apology and reparation.

**Amenhotep III** (1420-1376 B.C.), Kg. of Egypt; erected Memnon columns, Luxor.

**A. IV** (1384-64), religious reformer, worshipped sun-god Aton, hence surname Ikhnaton, "son of joy."

**A mensa et toro** (thoro) (Lat.), legal expression applied to judicial separation "from board and bed," as dist. from divorce.

**America** (*Western Hemisphere, or New World*), bordered by Atlantic, Pacific, and Arctic oceans, c. 16,200,000 sq.m.; pop., c. 220,000,000; consists of continents of N. and S. America, linked by Central America; from Cape Murchison on Boothia Felix (N.) to Cape Horn, Tierra del Fuego (S.), c. 9,400 m. The two continents have resemblances in form and structure: N. Amer. has the *Rocky Mtns.* on W. and *Appalachians* on E.; S. Amer. has *Andes* on W. and the highlands of Guiana and Brazil on E.; in centre each has prairie, forest, lakes, and rivers; regular coast, except on N. boundaries of N. America and in extreme S. of S. America; largest isl. Baffin Land (c.238,000 sq.m.), one of great group off Arctic coast; climate embraces all zones. The turkey, maize, potato, tobacco, and cocoa were introd. into Europe from Amer. Mineral wealth in both continents; precious stones in S.; Indian aboriginals disappearing in N. *Pioneers*: in Centr. and S.W. Amer., Spanish; in Brazil, Portuguese; in N. Amer., French, British, and Dutch. Said to have been reached by Norse rovers, c. A.D. 1000. Columbus discovd. the West Indian Isls., 1492; N. coast of S. Amer., 1498-1500; Centr. Amer., 1502-04. John Cabot (under patronage of Henry VII) left Bristol, 1497, and reached N. Amer.; Pedro Cabral (Portug.) discovd. Brazil, 1500; Ferdinand Magellan sailed through strait between S. Amer. and Tierra del Fuego, and across Pacific, 1520. Spain conquered Mexico, 1520, and Peru, 1520-30; countries held under European sovereignty for nearly 300 yrs. U.S. formed after War of Indep. (1775-83);

Brazil became an Empire, 1822; republic, 1889. America was named after Amerigo Vespucci (q.v.). *See also* CANADA, GUIANA, WEST INDIES, MEXICO, UNITED STATES, and the names of the various Centr. and S. American Repubs. African Negroes imported as slaves (emancipated 1865); approx. percent. of pop. in all Amer.: 65% white, 25% Indian (mainly in S.), 10% Negroes. **Central A.**, neck of land of Amer. continent betw. Atlantic and Pacific, connecting N. and S. Amer.; Isthmus of Tehuantepec on N.W. and Isthmus of Panama on S.E.; chiefly mountainous country (*Tajumulco*, 13,820 ft.), numerous volcanoes; products: coffee, rice, cotton, sugar cane, bananas, tobacco. *States*: Guatemala, Honduras, Salvador, Nicaragua, Costa Rica, Panama; British Honduras. **North A.**, N. half of Amer., bounded by Arctic, Atlantic, Pacific oceans and Gulf of Mexico; connected with S. America by Centr. America and mtn. chain of W. Indian Isls.; area, without the Arctic, c. 7,750,000 sq.m. Countries from N. to S.: *Alaska* (belonging to U.S.A.), *Canada* (Br. Dominion), *United States, Mexico*. **South A.**, S. half of Amer., bounded by Caribbean Sea, Atlantic and Pacific oceans, connected with N. America by Isthmus of Panama and Central America; c. 6,800,000 sq.m.; pop., c. 80,000,000; comprises Venezuela, Colombia, Ecuador, Peru, Chile, Brazil, Bolivia, Paraguay, Uruguay, Argentina, and Brit., Dutch, and Fr. Guiana.

**America Cup**, internat. yacht race, inaug. 1851 betw. N.Y. Yacht Club and Royal Yacht Squadron.

Won by U.S. yacht "America" in Eng. waters, since when 14 races won by Amer. in Amer. waters (5 unsuc. Engl. attempts by Sir Thomas Lipton with 5 yachts all named "Shamrock").

**American Civil War**: *see* SECESSION, WAR OF; UNITED STATES (History). **A. cloth**, smooth, shiny fabric, gen. cotton, impregnated with mixture of linseed-oil varnish and colourg. matter, imitatg. leather. **A. goldfinch**: *see* GOLDFINCH. **A. Independence, War of**: *see* UNITED STATES (History). **A. Indians**: *see* INDIANS. **A. Languages**: *see* LANGUAGE SURVEY.

**Amerinds**, native aboriginal races of N., Cent., and S. America. *See* INDIANS.

**Amerongen**, vill., Utrecht, Holland;



America Cup



resid. of ex-Kaiser Wilhelm II, 1918-20.

**A merveille** (Fr.), marvellously; admirably, very well.

**Amesbury**, 1) tn., Wilts., Eng., nr. S.E. edge Salisbury Plain; pop., 1,500; abbey church, relic of the abbey where Qn. Guinevere lived in penance; anc. Brit. earthwork ("Vespasian's Camp") on hill to W.; Stonehenge (q.v.) 2 m. W.; 2) tn., Massachusetts, U.S.A.; pop., 11,900.

**Amethyst**, a semi-precious quartz (q.v.), ranging in colour from lilac to purple; its name indicates ancient belief that it had the power of preventing intoxication.

**Amharic** (see LANGUAGE SURVEY, IV. *Semitic*), spoken in Abyssinia; based on Ethiopic or Geez.

**Amherst**, 1) tn., Mass., U.S.A.; pop., 6,000; *A. College* (1821); 2) seapt., Nova Scotia, Canada, at head Chignecto Bay; pop., 10,000.

**Amice**, R.C. eccles. vestment worn by celebrant and ministers at Mass; square of white linen, occas. ornamented, round neck and shoulders.

**A.M.I.C.E.**, abbr. Assoc. Member Instit. of Civil Engineers.

**Microscopic**, so small as to be invisible in the ultra-microscope (q.v.), i.e., smaller than 0.1  $\mu$ , or about 1/250,000,000 inch.

**Amicus curiae** (Lat.), a friend of the Court; legal term for one not taking part in a trial, but helping with his advice.

**Amides**, chem. compounds containing group  $\text{—NH}_2$ ; derived from ammonia,  $\text{NH}_3$ .

**A.M.I.E.E.**, abbr. Assoc. Member of Instit. of Electrical Engineers.

**Amiel**, Henri Frédéric (1821-81), Swiss scholar and memoir-writer; prof. aesthetics and Fr. Lit. Acad. of Geneva.

**Amiens**, cap. of dépt. Somme, France; pop., 91,576; cathed. dating from 13th cent.; manuf. centre for linen, wool, silks, and velvets.

**Treaty of A.**, 1802, betw. Fr. and Eng.; Eng. agreed to relinquish all her conquests except Ceylon and Trinidad, and Fr. recognised the republic of the Ionian Isles, evacuated Naples and Papal States; terminated by renewal of war, 1803. **Battle of A.**, Aug. 8th, 1918, Brit., French, Canadians, and Americans defeated Germans, and freed Amiens-Paris rly.; turning-point in the World War. See VILLERS-BRETONNEUX.

**Amino-acids**, important class of organic acids, containing Amino group  $\text{NH}_2$ ; formed by hydrolysis of proteins; both acidic and basic.

**Amir**: see AMEER.

**Amirante Islands**, group, Ind. Ocean, 150 m. S.W. of the Seychelles (q.v.), by wh. it is administered.

**Amman**, ruined city, Transjordan, anc. *Amman* or *Philadelphia*, cap. of the *Ammonites*.

**Ammianus Marcellinus** (c. 320-400), wrote history of Rome, 18 bks. of wh., covering period 353-78, are extant.

**Ammon**, **Amon**, Egypt. deity; as Amon-Ra ("king of the gods"), chief god of the State.

**Ammonia**, (chem.)  $\text{NH}_3$ , pungent water-soluble gas formed as a by-product in manuf. of coal gas or from atmos. nitrogen; used in refrigeration and in production of artificial manures. Liquid ammonia is a solution of the gas in water. See NITROGEN, FIXATION OF.

**Ammonite**, cephalopod mollusc, sometimes with thick, strong shell; widely distrib.; marine animal until Cretaceous times, since when extinct; branch of the species known as *Nautilus* still found in Sunda Archipelago. Also term for flat, spiral fossil shell of above, resembling ram's horn.



Ammonite

**Ammonites**, (O.T.) Transjordanic tribe akin to Israelites; defeated by Jephthah and Saul; befriended David in exile, who later annexed their territory; A. regained independence and allied themselves to Assyria; subjugated by Judas Maccabeus, 164 B.C.; merged in the Arab peoples by close of 2nd cent. A.D.

**Ammonium**, radicle  $\text{—NH}_4$ , which has the properties of an alkali metal, forming similar salts, and an amalgam with mercury. Not known in free state.

**Ammunition**, collective name for explosives, projectiles, and their cases, etc., used to charge firearms; e.g. shells, cartridges, etc.

**Amnesia**, forgetfulness of previous events, e.g., in cases of hypnosis, epilepsy, narcosis, and senile dementia.

**Amnion**, (physiol.) membrane covering the foetus and containing the *amniotic fluid*.

**Amoeba**, genus of unicellular animals, *rhizopoda*; found in

water, damp ground, and intestines of animals; progress by protruding and retracting processes (*pseudopodia*) from



a without capsule, b in capsule the protoplasmic body; their form changes continually. Food is absorbed by surrounding it. A. may be cause of aggravation in certain diseases, e.g., intestinal disease, dysentery.

**Amok** (Malay), a form of frenzy. **To run a.**, to rush about frenziedly attacking anybody met, usu. with a knife (fig.) to act in an uncontrolled manner.

**Amon**, **Amon-Ra**: see AMMON.

**Amontillado**, dry Sp. wine; sherry of deep golden colour.

**Amor** (Lat.; Gr., *Eros*), god of love, Cupid. Son of Venus and Mars; repre-



Amor and Psyche

sented with quiver, bow, and arrow; lover of Psyche.

**Amorini**, winged cherubs (companions of Amor often appearing as a decorative or symbolic embellishment of Renaissance pictures or sculpture. Also called *Putti*).

**Amorites**, (O.T.) Semitic hill tribes, S.W. Palestine.

**Amorphous** (lit. formless), in phys. opposed to crystalline; used of substances in non-crystalline condition (e.g., lampblack).

**Amortization**, systematic redemption of funds or loans by annual pymt. from a sinking fund; see MORTGAGE.

**Amor vincit omnia** (Lat.), love conquers all.

**Amos**, (O.T.) a Judæan; prophet in Israel (c. 750 B.C.); author of the Bk. of A., in wh. is foretold the Messianic age.

**Amour-propre** (Fr.), self-respect, pride.

**Amoy**, treaty port, in prov. of Fu-kien, S. China; pop., 300,000.

**Amp.**, abbr. ampère.

**Ampelopsis**: see VIRGINIA CREEPER.

**Ampère**, 1) André Marie, Fr. physicist and math. (1775-1836); investigated effects of elec. currents on one another, and the magnetic field of a current; 2) unit of elec. current named after him—the unvarying current which, when passed through a neutral solution of nitrate of silver, deposits 0.001118 gramme per sec.

**Amphibia**, group of vertebrates living partly on land, partly in water; smooth-skinned. Larvæ (tadpoles) breathe through gills; adults, through lungs.

1) *Apoda*, limbless A., small, worm-like, burrowing creatures found in tropics; 2) *Urodela* or tailed A., salamanders, newts, etc.; 3) *Anura* or tailless A., frogs and toads.

**Amphibian** (aeronaut.), an aeroplane designed to operate either from land or water.

**Amphibole**, name given to a group of rock-forming minerals of various forms and colours, including hornblende (q.v.).

**Amphictyonic Council** (or League), (Gr. hist.) deputation of 12 from the Gr. cities, meeting alternately at Delphi and Thermopylæ to manage Gr. affairs, esp. the temples and oracles of Delphi. Among other incidents arising from its upholding Gr. rights were the Sacred Wars of 598-586 and 356-346 B.C.

**Amphion**, (Gr. myth.) s. of Zeus and Antiope; with his twin brother Zethus took Thebes, afterwards fortifying it. A. played his lyre (a gift of Hermes) so skilfully that the stones fitted themselves into the walls of their own accord. A. became husband of Niobe (q.v.).

**Amphioxus**, or *Lancelet*, marine animal with a notochord in place of bony vertebrae; most primitive of the Vertebrata.

**Amphisbæna**, 1) in Greek legend, fabulous monster with head at either end. 2) (Zool.) Group of lizards with long, worm-like bodies, capable of moving equally well either backwards or forwards; found in tropical and sub-tropical regions.

**Amphitheatre**, anc. open-air stage having an arena with seats in circular tiers ranged in successive gradations.

**Amphitrite**, (Gr. myth.) sea goddess, wife of Poseidon.

**Amphitryon**, (Gr. myth.) Kg. of Thebes, stepfather of Heracles.

**Amphora**, antique two-handled vase (q.v.).



Greek Amphitheatre

**Amplification**, in wireless, increasing strength of elec. currents, usu. by means of valves (q.v.) which act as relays (q.v.). **Low frequency a.**, for low-frequency (speech current) signals; **high-frequency a.** for electro-magnetic waves as recd. **A. factor**, of a valve, factor by wh. it multiplies strength of current recd. **Amplifier**, whole arangmt. of valves and adjuncts (transformers, resistances, condensers), wh. amplifies usu. in "stages." See WIRELESS TELEGRAPHY.

**Amplitude**, (phys.) extent of vibration or oscillation (q.v.), e.g. of pendulum.

**Ampullæ**, (eccles.) cruets for wine and water used at Mass; vessels in wh. holy oil for chrism, unction, or coronation is kept.

**Amritsar**, city, Punjab, India; pop., 264,900; noted for cashmere shawls and carpets; relig. cap. of the Sikhs (q.v.), with marble temple in Sacred Tank.

**Amsterdam**, 1) chf. city and commercial cap. of Holland, on S. shore of the Y (inlet of Zuider Zee), at mouth of Riv. Amstel; largely built on piles; intersected by canals; connected with N. Sea by canal to Ymuiden and with Rhine and Meuse by Merwede Canal. Pop., 752,000. Royal palace; Oude Kerk (1300); Nieuwe Kerk (1400); Ryks Museum (picture gallery of Dut. and Flemish schools; Rembrandt); two universities; seapt. (harbour); airport; diamond-cutting; iron, chem., and soap works; tanneries, breweries, tobacco factories. Birthplace of Spinoza. 2) tn., New York State, U.S.A.; pop., 34,800; manuf.: carpets, brooms, silk wear, and oil-cake; race-horse breeding; trading centre.

**Amu Daria** (*Oxus*), riv. in Turkestan, 1,550 m., rises in Pamir plateau and flows to Sea of Aral.

**Amulet**, object worn as protection agst. evil, witchcraft, etc.

**Amundsen**, Roald (1872-1928), Norw.



Ampère

polar explorer; made N.W. Passage, 1903-06; first to reach S. Pole, 1910-12; flew over N. Pole in airship "Norge," 1926; died rescuing Nobile (q.v.) near N. Pole.

**Amur**, 1) river (2,800 m.), Eastern Asia, part of boundary betw. E. Siberia and Manchuria, navig. in summer. Formed by confluence of Riv. Shilka and Riv. Argun; chf. tribs.: Bureja, Sungari, Ussuri, and Zeya; falls into Gulf of Tartary. 2) Prov., Far Eastern Area of Russian S.F.S.R.; 91,500 sq.m.; pop., 393,570; cap., *Blagoveshchensk*; timber, coal, metals.



Amundsen

**Amurath (Murad)**, Sultans of Turkey. **A. I** (1319-89), first S. to make Eur. conquests; killed at Kosovo (q.v.). **A. II** (c. 1403-51), besieged Constantinople (1423); wars with Hungary and Morea. **A. III** (1546-95), wars with Austria and Persia. **A. IV** (c. 1611-40), captured Bagdad (1638).

**Amyclae**, (anc. geogr.) city, Laconia, Peloponnesus, Greece, 2½ m. S.E. Sparta; tradit. home of Castor and Pollux; festival of the Hyacinthia.

**Amygdalin**,  $C_{20}H_{27}O_{11}N_3 \cdot 3H_2O$ , glucoside (q.v.) present in bitter almond and other seeds; on hydrolysis forms *benzaldehyde* and *hydrocyanic acid*.

**Amyl acetate**, (chem.)  $CH_3CO_2C_5H_{11}$ , an important solvent of celluloid used in paints and enamels, and for joining celluloid. **A. nitrite**, (chem.)  $C_5H_{11}NO_2$ , volatile straw-coloured liquid admin. by inhalation (3 to 5 drops) in *angina pectoris* and other diseases.

**Anabaptists**, Protestant fanatics of 16th cent.; forerunners of Baptists (q.v.).

**Anabas**, (zool.) genus of East Indian and African fresh-water fish, the so-called climbing-perch, with modified gills and stiff fins, which enable it to travel some distance overland from stream to stream.

**Anabasis**, account by Xenophon of expedition of the younger Cyrus against his brother Artaxerxes, and of the Retreat of the Ten Thousand after the death of Cyrus at Cunaxa, 401 B.C.

**Anabolism**: see METABOLISM.

**Anachronism**, error in reg. to hist. period in wh. an event took place; incorrect reference.

**Anacletus, Pope**: see CLETUS.

**Anacoluthon**, lack of grammat. sequence in construction of sentence, sometimes delib. to give force, e.g., "And he charged him to tell no man; but go show thyself."

**Anaconda**, 1) tn., Montana, U.S.A.; pop., 12,500; copper and zinc smelting; 2) a tropical Amer. snake, which reaches 30 ft. in length and kills its prey by crushing; will man.

**Anacreon** (c. 536-c. 478 B.C.), Gr. lyric poet; only few genuine fragments extant; the *Anacreontic Poems* are much later Alexandrian imitations.

**Anaemia**, deficiency of blood, of red blood corpuscles, or of haemoglobin (colouring matter); two forms of primary A.: 1) *chlorosis*, due to lack of iron in diet; 2) *pernicious*, wh. is treated by a diet of liver or the like, usually in the form of extract. **Secondary a.** may be due to loss of blood or to the presence of a substance or bacterium in the blood which destroys the corpuscles.



Anacreon

**Anaerobic bacteria**, those capable of living without air or free oxygen.

**Anaesthesia**, condition in wh. there is loss of sensation; occurs in diseases of nervous system. **General a.**, loss of sensation of whole body accompanied by loss of consciousness and by muscular relaxation; produced by inhalation of chloroform, ether, etc. **Local a.**, loss of sensation of a limited area of body, produced by injection of cocaine, etc.

**Anagram**, transposition of letters or phrase to form a diff. word, or phrase e.g., *evil*, *veil*.

**Anakim**, (O.T.) tribe of reputed giants nr. Hebron called after **Anak** (Num. xiii, 33); fought agst. Israelites, overthrown by Joshua (Jos. xi).

**Analogy**, agreemt. in certain characteristics; in law, applicatn. of a legal maxim to a fact or conditn. not referd. to in the legal code.

**Analysis** (Gr.), 1) (chem.) separation or division of a compound substance into its component parts; 2) resolution of ideas into their logical components; 3) minute examination of grammatical structure of a sentence. See also PSYCHO-ANALYSIS. **Analytical language** (Ant.: *inflectional L.*), one that expresses grammatical relations by separate words instead of by inflexions. **Harmonic A.**, applied in mathematics, physics, engineering, etc., to express any periodic phenomenon (rise and fall of tide, sound emitted by instrument, statistical curves, alternating electric currents) as sum of a number of simple harmonic curves. *Kelvin's Harmonic Analyser*, machine used to perform analysis of any curve.

**Ananias**, (N.T.) 1) Disciple who baptized Paul. 2) A. and his wife Sapphira; struck dead after being rebuked by Peter for lying (Acts, v). 3) High priest (c. 47-59 A.D.), one of Paul's accusers; slain by mob.

**Anapaest**, Gr. met. foot: ~ ~ —.

**Anaphora**, gram. figure; repetition of same words at begin. of sev. successive clauses.

**Anaphylaxis**, excessive susceptibility to certain proteins; may be caused by injections

of horse or other serum or occasioned by inhaling or eating protein-contg. substances, cause of hay-fever and some forms of asthma.

**Anarchism**, polit. theory repudiating all forms of central govt., in favour of volunt. agreements betw. individuals or freely constituted groups; taught by Zeno (4th cent. B.C.); first formulated in Godwin's *Political Justice* (1793), developed by Proudhon, Kropotkin, etc. The active Anarchist usu. urges destruction of existing govts. by methods of terrorism.

**Anastasius**, name of 4 popes, of whom the most import., historically, are: **A. I**, St. (399-401), condemned works of Origen. **A. II** (496-98), attempted to end schism betw. sees of Rome and Constantinople, for wh. Dante placed him in Hell. **A. IV** (1153-54), determ. antagonist to Anacletus II, ended quarrel abt. St. William of York by sending him pallium.

**Anastigmat**, **Anastigmatic lens**, combination of lenses, esp. for photographic appar., free from astigmatism (q.v.).

**Anathema**, orig. sacrificial offering, "thing devoted" (to evil); curse or ban pronounced with eccles. authority, accompanied by excommunication; any strong imprecation; person or thing so cursed, or heartily reprobated. See also MARANATHA.

**Anatolia**, land E. of the Aegean; anc. name for Asia Minor, revived by mod. Turkey.

**Anaxagoras** (500-428 B.C.), Gr. teacher of Ionian philosophy (q.v.).

**Anax andrón** (Gr.), king of men; epithet for Agamemnon (q.v.) in the *Iliad*.

**Anaximander** (611-547 B.C.), Gr. teacher of Ionian philosophy (q.v.).

**Anaximenes**, Gr. rhetorician of 6th cent. B.C.; lived at Miletus; friend of Thales and Anaximander; regarded air as the primary substance.

**Ancestor worship**, relig. worship of souls of dead ancestors, practised in Japan, China, and among many primitive races.

**Anchises**, in Gr. legend, Prince of Troy; lover of Aphrodite, who bore him a son, Aeneas. For disclosing the name of his beloved he was struck blind.

**Anchor**, instrument for mooring ships and boats when afloat, consisting of strong iron or steel bar, having at one end curved arms with a fluke or hook at each extremity, wh. becomes embedded in sea or river bottom, and, at the other end, a ring to wh. a cable is attached that is fastened to ship. A.s. derive their distinctive names from: 1) method of use, e.g., *Drag A.*, *Kedge A.*; 2) object to wh. attached; e.g., *Ice A.*; 3) shape; *Grapnel A.*, *Mushroom Anchor*.

**Anchorite**, one who isolates himself from the world, esp. for religious reasons; hermit, recluse.

**Anchovy**, a small, silvery fish of same family as the herring (q.v.); abundant in the Mediterranean, where important fishery.

**Ancien régime** (Fr.), the old order or system; esp. applied to pre-Revolutionary France.

**Ancient lights**, in Eng. law, windows in respect of wh. a heritable right exists to enjoy daylight unencumbered by any subsequent erection.

**Ancona**, fort. port on Adriatic, Italy; pop., 83,236; 12th-cent. cathed.; indus.: sugar-refining, shipbuilding; chf. exports: asphalt and calcium carbide.

**Ancre**, riv., N. France, trib. of Riv. Somme; in area of severe fighting during World War from Feb., 1915, "Battle of Tanks," 8-10 Aug., 1918, betw. rivs. Ancre and Avre.

**Ancrum Moor**, heath, Roxburghsh., Scot., 4 m. E. St. Boswells, where the Scots beat the English in 1544.

**And.**, (mus.), abbr., *andante* (q.v.).

**Andalusia**, former prov. of Spain, comprising (till 1833) mod. provs. Almería, Cadiz, Cordova, Granada, Huelva, Jaén, Malaga, and Seville. Watered by Guadalquivir; mainly very fertile.

**Andaman Islands and Nicobar Islands**, two groups Brit. islands in the Bay of Bengal, forming prov. Brit. India. **Andaman Is.**, area c. 2,500 sq.m.; pop., 26,800, including Negrito aborigines. **Nicobar Is.**, area c. 600 sq.m.; pop., 9,260; cap., *Port Blair*, on S. Andaman. Copra, rubber, tortoiseshell. Convict settlement since 1858 (Andamans) and since 1869 (Nicobars).

**Andante**, (mus.) quietly, in moderately slow tempo.

**Anderida**, anc. Rom. fort, Pevensey, Sussex, Eng., predecessor of Pevensey Castle; taken by Ella and Cessa from the (Rom.) Count of the Saxon Shore, 491. The *Forest of A.* formerly covered a large part of Sussex.

**Andermatt**, vill., upper valley of Reuss, Uri, Switzl.; pop., 1,000; 4,750 ft. above sea-level, on St. Gothard-Furka-Oberalp road; winter health resort.

**Andersen**, Hans Christian (1805-75), Dan. auth.; *Fairy Tales*.

**Anderson**, Eliz. Garrett (1836-1917), Eng. physician; 1st woman with Brit. med. degree; pioneer of med. educ. for women; 1st wom. mayor in Eng., Aldeburgh, 1907. The *Eliz. Garrett Anderson Hospital*, London, grew from a dispensary where she worked many years.

**Andes**, or **Cordilleras de los Andes**, mt. system, S. America, extending W. side of continent from Isthmus of Panama to Cape



Hans Andersen

Horn; length, 4,000 m., widest in N. (up to 500 m.) where they divide into two or three main chains, divided by high plateaux (av. alt., 12,000 ft.). Numerous volcanoes (26 active, over 30 extinct), incl. Chimborazo (20,701 ft.), Cotopaxi (19,686 ft.), Sajama (21,048 ft.), Tupungato (21,490 ft.). Highest peak, Sorata, in Bolivia (25,248 ft.). Lake Titicaca (alt., 12,500 ft.; area, 3,300 sq.m.), world's highest navigable lake. Silver mines; coal. Two rlys. cross A.; Transandine Rly. through tunnel 10,500 ft. abv. sea-level.

**Andorra**, semi-indep. state in E. Pyrenees, under protection of France and the Bp. of Urgel (Span.); 190 sq.m.; pop., 5,200; horse-breeding, stock-raising, vines, tobacco; smuggling betw. Spain and France.



**Andover**, 1) munic. bor., Hants, Eng.; pop., 9,700; R.A.F. Staff College; cattle and corn markets; iron foundry; printing works. 2) Tn., Massachusetts, U.S.A.; pop., 10,000; educ. academy; textiles; tomb of Harriet Beecher Stowe.

**Andrade**, Edw. Neville da Costa (1887- ), Brit. physicist, Quain Prof. Physics, London Univ.; *The Structure of the Atom*, 1923, etc.

**Andrássy, Ct. Gyula** (1823-90), Hungar. statesman, leader in agitation of 1848; exiled, 1849-58; 1st constitutional premier, 1867; foreign minister of Austr.-Hung., 1871. **A. note**, urging on Turkey conciliation with Bosnia, 1876. **A., Ct. Gyula** (1860-1929), son of above; Hung. minister of interior, 1906; foreign minister of Austr.-Hung., 1918; sought to conclude separate peace in World War.

**André**, Maj. John (1751-80), Brit. officer; served in the American War; arrested by Americans and condemned as a spy: executed by hanging.

**Andrea del Sarto** (1486-1531), the *Perfect Painter*, It. painter; frescoes in Servite Church, Florence; *Madonna di S. Francesco*, c. 1517.

**Andrée**, Salomon (1854-97), Swed. engineer; perished in balloon flight to N. Pole. Remains (diaries, etc.) found 1930.

**Andrew**, (N.T.) one of 12 Apostles, bro. of Peter. Crucified on diagonal cross (*St. Andrew's Cross*). Patron Saint of Scotland; day: Nov. 30th.

**Andrew**, Kgs of Hungary. **A. I** (1047-1061); **A. II** (1205-1235); **A. III** (1290-1301).

**Andrewes**, Lancelot (1555-1626), Eng. bp. and author; dean of Westminster, 1601; bp. of Chichester (1605), Ely (1609), and Winchester (1618); one of translators of Bible; *Tortura Torti*, 1609.

**Andreyeff**, Leonid Nicolaievich (1871-1919), Russ. novelist and dramatist: *The Red*

*Laugh*, 1905; *The Life of Man*, 1907; *The Seven That Were Hanged*, 1909; *S.O.S.*, 1919.

**Andromache**, in *Iliad*; Hector's wife.

**Andromeda**, (Gr. myth.) dau. of Ethiopian Kg. Cepheus; fastened to a rock and delivered by Perseus; (astron.) constellation in N.C.H.; also a spiral nebula (*q.v.*) in this constell., the largest visible to naked eye. See Pl. ASTRONOMY, N.C.H., A.

**Andronicus**, name of 3 emperors of the Eastern Roman Empire: **A. I**, *Comnenus* (c. 1110-83-85), grandson of Alexius I (*q.v.*); murdered his uncle Alex. II, usurped throne, but defeated by Isaac Angelus, who put him to death. **A. II**, *Palæologus* (c. 1259-82-1332), empire ravaged by revolt of Catalan Grand Company agst. Ottoman Turks; de-throned by grandson, A. III, c. 1328. **A. III**, *Palæologus* (c. 1296-1328-41), engaged in unsuccessful wars with Turks.

**Andros** (*Andro*), 1) Gr. isl., most N. of Cyclades; 156 sq.m.; pop., 19,000; silk-worm breeding; 2) cap. of A.; pop., 1,990.

**Anemometer**, apparatus for measuring velocity of a current of air (wind) or gas; usu. of windmill type, the number of revolutions in a given time being related to speed of wind.

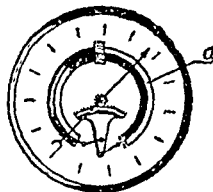
**Anemone**, the windflower, *Anemone nemorosa* (wild anemone), white or pinkish spring flower, grows to 6 ins.; many cultivated varieties.



Anemone

**Anerley**, residentl. suburb, S. London in urb. dist. of Penge.

**Aneroid barometer**, thin metal tube or box of elastic material from wh. the air is almost exhausted, causing it to yield to atmospheric pressure, degree of yield, and hence the pressure of atmosphere, being indicated by a pointer linked to some part of the box or tube.

Aneroid Barometer  
a Tubes

**Aneurysm**, pathological dilatation of walls of an artery, esp. the *Aorta*, to verge of rupture.

**Angara**, riv. (1,100 m.), Siberia, issues from Lake Baikal, flows into Riv. Yenisei; navigable.

**Angary** (internat. law), right of a State at war to seize and use property of an enemy, or neutral on belligerent territory, for its own purposes, or to prevent its use by the enemy.

**Angel** (Gr., messenger), 1) supernatural, immortal minister of God with superhuman powers and intelligence; guardian spirit; 2)

Eng. gold coin of 15th-17th cent.; value, 7s. to 10s. **A. choir**, series of carved or painted angels, usu. with musical instruments, adorning spandrels, or soffits of arches in Gothic architecture. **A. skin**, *peau d'ange*, strong satin tissue with dull, non-shiny surface, used for ladies' garments and trimmings.

**Angelica**, *Archangelica officinalis*, umbelliferous plant indigenous to N. Eur. and Asia; root is used in medicine as a stimulating expectorant and aromatic; stem, when candied, is used in confectionery. Wild angelica, *A. sylvestris*, widely distributed.

**Angelico**, **Fra** (Giovanni da Fiesole) (1387-1455), Ital. Dominican monk and painter; famous frescoes in Museo di San Marco, Florence.

**Angell**, Sir Norman (1874- ), Brit. publicist. Wrote *The Great Illusion*, 1910, (new Edn., 1933), prophesying World War and its economic effects.

**Angelus**, Cath. devotion commemorating the Incarnation, recited morning, noon, and night. **A. bell**, rung to indicate appropriate hour for this recital.

**Angermanland**, dist. on Gulf of Bothnia, Sweden; 8,100 sq.m.; pop., 180,470; form. prov., now incld. in govt. of Westernorrland; forestry, stock-raising, mining, agriculture.

**Angers** (Rom., *Andegavia*), cap., dépt. Maine-et-Loire, France, on Riv. Maine; former cap. of Anjou; cath., cas., univ.; agric. centre; pop., 78,000.

**Angevins**, Plantagenet kgs. of England from Henry II to Richard II; so called because the dynasty originated in Anjou (q.v.).

**Angina**, (med.) a feeling of suffocation. **A. pectoris**, painful, cramp-like affection of heart, accomp. by pallor, feeling of constriction of chest, of impending death; often dangerous; occurs usu. in men and women over 40 yrs. of age.

**Angiosperms**, (bot.) flowering plants, whose seeds are enclosed in ovaries. Ant.: *Gymnosperms* (q.v.).

**Angkor**, ruined city on Riv. Siem-Reap, in Cambodia, Fr. Indo-China; temple dedicated to Siva (*Angkor Vat*).

**Angle**, (math.) degree of space separating two intersecting straight lines, as right A. (90°), in which lines are perpendicular to each other; acute A. encloses less and obtuse A. more than 90° of space; a straight A. is 180°; a reflex A. betw. 180° and 360°. **A. iron**, iron or mild steel rolled in bars of L section. See also PROFILE IRON. **A. of repose**, angle with the ground made by sand, soil, earth, or other loose material when allowed to form a natural heap or bank.

**Angler-fish**: see DEVIL-FISH.

**Angles**, Germanic race from reg. of present Schleswig and Flensburg; crossed about A.D. 450, in a series of migrations with Jutes

and Saxons, to Britain, where they merged into *Anglo-Saxons*. See GREAT BRITAIN.

**Anglesey**, Hy. Wm. Paget, 1st Marq. of (1768-1854), Eng. general and statesman; served in Low Countries and Spain, 1808-09; commanded Brit. cavalry at Waterloo, 1815; Ld.-Lieutenant of Ireland, 1828-29, 1830-33.

**Anglesey** (Rom., *Mona*), isl. co., N.W. Wales, sep. from mainland by Menai Straits (rly. and road bridges). Flat, barren, and treeless plain; cattle- and sheep-breeding. Area, 290 sq.m.; pop., 49,000. Once seat of Druids (q.v.). Cap., Beaumaris; Holyhead is chief port for I. F. S..

**Anglican Church**: see ENGLAND, CHURCH OF. **A. communion**, body of episc. churches in communion with Church of England (q.v.), e.g., those of Ireland and various dominions and colonies.

**Anglice** (Lat.), in English.

**Anglicism**, Eng. idiom in another language.

**Angling**, fishing with rod, line and hook, to which natural or artificial bait (worm, insect, etc.) is attached.

**Anglo-Catholics**, members of Ch. of E. who maintain that its connection with Cath. Ch. was not broken at Reformation.

**Anglo-Egyptian Sudan**, Brit. Crown Colony, E. Sudan (q.v.), bounded N. by Libya and Egypt, W. by Fr. Equatorial Africa, S. by Belgian Congo and Uganda, E. by Abyssinia, Eritrea, and Red Sea; 1,008,100 sq.m.; pop., 5,600,000 (Arabs, Negroes; 3,000 Europeans). Watered by Riv. Nile (five cataracts); Nubian Desert betw. Nile and Red Sea coast; mtn. range (up to 7,500 ft.) parallel with coast; isl. of Meroe (betw. the Atbara and Blue Nile) very fertile; W. of Nile, desert (oases); forests and unhealthy swamps in S. Climate tropical. Rlys., 2,000 m. Exports: gum arabic, cotton, ground-nuts, ivory, gold. Chf. tns.: Khartoum (cap.), Omdurman, Wadi Halfa.

**Anglo-Israelite theory**, attempt to establish descent of the Eng.-speaking peoples from 10 tribes of Israel wh. dispersed after deportation from Canaan.

**Anglo-Saxon**, O. Eng.: see LANGUAGE SURVEY, Eng.; from c. 600-1100; **A.-S. Chronicle**, document of great importance for early Eng. hist. Prob. begun under Alfred (q.v.) and cont. to 1154.

**Angola**, or **Portuguese W. Africa**, largest Portuguese colony, S.W. Africa; bounded N. by Belgian Congo, E. by Belgian Congo and N. Rhodesia, S. by S.W. Africa, W. by the Atlantic; 485,000 sq.m.; pop., 2,120,000. Coastal plain leading up to interior plateau (4-6,000 ft.); Kwanza and Kunere chf. rivs., flowing into Atlantic; damp, hot climate; rubber, coffee, cotton, palm oil, sugar, salt, ivory. Silver, copper, and iron unexploited.

Cap., New Lisbon (Nova Lisboa), 280 m. inland on Benguella Rly. (*q.v.*); ports: Loanda (former cap.), Lobito Bay, Benguella, and Mossamedes. **A. hemp**, *Sansevieria cylindrica*, plant native to Africa; fibre used in rope-making.

**Angora**, *Ankara*, 1) Turk. vilayet, Asia Minor; 9,800 sq.m.; pop., 404,580; watered by Kizil Irmak, Sakaria, etc.; largely cultivated; grain and fruit; silver and copper; hot springs; 2) (anc. **Ancyra**), cap. of A., and (since 1923) of Turkey; pop., 74,800; honey, fruit, mohair manufacture. **A. cat**, breed of domestic cat with long, silky hair. **A. goat**, bred in neighbourhood of Angora; very long, silky hair (*Angora wool*).

**Angostura**: see CIUDAD BOLIVAR. **A. bitters**, bitters made from vegetable tonics, orig. manuf. at Angostura.

**Angoulême**, cap. of dépt. Charente, France, on Riv. Charente; pop., 35,000; wine, paper; impt. station on Paris-Bordeaux railway.

**Angra Pequena**: see LÜDERITZ.

**Angstrom**, Anders Jonas (1814-74), Swed. astronom. and physicist; most imp. work concerned solar spectrum. **A. unit**, unit of measurement for light-waves, = 1 ten-millionth of a millimetre.

**Anguilla**, one of the Brit. Leeward Is.; 35 sq.m.; pop., 4,200. See ST. KIRTS.

**Angus**, or **Forfarshire**, mar. co., E. Scot.; area, 875 sq.m.; pop., 270,200; surface hilly; agric., cattle, sheep; jute and flax at Dundee (largest tn.), Arbroath, and Forfar (cap.).

**Anhalt**, free State of Ger. Repub., on either side of Elbe and Saale and on N. side of Harz Mtns.; 886 sq.m.; pop., 351,500; cap., Dessau; agric. and stock-raising, sugar and salt works, breweries.

**Anhui**, prov. of China; pop., 20,200,000; cap., Anking; pop., 40,000.

**Anhydride**, in inorg. chem., oxide derived from hydroxide by dehydration, wh. recombines to form acid or hydroxide. In org. chem., compound containing group  $\sim\text{CO.O.CO}\sim$ , derived by removal of water from 2-COOH groups. See ACETIC ANHYDRIDE.

**Anhydrite**,  $\text{CaSO}_4$ , mineral found in rock salt deposits.

**Anicetus**, St., pope (c. 157-67).

**Aniline** (*Aminobenzene phenylamine*),  $\text{C}_6\text{H}_5\text{NH}_2$ , manufactured on very large scale by reduction of nitrobenzene (*q.v.*), b.p. 184°C. Forms solid cryst. salts with mineral acids. Starting point for manufacture of numerous dyes and drugs.

**Animal magnetism**: see HYPNOTISM.

**Animals**, living organisms wh. subsist on organic matter, in distinction from plants, most of which build up their tissues from inorganic substances.

**Animation**, the condition of having life. **Suspended a.**, condition of the deepest unconsciousness resembling death, with only faint signs of life.

**Animism**, 1) concep. of a soul or "life-principle" sep. from body; origin attrib. to concern of primitive man abt. nat. of dreams, visions, and death; supposed to be source of relig.; 2) belief held by prim. peoples that inan. objects, particularly when sacred, are endowed with life; see MANA.

**Anion**, electro-negative ion (*q.v.*) which in electrolysis (*q.v.*) moves to the positive electrode or anode. A.s are formed by non-metallic elements and acid radicles.

**Aniseed**, dried ripe fruit of *Pimpinella anisum*, cultivated in many parts of Europe, esp. in Spain and S. Russia. Contains an essential oil used as a flavouring and in medicine as a carminative, stimulant, and expectorant.

**Anisette**, liqueur strongly flavoured with aniseed.

**Anjou**, countship on Lower Loire, France (cap., Angers), fndd. 870 by grant from Charles the Bald (*q.v.*). Fulke, Ct. of A., became Kg. of Jerusalem, 1131; Henry, son of his son Geoffroy, fndd. Eng. Plantagenet (*q.v.*) dynasty, 1154. 2nd House of A., a branch of Fr. royal family, 1204-1481; estabd. on throne of Naples, 1266; absorbed in Fr. royal house, 1480. Title, *Duc d'A.* borne by, among others, Charles VIII, Louis XV, and Philip V of Spain. **Vin d'A.**, sweet wine produced in the district.

**Anker**, old liquid meas. for spirits,  $8\frac{1}{2}$ -10 gallons.

**Ankh**, anc. Egypt. emblem, resembling a cross with loop at top; symbol of life. Used by early Coptic Christians to represent the Cross.

**Ankylosis**, partial or complete immobility of a joint due to previous inflammation of some part of the joint structure.

**Ankylostomiasis**, hookworm disease, common in tropical and sub-tropical countries.

**Anna**, Brit. Indian money unit, equiv. to one-sixteenth of rupee (*q.v.*).

**Anna Karenina**, novel by Tolstoy, 1878.

**Annam**, kgdm. under Fr. protection occupying E. coastal area of Fr. Indo-China; bounded N. by Tongking, W. by Laos and Cambodia, S.W. by Cochinchina; c. 39,000 sq.m.; pop., 5,585,000. Coast-line (c. 750 m.) generally flat; surface mountainous (*Pu Atwat*, 8,200 ft.); monsoon climate. Coast-road links chf. tns.; rlys. (622 m.) from Tourane (port) to Hué (cap.). In N. and S. coal and iron worked; exports rice, cotton, silk, tea. Ruled by emperor, assisted by council and advised by Fr. resident. Dependency of China until 10th cent. and 1407-27; allied to France, 1787; protectorate, 1874.

**Annamese:** *see* LANGUAGE SURVEY, *Mon-Khmer languages*.

**Annan**, royal burgh, Dumfriessh., Scot., on Riv. Annan; pop., 4,000. **Annandale**, vall. of Riv. Annan; orig. part Brit. kgdm. of Strathclyde, later property of the Bruces.

**Annapolis**, cap. Maryland, U.S.A.; pop., 12,550; port on Severn Riv.; U.S. Naval Academy; St. John's Coll., chartered 1784 (formerly King William's school, fndd. 1696).

**A. Convention**, Sept., 1786, important in movement to revise articles of Confederation of U.S.A.

**Annapolis**, tn., Michigan, U.S.A.; pop., 26,950; seat of Univ. of Mich., fndd. 1837.

**Annates**, the 1st year's income of an eccles. benefice, claimed by Pope after Council of Constance (1414-18); in Eng. assigned to Kg. in 1534, given back to Pope, 1555; resumed by Elizabeth, 1559; transf. by Qn. Anne (1704) to commissioners to be employed in supplementing incomes of poor clergy, and, together with *tithes* (*q.v.*), known as "*Queen Anne's Bounty*."

**Annatto**, red dye derived from fruit of *Bixa orellana*, shrub native to Cent. America, cultivated elsewhere. Pure dye base is *bixin*,  $C_{28}H_{34}O_6$ .

**Anne**, St., mother of the Virgin Mary; wife of St. Joachim. Feast day, July 26th.

**Anne**, Empress of Russia (1693-1730-40), dau. of Ivan V; Crimean War of 1736-39 (first success of Russ. arms against Turkey).

**Anne** (1665-1702-14), 2nd dau. of James II, Qn. of England (Gt. Brit. and Ireland). She m. George, Prince of Denmark, and was mother of 13 children, all of whom d. young. Was founder of Queen Anne's Bounty (*q.v.*); Union of Eng. and Scot., 1707, most important event of reign.

**Anne Boleyn** (1507-36), 2nd wife (1533) of Henry VIII of Eng.; beheaded. **A. of Brittany** (1477-1514), wife of: 1) Charles VIII of Fr. (1491) and 2) Louis XII (1499); united Brittany with kgdm. of France. **A. of Cleves** (1515-57), 4th wife of Henry VIII of Eng., m. Jan. 6th, 1540; marriage declrd. void foll. July 9th. **A. of Denmark** (1574-1619), dau. of Fred. II of Den. and Norway, wife of James VI of Scot. (I of Eng.); marriage (1589) settled claim of Scot. to Orkney and Shetland Islands.

**Annealing**, treatment of a solid by heating to a def. temp., whereby either internal stresses are relieved (glass, cast-iron) or change in internal structure produced (steel, metals after cold-working, wire-drawing, pressing, etc.). A. is used more specif. when slow cooling is necessary (*e.g.*, glass); *heat-treatment* (*q.v.*) is mod. and gen. term for metals.

**Annécly**, cap. dépt. Haute-Savoie, France; pop., 17,230; cathedral.

**Annexation**, approp. by a nation of terr. wh. has not previously been occupied by a civilized power.

**Annis del Mona**, Sp. liqueur similar to anisette.

**Anno aetatis suae**, *see* AET.

**Anno Domini** (Lat.), A.D., in the year of our Lord.

**Annuities**, fixed yrly. pymts. payable for a stated period: 1) in case of perpetual public loans; 2) in sense of a pension; yrly. sum granted to a pers. during his lifetime; 3) life insur. policies may be written for annuities to be paid to the assured after reaching a certain age.

**Annunciation of the Blessed Virgin**, announcement to B.V.M. by archangel Gabriel of Incarnation of Christ; Christian festival in commemoration of above, falling on March 25 (Lady Day).

**Annunziata** (**Annunciation**), Order of the, highest It. order of knighthood, fndd. 1362; revived 1518.

**Annunzio**, Gabriele d' (1863- ); It. auth.; held Fiume for Italy, 1919. Poems, plays, novels. Made Prince of Monte Nevoso, 1924.

**Annus mirabilis** (Lat.), the wonderful year, year of marvels; title of Dryden's poem (1667) on the Dutch War and Fire of London (1666).

**Anoa**, smallest and most antelope-like member of the buffalo family; native of Celebes.

**Anode**, positive electrode (*q.v.*). **A. battery** (*H.T. battery*) attached to the triode valve, provides tension betw. cathode and A. (making **A. current**).

**Anonymous** (Gr.), witht. name; in lit., author unnamed; abbr. *anon.*

**Anopheles**, a genus of mosquitoes including carriers of the malarial parasite.

**Anorthite**, a silicate of calcium and aluminum,  $CaAl_2Si_2O_8$ , one of the feldspar (*q.v.*) group of minerals; crystallizes in the anorthic system, *i.e.*, with no right angles; white, grey, or red in colour; transparent or translucent; so named since 1823; formerly known as *Indianite*.

**Anorthoclase**, a sodium-potassium feldspar (*q.v.*),  $(Na,K)AlSi_3O_8$ ; crystallizes in triclinic system; *see* CRYSTALS.

**Ansbach**, *Anspach*, tn., Bavaria, Germany, on Riv. Rezat; pop., 22,000; machinery, toys, wool, flax, embroideries, earthenware, cutlery, playing cards; resid. of Margrave of A., 1440-1791.



D'Annunzio



Anopheles



**Anselm**, St. (1033-1109), Abp. Canterbury, early scholastic theologian; maintained Papal rights agst. Wm. II and Henry I.

**Anseriformes**, order of birds including swans, geese, and ducks.

**Anson**, Geo. (1697-1762), 1st Bn. Anson, Brit. admil.; circumnav. world, 1740-44.

**Anstey**, F., see GUTHRIE, THOS. ANSTEY.

**Ant**, insect of the order Hymenoptera; lives in colonies consisting of sexed females (queens), males and workers (undeveloped females), of which there are several grades. Queens and males are winged at certain seasons. The metamorphosis is complete. Habits are very varied, some being hunters and carnivorous; others harvesters and herbivorous. Many other insects are associated with ant-colonies, aphids being actually controlled by the ants for the sake of their secretion (honey-dew).



Ants

**Antaeus**, giant of Gr. myth.; son of Neptune and Terra (Earth); fought with Heracles; invincible whilst in contact with his mother.

**Antananarivo**, *Tanana-rivo*, cap. Madagascar (*q.v.*); pop., 92,500.

**Antarctic Circle**: see ARCTIC CIRCLE.

**Antarctic Regions**, area of the earth's surface within **A. Circle** ( $66^{\circ} 30'$  S. Lat.) or even within  $60^{\circ}$  S. Lat. Isolated from all inhab. continents; includes a continent of c. 5 mill. sq.m. uninhabited, devoid of animals, treeless, and with few plants (lichens, mosses). Surface an ice-covered plateau (c. 10,000 ft.) surrounded by floating ice-barriers, centring round S. Pole. Divided into *Weddell Quadrant* (S. of S. America, Weddell Sea, S. Orkneys, S. Shetlands, Graham Land, etc.); *Ross Quadrant* (Ross Sea, Ross Barrier, route to S. Pole); *Victoria Quadrant* (S. Victoria Land, Ross Isl., Mt. Erebus), and *Enderby Quadrant*. Lowest temperature recorded,  $-77^{\circ}$  F. Sole industry, whaling. Capt. Cook crossed Antarctic Circle, 1773; discovered S. Georgia, 1774; W. Smith discovered S. Shetlands, 1819; Weddell sailed into Weddell Sea, 1823; Ross expeditions, 1839-41; Scott reached  $82^{\circ} 17'$  S. Lat. in 1901; Shackleton  $88^{\circ} 23'$  S. in 1909; Amundsen reached S. Pole in Dec. 1911, and Scott in Jan. 1912. Byrd flew to S. Pole, Nov. 1928.

**Antares**, 1st magn. red star,  $\alpha$  in con-  
l. Scorpio; see PL. ASTRONOMY, S.C.H., C.

**-eater**, **Great**, largest of the S.  
edentates; distributed over whole

of tropical S. and Cent. America; nocturnal; feeds upon termites and other ants.

**Antelopes**, hollow-horned ruminants distinguished from the deer by their simple, hollow, unbranched horns, which are not shed annually; chiefly confined to Africa and Arabia; include the gazelles, gnu, eland, water-bucks, and duikers.

**Ante meridiem** (Lat.), before noon (A.M.).

**Antennae**, 1) (zool.) jointed feelers on upper surface of head of insects, crustaceans, myriapods, and centipedes; vary greatly in length, shape, and complexity. 2) (tech.) In wireless telegraphy, an arrangement of aërials giving directive transmission reception.

**Anther**, (bot.) the part of the stamen of a flower containing the pollen (*q.v.*).

**Antheridium**, (bot.) male organ in *pteridophyta* (*q.v.*).

**Antherus**, St., Pope (235), tradit. martyred for ordering collection of Acts of Martyrs; orig. epitaph fnd. in Catacombs, 1854.

**Anthology**, collection of extracts either from the writings of many authors or of one, and usu. from poetry; so named from the *Greek Anthology*, a compilation of some thousands of epigrams and short poems by Gr. writers from the 3rd cent. B.C. to 6th cent. A.D.

**Anthony**, St., the Great (c. 251-c. 356), hermit in Egypt. desert, where he was subjected to many temptations; a supporter of Athanasius; day, Jan. 17th. **St. A. of Padua** (1195-1231), friar of Franciscan Order, opponent of the Ghibelline, Eccelin da Romano; represntd. carrying infant Jesus; day, June 13th.

**Anthracene**, (chem.)  $C_{14}H_{10}$ , aromatic hydrocarbon prepared from coal-tar, used to produce alizarin (*q.v.*) and other dyes.

**Anthracite**, hard, bright coal containing high percentage of carbon; of slow combustion, giving out little flame or smoke but intense heat. Calorific value: 8,500 kcals.

**Anthraquinone**,  $C_{14}H_8O_2$ , a derivative from anthracene (*q.v.*), used in preparation of artificial alizarin dyes.

**Anthrax**, *wool-sorters' disease*, dangerous contagious disease, caused by a germ (*bacillus anthracis*) carried in skins, furs and bristles; disease of animals in origin.

**Anthropoid apes**, those Primates most closely approaching man in general structure: gorilla, chimpanzee, orang-utan, and the gibbons.

**Anthropology**, science of man; hist. of devel. and comparative anat. of human race.

**Anthropomorphism**, descrip. of divine or natural things in terms of humanity.

**Anthrophagi**, a tribe of cannibals on N.E. shore of Caspian Sea, described by Pliny as eating their aged parents in order to ensure



Antaeus

preservation of ancestral traits; hence, cannibals in general. **Anthroposophy**, as opp. to Theosophy (*q.v.*), esoteric teaching of Rudolf Steiner, acc. to wh. supernatural things are regarded from a natural standpoint.

**Anthurium**, tropical Amer. plant of the arum family, cultivated as ornamental plant.

**Anti-aircraft gun**, protectn. agst. enemy aircraft; can fire at any angle; tracer ammunition leaving a trail of smoke, used for observ. of trajectory.

**Antibes**, tn., Fr. Riviera, dépt. Alpes Maritimes, 13 m. S.W. Nice; scent manufacture; pop., 13,000.

**Antibody**, a substance not normally present in the animal body, but produced in response to the injection of various substances called *antigens*. Injection of protein gives rise to an antibody called a *precipitin*, of bacteria to an *agglutinin*, of toxin to an *antitoxin* (*q.v.*); injection of red corpuscles from another animal produces a *haemolysin*.

**Antichrist**, (N.T.) false prophet, to appear bef. 2nd coming of Christ, foretold in Bk. of Revelation and repred. by 666, *Apocalyptic Number of the Beast*. Nero, Mohammed, Napoleon, and others have been so designated.

**Anticline**, (geol.) fold, on either side of which the strata slope in opposite directions.

**Anticosti**, isl., Canada, in Gulf of St. Lawrence, prov. of Quebec; 140 by 30 m.; pop., 250; game preserve; timber.

**Anticyclone**, state of atmosphere tending to produce change of weather for better and more settled conditions; cf. *CYCLONE*.

**Antidotes**, specifics against poison; vary accdg. to nature of poison: *Corrosive acids* (spirits of salts, oil of vitriol, etc.) must be treated with alkalis (magnesia, bicarbonate of soda, chalk, lime-water) and white of egg (no emetics); *caustic alkalis*: with weak acids such as vinegar; *carbolic acid* ("lysol"), etc.: stomach should be washed out with dilute sugared lime-water; *oxalic acid*: give chalk, lime-water, whiting, wash out stomach. *Metallic poisons* (arsenic, antimony, lead, copper, zinc, chromates, mercury): in acute cases administer emetics; in chronic poisoning discover source (felonious administration in small doses, occupation, etc.). For poisoning by prussic acid, strychnine, opium, coal-gas: see POISONING, TREATMENT OF. See also EMETICS.

**Anti-fouling**, paint, etc., used to protect bottoms of ships from growth of marine organisms, weed, barnacles, etc. Contains verdigris or metallic copper powder.

**Anti-friction metal**: see BEARING.

**Antigone**, (Gr. myth.) daughter of Oedipus, heroine of a tragedy by Sophocles.

**Antigonus** (One-Eyed), general of Alexander the Great (381-301 B.C.); fell in wars of

the Diadochi (*q.v.*) for the sovereignty of Asia.

**Antigua**, 1) isl., Brit. W. Indies, seat of govt. of Leeward Isls. (*q.v.*); 108 sq.m.; pop. (incl. Barbuda), 31,000; archbpric. of W. Indies; chf. product sugar; cap., St. John's; 2) tn. and anc. cap. Guatemala, Centr. America, wrecked by earthquake, 1773; pop., 40,000; coffee plantations.

**Anti-Lebanon**, mtn. range, Syria, parallel to Lebanon Mtns. (*q.v.*) and E. of them, separated by valleys of Orontes and Litâni; highest pk., Hermon, 9,400 ft.

**Antilegomena**, (eccles.) those bks. of N.T. wh. for some time were not admitted as canonical. Eusebius applies term to Epis. of James, Jude, II Peter, II and III John, and Revelation; later Epis. to Hebrews also included.

**Antilles**: see WEST INDIES.

**Antimony**, chem. element, symbol Sb.; at. wt. 121.76, sp. gr. 6.67; m.p. 630°C; white, brittle metal; important alloys are type metal (A. 20, lead 75, tin .5) and britannia metal (tin 140, copper 3, A. 9); cert. compounds used in medicine. **A. glance**: see STIBNITE.

**Antinomians**, relig. sect wh. maintained that the moral law was not binding, since faith alone was sufficient to salvation.

**Antinomy**, (logic) contradiction or inconsistency betw. two laws or principles; opposition of one law or principle to another.

**Antinous**, 1) (Gr. myth.) chf. of Penelope's suitors, slain by Ulysses; 2) favourite of Emp. Hadrian; ideal of youthful male beauty in late Rom. art; 3) astron.: constell. usually known as *Aquila* (*q.v.*).

**Antioch**, tn., Syria, on Riv. Orontes; pop., 29,900. Fndd. by Seleucus 300 B.C.; fl. at period of Rom. Empire; 1st large Christian community outside Palestine. In Mid. Ages successively Arab. and Turkish, then passed into hands of Bohemund of Tarentum c. 1100; conquered by Egyptians, 1268; silk, cotton, soap, tobacco, olives, maize.

**Antiochus: A. III.**, the Great (242-187 B.C.), Kg. of Syria, defeated by Romans. His s., **A. IV.**, *Epiphanes*, Kg. of Syria, drove Maccabees (*q.v.*) to rebellion.

**Antioquia**, dept., Colombia, S. America; 25,500 sq.m.; pop., 1,011,300; surface mountainous (Andes); gold and silver mines; agric.; cap., Medellín.

**Antiphon**, 1) alternate chanting of verses by 2 sides of choir in Christian Ch.; 2) anything arranged to be so sung; 3) sentence chanted bef. or aft. psalm or canticle pointing its application to season or festival.

**Antipodes**, regions lying on opp. side of earth from any given point; (fig.) the exact opposite of a given thing.

**Antipopes**, claimants to the Papacy (*q.v.*) whose claims have not been admitted by the Universal Church.

**Antipyretic**, drug which reduces temperature of the body; a febrifuge.

**Antipyrine**, *phenazone*,  $C_{11}H_{12}N_2O$ ; synthetic coal-tar drug, very similar in its action to phenacetin.

**Antirrhinum**: see SNAPDRAGON.

**Antisana**, extinct volcano, Ecuador, S. Amer.; 18,850 ft.

**Anti-Semitism**, orig. Ger. expression (c. 1880) denoting antagonism to Jewish social and polit. equality, now used of any manifestation of animosity towards the Jews; based on theory that Semites (*q.v.*) are inferior to Aryans.

**Antisepsis**, the arrest of growth of bacteria and other minute organisms by means of chemicals (e.g., phenol) and physical agents (e.g., heat, ultra-violet rays), known as *antiseptics*.

**Antisthenes** (c. 444-c. 365 B.C.), Gr. philosopher; pupil of Socrates, and fndr. of the Cynic School in the Cynosarges, in Athens. See CYNICS.

**Antithesis**, contrast; fig. of speech in wh. contrasting words or statements are combined for sake of effect.

**Antitoxin**, serum, or preparation from serum, of a horse or other animal to which increasing doses of a bacterial toxin have been given by injection. Diphtheria toxin is prepared by growing the diphtheria bacillus on a liquid soil or medium; the medium (known as the toxin) is then found to become extremely poisonous, to animals, so that the injection of a minute amount will kill. If the antitoxin is mixed with the toxic medium, however, the mixture will not kill. A. is used in treatment of diphtheria, tetanus, peritonitis, dysentery, and other diseases.

**Antivari**: see BAR.

**Antlers**, (zool.) branched horns growing out of frontal bone of males of the deer family, also of female reindeer; deciduous, falling off each year and reappearing; number of branches increases with age.



Antlers

**Ant-lion**, neuropterous insect whose larvae dig funnel-shaped holes in the ground, at the bottom of which they await their prey, consisting chiefly of ants. The adult, winged insect is not unlike a dragon-fly in appearance.



Ant-Lion

**Antofagasta**, 1) prov. of N. Chile, 46,400 sq.m.; pop., 236,000; extensive saltpetre deposits, much silver and guano; 2) cap. of A., port in desert surroundings; pop., 52,000; mining, silver-smelting.

**Antoine**, André (1858- ), Fr. actor-manager; fndd. *Théâtre Libre*, Paris, 1889.

**Antonelli**, Giacomo (1806-76), It. card. and statesman.

**Antonello** da Messina (c. 1414-93), It. portrait painter; intro. Flemish system of oil-painting into Italy.

**Antoninus: A. Pius**, Rom. Emp. (86-161 A.D.); **Wall of A.**, from Clyde to Forth, blt. in his reign; see GRIME'S DYKE. **A.:** see MARCUS AURELIUS A. **St. A.** (1389-1459), Abp. of Florence; Dominican; wrote on economics and theology; Papal theologian at Council of Florence, 1439. Commem. May 10th.

**Antony**, Mark (*Marcus Antonius*, 82-30 B.C.), member, with Octavianus and Lepidus, of 2nd Triumvirate, formed to combat Julius Caesar's assassins; defeated Brutus and Cassius at Philippi, 42 B.C. Defeated by bro.-in-law, Octavianus, at Actium, 31 B.C.; committed suicide. See CLEOPATRA.

**Antrim**, 1) N.E. co. Ulster, N. Ire.; 1,098 sq.m., pop., 606,800; hilly in E., peat bogs in S.W.; Lough Neagh, largest lake in Brit. Isles (153 sq.m.), outlet Riv. Bann; basaltic Giants' Causeway in N.; agric., cattle, sheep, pigs; linen; distilling; fisheries. Largest tn., Belfast. 2) Co. tn.; pop., 2,000.

**Antrum** (anat.): see CAVITY.

**Antung**, treaty port in S. Manchuria, at mouth Riv. Yalu; pop., 87,300.

**Antwerp**, 1) N. prov., Belgium, on Dut. frontier; 1,094 sq.m.; pop., 1,100,000. 2) Cap. of prov. and chf. port of Belgium, on r. bank Riv. Scheldt, 50 m. from the sea; pop., 427,250 (mainly Flemish); third port of Europe; late-Gothic cathed. (paintings by Rubens); Mus. of Fine Arts (Flem. School); Academy of Sciences; Plantin Mus.; Renaissance Town Hall. Textiles, lace, tobacco, diamond-cutting, shipbuilding. Mentioned in 7th cent.; world's commercial centre in early 16th cent.; captured by Spaniards, 1576; declined after 1648, when Dut. closed Scheldt estuary; revived after temporary union of Belg. and Holland, 1815; Belg., 1839; prosperous since abolition of Scheldt shipping dues, 1863. Occupied by Germans 10 Oct., 1914 till end of World War.

**Anubis**, Egyptn. god of the dead, repres. with jackal's head.

**Anuradhapura**, *Anuradha*, ruined city of Ceylon, anc. cap. of island (5th cent. B.C. to 9th cent. A.D.); remains of sacred *Bo Tree*, prob. oldest tree in the world (288 B.C.).

**Anus**, opening at lower end of rectum wh. is last part of alimentary canal. A. is closed by sphincter muscles. Itching of A. often caused by intestinal worms.

**Anvil**, any firm, hard erection used to support an object to be hammered; e.g., by blacksmith.

**Anzac**, 1) abbr. Australian and New Zealand Army Corps. 2) name given to land-

ing-place of this corps, 25 Apr., 1915, 1½ m. N. Gaba Tepe, Gallipoli Peninsula. **A. Day**, April 25th, when this is commemorated.

**Aomori**, seapt., N. Hondo, Japan, at head Mutsu Bay; pop., 60,000.

**Aorist**, Gr. narrative tense; expressing indefinite past time.

**Aorta**, princ. artery of the body; supplies all other arteries; *see* *illus.*, MAN.

**Aosta**, tn., N.W. Italy, at confluence of Rivs. Buthiere and Doire; pop., 7,600; old gateway tn. for Gt. and Little St. Bernard passes; birthplace of Anselm.

**A outhance** (Fr.), to a finish; to the utmost; to the death.

**Apaches**, 1) Ind. tribe, Arizona and New Mexico, U.S.A.; 2) crim. classes of Paris.

**Apagoge**, (logic) indirect proof of truth of an assertion by demonstrating the absurdity of its opposite.

**Apatite**, a phosphate of lime; often confused with other minerals owing to its deceptive appearance, which is indicated by the Greek original of its name.

**Ape**, generic name for the anthropoid or man-like monkeys, members of order *Primates* (*q.v.*).

**Apeldoorn**, tn., Gelderland, Holl.; pop., 53,000; paper. The Loo, country seat of Dut. royal family, is in vicinity.

**Apelles** (fl. 332 B.C.), Gr. painter, traditionally the most famous of antiquity.

**Apennines**, mtn. range of recent geol. formation, extending S. from Nice to Messina (750 m.), Italy; av. height, c. 4,000 ft.; max., Gran Sasso d'Italia, 9,500 ft.; much deforested, hence paucity and irregularity of rivers (Tiber, Arno, etc.).

**Aperçu** (Fr.), short sketch, epitome.

**Aperient**, laxative, substance wh. stimulates action of bowels and causes an evacuation.

**Aperiodic system** (physics), an oscillating system, *e.g.*, coil and pointer of electrical instrument, with just sufficient damping (*q.v.*) to prevent oscillation taking place; applied to A. compass, adopted in Brit. Navy since 1918; stability of compass attained by use of liquid.

**Apéritif**, appetizer; usu. a short drink with stimulating flavour; *see* COCKTAIL.

**Aperture**, (photog.) effective diameter of the part of lens used for illuminating plate; limited by the *diaphragm* (*q.v.*). A. usu. expressed as  $f/a$  where  $a$  is ratio of focal length of lens to diameter of diaphragm opening; exposure varies as the square of the  $f$  numbers ( $a$  above).

**Apex of earth's motion**, (astron.) part of heavens towards wh. the earth in its orbit is moving. **A. of the sun**, point in space towards wh. solar system is moving; this lies in the constell. Hercules (*q.v.*).

**Aphasia**, partial or complete loss of speech; *e.g.*, after an apoplectic stroke.

**Aphelion**: *see* APSIS.

**Aphis**: *see* PLANT LICE.

**Aphorism** (Greek), a pithy saying, maxim.

**Aphrodite**, in Gr. myth., goddess of Beauty and Love (Rom. Venus, *q.v.*). A. of *Cnidus*, statue by Praxiteles.

**Apia**, cap. and chf. port, Upolu, W. Samoa; observatory, wireless station. R. L. Stevenson died at Vailima, near by, in 1894.

**Apianus**, Petrus (1495-1552), Ger. astron. and cosmographer; made some of earliest maps of America. Name is Latinized form of Peter Bievewitz.

**A pied** (Fr.), on foot.

**Apis**, deity of anc. Egypt in shape of a bull.

**Aplanatic**, or *rectilinear*, **lens**, in photog., now superseded because of astigmatism (*q.v.*) and colour distortion.

**Apocalypse** (Gr., Revelation), the Bk. of the Revelation of St. John (*q.v.*); also certain Jewish and early Christian writings (c. 250 B.C.-A.D. 150), the intention of wh. was to revive Jewish Messianic hopes. The chf. features of Apocalyptic lit. are revelation of mysteries, esoteric wisdom, and prophecies concerning latter days, usu. by means of a dream or through angelic visitation. **Horsemen of A.**, Pestilence, Famine, War, and Death. **Knights of the A.**, secret society in Italy (1693) for defending the Ch. agst. Antichrist (*q.v.*); suppressed by the Inquisition, 1694. **Apocalyptic number**: *see* ANTICHRIST.

**Apocrypha**, Jewish relig. lit. contained in the Septuagint and Vulgate but not accepted as canonical by Jews or Protestants. They include \*I and II *Esdras*, *Tobit*, *Judith*, additions to *Esther*, *Wisdom of Solomon*, *Ecclesiasticus*, *Baruch*, additions to *Daniel*, \**Prayer of Manasses*, and I and II *Maccabees* (all except those marked \* accepted by the R.C.Ch.). A. of N.T. include uncanonical Gospels and Sayings of Christ, Epistles, the *Acts of Paul and Thecla*, etc.

**Apogee**, (astron.) point at wh. the moon in its orbit is farthest away from the earth; *cf.* PERIGEE.

**Apollinaris**, St., mythical 1st Bp. of Ravenna; said to have been ordained by St. Peter.

**Apollo**, 1) (Gr. myth.) son of Zeus and Leto; god of Light-(*Phœbus*)



Aphrodite of Cnidus



Apollo Belvedere

and of Art. *A. Belvedere*, statue in Vatican Museum (early Rom. Empire). 2) (entomol.) **A. butterfly**, *Parnassius*, a beautiful, rare butterfly of the Alpine and sub-Alpine regions of Europe and Asia; white, with black and red spots; in danger of extinction.

**Apollonius: A. Rhodius** (b. c. 240 B.C.), Gr. epic poet: *Argonautica*. **A. of Perga** (fl. 250-220 B.C.), a pioneer of mathematics. **A. of Tyana** (fl. 1st cent. A.D.), Pythagorean philos. and reputed miracle-worker; worshipped as a god in 3rd cent.; his *Life* written by Philostratus.

**Apollo**, (N.T.) Alexandrian Jew who assisted St. Paul in missionary work (Acts xviii).

**Apollyon**, (N.T.) angel of the Abyss (Rev. ix), identified with Satan.

**Apologetics**, branch of theol. concerned with reasoned defence of revealed relig.; work of one of the **Apologists** (Aristides, Justin, Origen, Tertullian, Newman, etc.).

**Apophthegm**, brief sententious utterance; maxim; terse proverbial saying.

**Apoplexy**, stroke, paralysis; caused by haemorrhage, obstruction or spasmodic contraction of a blood-vessel of brain; often accomp'd. by paralysis of one side of body, gen. by loss of speech and sometimes unconsciousness.

**Apostasy**, deliberate renunciation of one's former faith. **Apostate**, one guilty of apostasy (e.g., *Julian the Apostate*).

**A posteriori** (Lat.), from the later; applied to inductive logical argument from effect to cause; see INDUCTION.

**Apostle**, (Gr., messenger) advocate of a cause; esp. one of the 12 orig. disciples of Christ, viz., Simon (Peter), Andrew, James son of Zebedee, John, James son of Alphaeus, Philip, Bartholomew, Matthew, Thomas, Thaddaeus, Simon the Canaanite and Judas Iscariot; later included Matthias (in place of Judas) and Paul. **Acts of the As.**, 5th Bk of N.T.; only source for early hist. of Christianity. Authorship ascribed to Luke. **Apostle Spoon**, silver or silver-gilt spoon with figure of an Apostle on handle.

**Apostolic**, connected with the Apostles and their times or with St. Peter, chief of Apostles, and hence with the Papacy. **A. Benediction**, Papal blessing. **A. Fathers**, immediate disciples of Apostles, and their writings. **A. King**, title of Kgs. of Hungary from 16th cent. **A. See**, Vatican. **A. Succession**, continuity of holy orders from the Apostles.

**Apostrophe**, 1) sign of omission ('), indicates elision of letter in word, etc., e.g., "fo'c'sle" for "forecastle"; 2) sign of possessive case in English; 3) speech addressed to absent persons or breaking into main discourse.

**Apothecary**, term originally applied to

those members of the medical profession who kept drug shops, as distinct from physicians and surgeons. The **Apothecaries' Company**, London, Eng., one of the City Companies, incorp. 1606, and united with Grocers; sep. corporation, 1617; hall in Water Lane, City; various Acts of Parlt. have brought it into close relation and co-operation with the medical profession proper. **Apothecaries' fluid measure**, system of fluid measures used for medicine. **Apothecaries' weight**, system of wts. used for medicines; uses the pound troy (12 oz.). See TROY and AVOIRDUPOIS WEIGHT.

**Apotheosis**, 1) raising of a mortal to rank of deity; 2) supreme glorification of person or thing.

**Appalachian Mountains**, N. American range, stretching S.W. from Newfoundland to Alabama (c. 1,500 m.); N. region: Shick-shock, White, and Green mtns.; central: Alleghany and Blue Ridge; south: end of Blue R., and Unaka range; chf. peaks: Katahdin, 5,268 ft., and Mt. Washington, 6,288 ft.; timber in N.; coal, iron, copper, zinc, silver and petroleum. Forms barrier to interior which delayed colonization to W. **A. Way**, highway from Great Lakes through A. Mtns. to Charleston.

**Appanage, apanlage**, 1) orig., means of subsistence supplied by parents for the younger children; now provision from Crown property for younger members of royal house; 2) property or emolument attached as a perquisite to an office.

**Apparatus belli** (Lat.), materials, munitions of war. **A. criticus** (Lat.), literary or other material for the critical study of documents, texts, etc.

**Appassionato**, (mus.) passionately.

**Appeal, Right of**, right to have judgment reconsidered by higher court within definite time.

**Appendicitis**, (med.) inflammation of the appendix to the caecum. *Acute a.*, accomp'd. by severe abdominal pains, sickness, often fever and imminent danger of peritonitis (*q.v.*). *Chronic a.*, without fever; gen. characterised by intermittent abdominal pain.

**Appendix**, (med.), worm-like appendage to caecum; in lower right portion of abdomen. See APPENDICITIS.

**Apperception**, (philos.) process of perceiving or becoming aware of a thing.

**Appian** (fl. 2nd cent. A.D.), Gr. writer: *Rom. History*.

**Appian Way**, road (commenced by Appius Claudius Caecus, 312 B.C. and finished 244 B.C.) from Rome to Brundisium (Brindisi) via Capua and Beneventum. Still intact for some miles from Rome.

**Appin**, vil. and dist., Argyllsh., Scot., on Loch Linnhe, N.N.E. Oban.

**Apple**, *Pyrus malus*, rosaceous tree cultivated in all temperate regions; highly esteemed for the fruit. Many varieties have been produced by grafting, etc., mostly developed from wild or crab-apple (*q.v.*). Apple-growing and exporting carried out on large scale in Canada, Australia, and New Zealand. **A.-blossom weevil**, a small beetle, injurious to apple trees; causes "capped blossom" and so prevents fruit from setting. **A. of Discord**: see ERIS.



Apple-blossom

**Appleby**, co. tn., Westmor., Eng.; on Riv. Eden; pop., 1,610.

**Appleton layer**, ironized conducting layer at great height in atmosphere, above *Heavyside layer* (*q.v.*)

**Applied art**, art turned to practical use in some craft or industry, as opp. to *fine art*, the only object of wh. is its own perfection.

**Appliqué**, general term for ornaments let into or fixed to the surface of a piece of furniture, etc. **A. work**, embroidery in wh. cut-out patterns of material are sewn on to a cloth or silk foundation.

**Appointment**, (milit.) disciplinary status given to a soldier who is allotted duties of rank above his own, e.g., lance-sergeant, corporal who acts as sergeant.

**Appomattox**, vil., A. county, Virginia, U.S.A., where Confederate Army, under Gen. Robt. E. Lee, surrendered to Federal Army, under Lt.-Gen. U. S. Grant, 9 Apr., 1865, thus ending Amer. Civil War.

**Apponyi**, Albert George, Ct. von (1846-1933), Hung. statesman; leader of independence party; represen. on League of Nations 1924-25.

**Appraiser**, professional licensed valuer, who estimates worth of property or articles (furniture, jewelry, etc.) in connection with valuation of goods for sale, or for purposes of probate, etc. In the U.K. the annual licence fee is £2. In U.S.A., term also applied to certain Customs officials.

**Apprenticeship**, contract whereby one person ("master") undertakes to teach, and another ("apprentice") to learn some trade or profession, the appr. serving the master for a term of yrs. A. in Eng. dates from 13th cent., and in Mid.Ages was the invariable mode of entry into any trade or "mystery." A. of 7 yrs. was made compulsory by law, 1562; repealed 1814. System began to decay by 18th cent., and this was accentuated with intro. of machinery and Adam Smith's doctrine of unrestricted freedom of trade.

**Approved society**: see HEALTH INSURANCE.

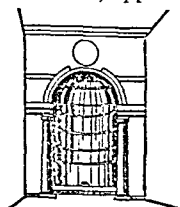
**Après moi le déluge** (Fr.), after me the deluge; orig. said by Louis XV in anticipation of the downfall of the Fr. monarchy.

**Apricot**, *Prunus armeniaca*, richly flavoured fruit of the plum family. Native of Asia, but cultivated elsewhere. The kernels yield an oil sometimes used to adulterate or as a substitute for almond oil.

**April**, 4th month, of 30 days; name (Lat., *aperire*, to open) prob. refers to opening of buds. **A. Fools' Day**, 1st April, period for practical jokes.

**A priori** (Lat.), from the earlier; applied to deductive logical argument from cause to effect, or from the particular to the general; see DEDUCTION.

**Apse**, (archit.) rounded or angular end of a church choir or aisle.



Apse

**Apsheron**, penins., in Azerbaijan, on Caspian Sea; rich petroleum wells. On S. coast is Baku (*q.v.*).

**Apsis** (astron.), point at wh. a planetary body is nearest to, or farthest from, its centre of attraction; the apogee and perigee of the moon, aphelion and perihelion of planets, apojove and perijove of satellites of Jupiter.

**Aptera**, (zool.) term applied by Linnaeus to group of arthropods wh. includes some wingless insects (centipedes, millipedes, arachnida, *q.v.*) and crustaceans; term now usu. confined to order of small insects known as spring-tails and bristle-tails.

**Apteryx**, (ornithol.) genus of bird with rudimentary wings, native to New Zealand; known as kiwi (*q.v.*).



Apteryx

**Apuleius**, Lucius (c. 125-c.174), Rom. philos. and writer: *The Golden Ass*, containing tale of *Cupid and Psyche*.

**Apulia**, regional div. of S.E. Italy, 7,400 sq.m.; pop., 2,298,000; interior thinly pop. through scarcity of water (limestone plains). Adriatic coast very fertile; wine, oil, grain, fruit; chf. tns., Brindisi, Bari, Taranto.

**Aquae sulis**: see BATH.

**Aqua fortis**: see NITRIC ACID.

**Aquamarine**, variety of beryl (*q.v.*); a pale blue-green, transparent, semi-precious stone.

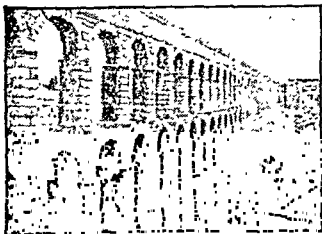
**Aqua regia**, chem. wh. dissolves the "king of metals," i.e. gold. Consists of 3 parts hydrochloric acid and 1 part nitric acid; also dissolves platinum.

**Aquarium**, glass (or glass-fronted) container for breeding and exhibiting aquat. animals and plants; bldg. in wh. such are exhibited.

**Aquarius**, zodiacal constell. ♒, 11th sign of Zodiac (*q.v.*); see PL. ASTRONOMY, S.C.H., A.

**Aquatint**, process of etching on copper or steel plates by means of acid, producing an effect resembling a fine drawing in water-colour, sepia, or Indian ink. In aquatint the plate is etched in areas and not in lines as in an etching (*q.v.*).

**Aqueduct**, artificial conduit, gen. of masonry, for carrying water; often crosses valleys and streams in form of bridge; important remains exist of As. built with great architectural skill by anc. Romans.



Roman Aqueduct

**Aquila**, the Eagle, constell., *see* PL. ASTRONOMY, N.C.H., G.

**Aquila and Priscilla**, (N.T.) Jewish Christian pair, friends of Paul (Acts xviii).

**Aquilegia**, *Columbine*, *Aquilegia vulgaris*, plant growing in open woods; flowers white, blue, or purple; often cultivated.



Aquilegia

**Aquileia**, anc. Rom. stronghold on R. Natisone, at head of Adriatic; destrd. by Attila, A.D. 452; patriarchate in 6th century.

**Aquitaine**, anc. prov., S.W. France, roughly corresponding to Rom. Aquitania (*q.v.*); name corrupted in Mid. A. to Guienne (*q.v.*). Marr. of Eleanor of A. to Henry II, 1152, united prov. to Engl. Crown (lost under Henry VI, 1451-53).

**Aquitania**, part of S.W. Gaul (France) in Rom. times; orig. dist. betw. Riv. Garonne and Pyrenees; later comprised whole of Gaul S. of the Loire and W. of the Allier. *See* AQUITAINE.

**A.R.A.**, abbr. Associate of Royal Academy.

**Arabesque**, decorative work, of Arabian or Oriental origin, consisting of fancifully grouped and interlaced lines, scrolls, etc., with or without conventionalized flowers, fruit, figures, etc.



Arabesque

**Arabi (Ahmed) Pasha** (c. 1839-1911), Egyp. soldier and revolutionary; defeated by Wolseley at Tel-el-Kebir, 1882, and banished to Ceylon. Allowed to return by Khedive Abbas II, 1901.

**Arabia**, peninsula, S.W. Asia, betw. Red Sea and Persian Gulf; c. 1,150,000 sq.m.; pop., c. 8 million (Bedouins and settled tribes). Interior a high desert plateau (2,500-7,000 ft.; largely unexplored), with

mtns. in N.W., S.W., and S.E. (up to 10,500 ft.); Syrian Desert in N., *Rub al Khali* (*q.v.*) in S. Climate dry and hot. Divided into: 1) Kgd. of Saudi Arabia, formerly *Hejaz and Nejd* (in N.W. and centre; includes Asir on Red Sea, and cities of Mecca and Medina); 2) *Yemen* (S.W. coast); 3) *Aden* (Brit. possession and protectorate on W. of S. coast); 4) *Hadramaut* (S. coast); 5) *Oman* (S.E. peninsula; Brit. influence); 6) *Kuwait* (Persian Gulf; Brit. influence); and, 7) *Bahrain Isls.* (Persian Gulf; Brit. protectorate). A. famous for horses and camels; sheep and goats bred. Ostriches found in oases; wild beasts include lion, panther, hyena, jackal. Exports: coffee, spices, wool, hides, and skins; chf. ports: Muscat and Aden. Anciently divided into *Arabia Petraea*, *A. Felix*, and *A. Deserta*. Many tribal wars for guardianship of the Kaaba at Mecca (*q.v.*). In 7th cent. A. united by Islam and strong enough to form new empires in Asia, N. Africa, and Spain. Turks conquered Yemen in 16th cent.; Wahabis flourished in centr. Arabia in 18th cent., temporarily overthrown by Mohammed Ali, Viceroy of Egypt, 1819; Brit. occupied Aden, 1839; Turk. sovereignty lost in World War; revival of Wahabis in 1901-10 under Abdul Aziz III, who became ruler of Hejaz and Nejd in 1926 and virtual overlord of A. except territories on S.W., S., S.E., and N.E. coasts.

**Arabian art and literature**: *art* essent. nomadic, purely ornamental; *plastic arts*: rock-carving in low relief, carved rafters, small-scale figures, glazed stoneware; *painting*, figures exclud. from public, polit. and relig. buildings, but tolerated in private; *ceramics*, lustre-ware, glass, crystal-ware; *metal-work*, chiefly in bronze; *book-binding*, *lacquering*. Chf. monuments of A. art in Europe: minaret of Mosque of Cordova (c. 800), horse-shoe arch over Puerta del Sol, Toledo (1100), Alhambra, Granada, 14th cent. *Lit.*; pre-Islamic: *poetry*, 5th-6th cent. A.D. early bards preserved in *Diwans*, anthols. (*Mo'allaqat*); post-Islamic periods: 1) Omayyad, repres. writers Farazdaq (d. c. 728), Jarir (d. 728), Akhtal (d. 710). 2) Abbasid, repres. writers Abul-Atahiya (748-828), Abu'l-Ala Ma'arri (973-1057), Hariri (1057-1122), Ibn Farid (1181-1235); *belles-lettres*, repres. writers Ibn Muqaffa (8th cent.), Kalila wa-Dimna, Abu Bakr ul Khwarizmi,

Arabic Handwriting  
Page from the Koran

Hamadhani (967-1007); see ARABIAN NIGHTS' ENTERTAINMENT; relig. lit. see KORAN; scientific lit. not indigenous, mainly trans. of Gr. and Ind. scientific works; but Europe owes much to A. in maths., astron., chem., medicine, etc.; Arabs in Spain had great influence on Sp. lit.

**Arabian Nights' Entertainment**, or *Thousand and One Nights*, 10th cent. collectn. of Arab. tales showing Pers. and Hellenistic influence; trans. into Fr. by Galland, 1707-17, and by J. C. Mardrus, 1899. *et seq*; into Ger. by Littmann, 1928; Eng. trans. Lane's, 1839-41; Payne's, 1882-84, Sir Richd. Burton's—based on Payne, 1885-88.

**Arabic**: see LANGUAGE SURVEY, IV. *Semitic*.

**Arabic numerals**, the ten numerals from 0 to 9, introd. to Europe by the Arabs (12th century).

**Arabis**, *rock-cress*, genus of herbs of the order Cruciferae (*g.r.*), some species of which are a common garden-flower; the four-petalled flower is generally white or purple.

**Arachnida**, (entomol.) class of insects divided into 7 orders: Scorpions (*Scorpiones*); whip-scorpions (*Pedipalpi*); spiders (*Araneae*); false spiders (*Solifugae*); false scorpions (*Pseudo-scorpiones*); harvestmen (*Opiliones*); mites and ticks (*Acari*).

**Arafura Sea**, shallow sea betw. N. Australia and New Guinea.

**Arago**, François (1786-1853), Fr. physicist; noted for work in optics and magnetism.

**Aragon**, anc. kgdm. of N.E. Sp., now provs. of Huesca, Saragossa, and Teruel on Ebro; 18,600 sq.m.; pop., 1,000,000; oases of infiltration near rivers, otherwise arid plains. Coal, iron; cap., Saragossa.

**Aragonite**, carbonate of lime, as found in natural state.

**Aral, Sea of**, fourth largest inland sea in the world; 25,100 sq.m.; in Cent. Asia; av. depth, 52½ ft., max., 222 ft.; fed by Riv. Oxus and Riv. Syr Darya.

**Aram**, Eugene (1704-59), Eng. philologist and murderer; subject of Hood's poem, 1829, and Bulwer-Lytton's novel, 1832.

**Aram**, (anc. geogr.) dist. comprising Syria and Mesopotamia, giving name to Aramaic; see LANGUAGE SURVEY, IV. *Semitic*.

**A.R.A.M.**, abbr. Associate of Royal Academy of Music.

**Aramina fibre**, fine, soft, lustrous fibre, grown in Brazil, India, Cuba, U.S.A., etc.; used for coffee bags, etc., in place of jute.

**Aran Islands**, group, Co. Galway, I.F.S., in Galway Bay; *Inishmore*, *Inishmaan*, *Inish-ecr*; 18 sq.m.; pop., 1,600; archit. antiquities.

**Aranjuez**, tn. on Riv. Tagus, Sp.; pop., 14,000; former roy. palace with large park.

**Arapaima**, largest fresh-water bony fish (*Teleost*); attains 16 ft. in length and a weight

of about 400 lbs. Native to the Guianas and Brazil; body clothed in very large scales marked with mosaic-like sculpturing.

**Ararat**, *Great A.*, 17,000 ft., and *Lesser A.*, 12,800 ft.; chain of mtns. on Turk.-Pers. frontier; tradit. resting-place of Noah's Ark.

**Aras**, *Araxes*, riv., Armenia; orig. trib. of Kura, but now flows direct to Kizil-agach Bay of the Caspian; 350 m.; ordinarily fordable, but dangerous when swollen by melting of snow in Armenia.

**Araucanians**, **Araucos**, linguistic subdiv. of S. Amer. Indians of mixed stock in S. Chile and Argentina; settled agriculturists; offered long resistance to Span. forces; now rapidly becoming extinct. See LANGUAGE SURVEY, Amer. language.

**Araucaria**, monkey-puzzle tree, *Araucaria imbricata*, pinaceous S. Amer. tree with sharp pointed leaves. Sometimes cultivated as an ornamental tree.

**Araxes**: see ARAS.

**Arbela**, or **Gaugamela**, victory of Alex. the Great over Kg. Darius III, 331 B.C.

**Arber**, Edward (1836-1912), Eng. scholar, reprinted many scarce works of Eng. literature.

**Arbiter elegantiarum** (Lat.), judge or arbiter of taste, fashion.

**Arbitrage**, dealings in bills of exchange, stocks, bonds, foreign currencies, prec. metals, etc., with object of taking advantage of differing rates of exch. in the var. countries.

**Arbitration**, 1) settlement of differences betw. States by decision of impartial third party, as opposed to war (*g.r.*). One of the main objects of League of Nations (*g.r.*). See also HAGUE TRIBUNAL. 2) Settlement of indust. disputes by decision of 3rd party not directly affected by dispute. In regard to wages disputes often carried out by *Conciliation Boards* with advisory powers only, consisting of representatives of employers' associations and trade unions; should such a Board fail to reach agreement an arbitrator may be apptd. Usu. there is an understanding that no strike or lockout shall occur whilst Board is considering points at issue.

**Arbitrator**, pers. selected by mutual agreement to settle a dispute betw. 2 parties.

**Arblay**, Frances, Mme. d' (1752-1840), (Fanny Burney); Eng. novelist and diarist: *Evelina* (1778).

**Arbor Day**, annual holiday, recognized in U.S.A., Canada, and N. Zealand, upon which trees are planted, esp. by school children; its date varies in different districts.

**Arbor Vitae**, coniferous trees and shrubs, species of *Thuja*; common



Araucaria



Arbor Vitae



arbor vitae (*T. occidentalis*) is used as an ornamental tree.

**Arbroath**, royal burgh, Angus, Scot.; seapt.; 12th cent. abbey; jute and linen mills; pop., 17,700.

**Arbutus**, genus of evergreen shrubs belonging to the heath family, flourishing chiefly in S. Europe. One species is the Strawberry Tree (*q.v.*).

**Arcade**, (archit.) range of arches supported on piers or columns, attached to or detached from a wall.

**Arcades ambo** (Lat.), "Arcadians both," i.e. shepherds, rustics; often used ironically of a couple well matched in simplicity or knavery.

**Arcadia**, 1) anc. dist. of Greece, central region of the Peloponnese; rustic simplicity of people proverbial; now modern prov.; 1,425 sq.m.; pop., 155,000; surrounded by mts. (Mt. Cyllene, 7,900 ft.); pasture. 2) Park on Mt. Desert Is., off coast of Maine, U.S.A., formerly called Lafayette National Park.

**Arcadius** (377-408), 1st Rom. Emp. of the East, bro. of Honorius, who received Western Empire at death of their father Theodosius.

**Arcana** (Lat.), secrets.

**Arc de Triomphe**, triumphal arch; esp. A. de T. de l'Etoile, Paris (162 ft. high, 147 ft. wide), largest in world, commemorating victories of revolutionary and Napoleonic troops; under it is grave of French *Unknown Warrior*.

**Arch**, Joseph (1826-1919), Brit. politician; fndr. of Nat. Agric. Labourers' Union, 1872; M.P. for N.W. Norfolk, 1885 and 1892-1900.

**Arch**, (archit.) curved construction spanning pillars or openings in walls; division of a bridge.

**Archae-an**, earliest geol. period; see GEOLOGICAL FORMATIONS.

**Archaeopteryx**, primitive saurian bird, fossilized in the Jurassic beds; had marked reptilian characteristics, e.g., teeth; link betw. birds and reptiles.

**Archaism**, (Gr.) use of obsolete forms in or in speech.

**Archangel**, tn. and port, Russian S.F.S.R.; cap. of non-auton. prov. of same name (174,800 sq.m.; pop., 430,000), at mouth of Riv. Dwina and on White Sea; pop., 72,000; icebound Nov. to May. Cod-liver oil preparation; cod- and salmon-curing. Harbour can accommodate hundreds of ocean-going steamers. Brit. among allied troops engaged against Bolsheviks, 1918-19.

**Archangels**, highest order of angels: Michael, Gabriel, and Raphael. Jews also recognized Uriel, Chamuel, Jophiel, and Zadkiel.

**Archbishop**, eccles. title first used in 4th cent.; bp. at head of an eccles. province; metropolitan.

**Archdeacon**, eccles. dignitary having special charge, under bp., of part of diocese, in respect mainly of discipline. Orig. a deacon, now always a priest, though he may be in episc. orders. Office now abolished in R.C.Ch. and almost so in Grk. Orth. Ch.; still important in C. of England.

**Archduke**, title given to princes of the House of Habsburg.

**Archegonium**, (bot.) fem. reproductive organ in *pteridophyta* (*q.v.*).

**Archelaus**, (N.T.) son of Herod the Gr., whom he succeeded as Kg. of Judaea; deposed and banished c. 7 A.D.

**Archer**, Fredk. James (1857-86), Brit. jockey. **A., Wm.** (1856-1924), Brit. dramatic critic, ed. works of Ibsen; play: *The Green Goddess*.

**Archer Fish**, scaly-finned fish of family *Toxoidae*; so called because it spurts drops of water at insects flying over surface of water. Found in E. Indies, N. Australia, Polynesia, and New Zealand.

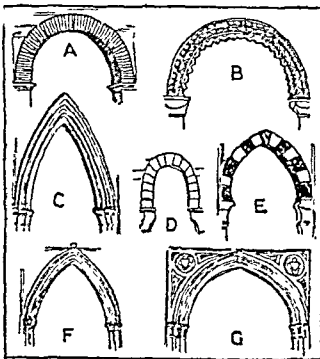
**Archers, Royal Company of**, personal bodyguard of the Brit. sovereign in Scotland, raised 1676.

**Archery**, shooting with bow and arrow; earliest form of shooting, dating back to Flint Age, prob. earlier. Bow and arrow used as weapon in Gt.Br. until late 16th cent. Now practd. as sport under Roy. Toxophilite Soc., Lond. Record shot of 462 yds. 9 in. with 80-lb. bow, made by Inigo Simon (1914). Targets, straw, with 5 concentric rings, white = 1 pt.; black = 3; blue = 5; red = 7; gold (centre) = 9. Ranges vary fr. 50-100 yds.



Archery

**Archives, Court of**, eccles. court of Ch. of Eng., so called because it was held by Dean of Arches at London ch., St. Mary-le-Bow ("S. Maria de Arcubus"); court of appeal from all diocesan courts in prov. of Canterbury. See BOW CHURCH.



Types of Arch

- A Roman Norman
- B Norman
- C Early English Lancet
- D Norman Stilted
- E Moorish
- F Decorated
- G Perpendicular

**Archetype**, prototype, orig. form or pattern wh. serves as a model. In Plato's philos., transcendental concep. of wh. reality is an imperf. imitation.

**Archilochus** (fl. c. 650 B.C.), Gr. lyric poet; only fragments of his work remain.

**Archimandrite** (Gr. Orth. Ch.), superior of large monastery or group of monasteries, corresponding to *abbot* in Western Church.

**Archimedean Drill**, light hand drill, with double spiral groove on spindle, rotated by sliding a sleeve up and down. **A. screw**, tube bent like a corkscrew; when rotated with one end submerged in a liquid, the latter is raised and discharged at the other.

**Archimedes** (287-212 B.C.), Gr. physicist and mathematician, the most famous of antiquity; discovd. principle of the lever and law of specific gravity.

**Archipelago**, group of islands; sea or sheet of water in wh. islands are numerous, e.g., the Aegean.

**Architect**, member of profession trained to undertake design, prepn. of drawings, specification, and supervision of buildings to be erected.

**Architects, Royal Institute of British**, fndd. 1835, regulates practice and teaching of archit. throughout Brit. Emp. The Inst. has no schools of its own, but has set up a system of tests by examination and extended recognition of certain schools of archit. in Gt. Brit., in connection with wh. it grants prizes and scholarships. Publications: *Transactions* and *Proceedings* (from 1879).

**Architecture**, art and science of designing and controlling erection of buildings in significant shapes, conditioning their style by their purpose, materials to be employed, climate, etc.; see ART, HISTORY OF.

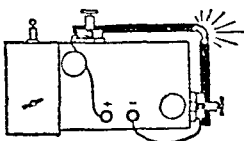
**Architrave**, (archit.) beam or lowest member of entablature (q.v.); also frame surrounding window or door opening.

**Archives**, collec. of docmnts. of pub. and hist. value; usu. preserved by govt. (*State A.*). See RECORD OFFICE.

**Archon**, highest office in anc. Athens; lost most of its significance in democ. times (after 594 B.C.)

**Archpriest**, former title of an officer in R.C.Ch., head of missionary R.C. priests in England; last was Wm. Harrison (1553-1621).

**Arc lamp**, elec. lamp in wh. current passes thr. air betw. 2 carbon rods not in contact; current is carried by vapour of the carbon.



Arc Lamp

**A.R.C.M.**, abbr. Associate Royal College of Music.

**A.R.C.O.**, abbr. Associate Royal College of Organists.

**Arco**, Ct. Georg von (1869- ), Ger. engineer; did great service in development of wireless telegraphy.

**Arcola**, vil. nr. Verona, Italy; defeat of Austrians by Bonaparte, 1796.

**Arcot**, city, Madras, India; pop., 11,000. Here Clive, having captured the city, was besieged for 50 days in 1751.

**A.R.C.S.**, abbr. Associate Royal College of Science.

**Arctic and Antarctic circles**, lines of latitude of terrestrial globe, parall. to the Equator, about 23° 30' distant from the poles, dividing the Temperate from the Arctic or Antarctic zones, which together comprise 84% of the earth's surface. During summer, in these zones, sun remains above horizon for long period; below it for corresponding period in winter. See MIDNIGHT SUN; POLAR NIGHT.

**Arctic fox**, characterized by its short ears, extremely bushy tail, and the long hair clothing the soles of its feet. Pelt bluish grey in summer, changing to pure white in winter; native of Arctic regions.

**Arctic regions**, area of the earth's surface within *Arctic Circle* (66° 30' N. Lat.); temperature influenced by Gulf Stream (q.v.). Lowest temperature recorded, -90° F.; high temperatures (exceeding 80° F.) known in area in summer. Includes northernmost parts of Norway, Sweden, Lapland, and Russia (Europe), of Siberia (Asia), and of Alaska and Canada (America). Chf. isls.: Greenland (N. half), Iceland (N. coast), Spitsbergen, Novaya Zemlya, Franz Josef Land, Banks Isl., Victoria Land, Melville Isl., Baffin Isl. (N. half), Ellesmere Land. Inhabitants include Eskimos, Indians, Samoyedes; among the fauna are whales, seals, and polar bears. **A. Ocean**, water area within Arctic Circle; communicates with Atlantic by Greenland Sea and Pacific by Behring Strait; max. depth, 12,600 ft.—EXPLORATION: Norsemen visited Greenland in 10th cent.; attempts in 16th-18th cents. to discover N.W. and N.E. passages; Willoughby-Chancellor expedition, 1553; Frobisher, 1576; Davis sailed up W. coast Greenland (Davis Strait), 1585; Hudson discovered Hudson Bay and Strait, 1610; Behring discovered Behring Strait, 1728; expeditions of Ross and Parry, 1818-20; Franklin, 1845; McClure discovered N.W. Passage, 1850-54; Nordenskiöld, N.E. Passage, 1878-79; Nansen sailed N. coast Europe and Asia, 1893-96; Peary (q.v.) reached N. Pole, 1909; Amundsen flew in airship, Spitsbergen to Alaska, 1926; Byrd, aeroplane, N. Pole and back, 1926; Sir Geo. Wilkins (q.v.), aeroplane Alaska to Spitsbergen, 1928. cf. NORTH POLAR REGIONS.



Archimedean Drill

**Arcturus**, 1st magn. yellow star, in constell. Boötes (*q.v.*); 4th brightest in entire heavens.

**Ardashir** (*Artaxerxes*), (c. A.D. 227-240), fndr. of Sassanian Empire in Persia; fought w. Roman Empire; ardent propagandist of Zoroastrianism.

**Ardeale**: see TRANSYLVANIA.

**Ardèche**, dépt., S. France; 2,144 sq.m.; pop., 282,911; mountainous pasture-land, exceptionally fertile in Rhone valley; cap., Privas.

**Ardeiformes**, order of birds including herons, egrets, bitterns, and storks.

**Arden**, Forest of, well wooded region N. Warwicksh., Eng.; originally forest.

**Ardenne**, anc. forest, N.E. Gaul, France, now partly occupied by dist. of Ardennes (*q.v.*).

**Ardennes**, 1) dist. N.E. France, Belgium, and Luxembourg, covering part of anc. forest of Ardenne; wooded and hilly (W. end of *Rhine Slate Mtns.* up to 2,140 ft.); wild boar, red deer. 2) Dépt., N.E. France, on Belg. frontier; 2,027 sq.m., pop., 293,746; wooded and hilly; cattle-breeding, weaving, quarries, iron and glass indus.; cap., Mézières.

**Arditi**, Luigi (1822-1903); It. comp. and mus. dir.; song: *Il Bacio*.

**Ardnamurchan**, dist. and parish, W. Argyllsh., Scotland, ending in *A. Point* (lighthouse).

**Ardrrossan**, seapt. tn., Ayrsh., Scot.; pop., 6,900.

**Are** (metric system), 100 sq. metres (119.6 sq. yds.).

**Area**, (bldg.) site covered by a building; in domestic archit., open space in front of basement storey.



Arena at Verona

**Areca**, genus of trop. palms growing to a considerable height; the *A. nut* is imported for use in toothpastes. See BETEL NUT.

**Arelate**: See ARLES.

**Arena**, orig. sanded central area of amphitheatre, for gladiatorial contests; now any level space for displays, etc.

**Areometer**, instr. for measuring specif. gravity or density of fluids; a cylindrical hollow vessel, weighted so as to float upright in the liquid, with part (the stem) above surface; stem is more or less immersed acc. to density of liquid, and is graduated so that this can be read off; see also HYDROMETER.



Areometer

**Areopagitica**, treatise by Milton (*q.v.*), addressed to the "Parliament of

England," "for the liberty of unlicensed printing."

**Areopagus**, Hill of Ares, orig. seat of Athenian crim. court. Little power after 462 B.C.

**Arequipa**, 1) dept. of Peru; 21,900 sq.m.; pop., c. 350,000; 2) cap. of A.; 2nd largest city of Peru; pop., 65,000; climate temperate and healthy; pears, strawberries, granadillas, lemons, etc.; min. oils; alpaca wool; borax deposits.

**Ares**, Gr. god of war; the Rom. *Mars* (*q.v.*). **Ludovisi A.**, statue in Villa Ludovisi, Rome.

**Arête**, sharp ridge or crest of mountain, in the Alps and other mountaineering centres.

**Arethusa**, 1) in Gr. myth., one of the Nereids (*q.v.*); escaping from Alpheus, she was changed by Artemis into the fountain of Ortygia, nr. Syracuse, whither the river-god pursued her under the sea. 2) Trad.

name of Brit. warship; specif. class of light cruisers, Brit. Navy (1914), 3,500 tons, 29 knots.

"Arethusa" fought at Heligoland Bight (28 Aug., 1914).

**Aretino**, **Pietro** (1492-1557), Ital. poet and wit; remembered for his licentious writings. **A.**, **Spinello** (c. 1330-1410), Ital. painter; frescoes Siena and Campo Santo, Pisa.



Aretino

**Arezzo**, 1) prov. of Tuscany, Centr. Italy, 1,276 sq.m.; pop., 300,500; 2) (anc. *Arretium*) episc. see, cap. of prov. of A., 54 m. S.E. of Florence; pop., 52,200; birthplace of Petrarch, Vasari, etc.

**Arg.**, abbr. Argentina.

**Argali**, or *Marco Polo Sheep*, wild sheep (*q.v.*) native to Cent. Asia; remarkable for wide-curving horns of male; freqt. mountainous regions.

**Argand burner**, form of oil-lamp burner, invented by Aimé A. (1755-1803); outer of two concentric tubes contains circular wick, inner admits air to inside of flame. Many modern lamps are a development of this principle, which has also been applied to gas burners.

**Argenteuil**, tn. dépt. Seine-et-Oise, France, on Seine; pop., 44,583; vineyards, vegetable gdns. and watchmaking; famous for its connection with Héloïse and Abélard (1129).

**Argentina**, or **Argentine Republic**, second largest state of S. America, occupying most of S. peninsula; bounded W. by Chile, N. by Bolivia and Paraguay, E. by Brazil, Uruguay, and S. Atlantic. Federal repub.

divided into 14 provs., 10 territories, and one federal dist.; c. 1,150,000 sq. m.; pop., c. 11,200,000. The Andes form natural frontier betw. A. and Chile, occupying up to one-third of area (*Aconcagua*, 23,025 ft.); country slopes away from W. to E.; surface generally unbroken. In N. is densely forested Gran Chaco; pampas (prairies) in centre (pastures, ranching); desert steppes in S. (Patagonia). La Plata estuary is fed by rivs. Paraná and Uruguay (enclosing wooded Entre Ríos dist.) and Riv. Paraná by Rivs. Paraguay and Pilcomayo; all four rivs. form parts of the Argentine frontier. Rivs. farther S. include Colorado and Río Negro. Many lakes; climate temperate; wheat, maize, and fruits are grown; cattle-raising and dairying important; minerals undeveloped. Chf. exports: chilled and frozen meat, cereals, wool, hides, and skins. Rlys., 25,440 m. (Transandine Rly. to Valparaíso, Chile). Chf. ports, Buenos Aires (cap.) and Bahía Blanca (naval station). La Plata estuary discovered by Spaniards, 1516; Buenos Aires colonised, 1535; A. united with Bolivia, Uruguay, and Paraguay under Span. viceroy, 1776; independent, 1816; frontier dispute of 55 yrs. standing with Chile settled by Kg. Edward VII as arbitrator, 1902.



**Argentite**, an important silver ore; a sulphide of silver found in combination with sulphides of copper and lead; yields abt. 86.5% silver.

**Argillaceous earth**, *see* BOLE.

**Argives**, (Gr. myth. and hist.) inhab. of Argolis, Peloponnesus, Greece. In Homer often synonymously with "Greeks," as the Achæan A. under Agamemnon, Kg. of Mycenæ, were the dominant race.

**Argo**, 1) ship of the Argonauts (*q.v.*); 2) (astron.) Southern constell.; *see* PL. ASTRONOMY, S.C.H., F.

**Argol**, crude potassium hydrogen tartrate deposited in wine casks during fermenting process.

**Argolis**, anc. division of the Peloponnese, Greece, containing the cities of Argos and Mycenæ. **A. and Corinth**, mod. dept. in the Peloponnese; 1,970 sq. m.; pop., 174,300; cap., Nauplia.

**Argon**, chem. element, symbol Ar; at. wt. 39.944; gas, colourless and tasteless, forms 1.186% of atmosphere. Is incapable of chemical combination.

**Argonaut**, (zool.): *see* PAPER NAUTILUS.

**Argonautica**, epic by Apollonius of Rhodes (3rd cent. B.C.) on legend of the Argonauts.

**Argonauts**, (Gr. myth.) Jason (*q.v.*) and his companions in the "Argo" in quest of the Golden Fleece (*q.v.*).

**Argonne**, plateau (c. 1,000 ft.), N.E.

France, extending betw. rivs. Marne and Meuse, along borders of Champagne and Lorraine; thickly wooded. Scene of heavy fighting during first year of World War, and in Allies' final counter-offensive (advance of the Americans), Sept.-Nov., 1918.

**Argos**, tn. in prov. of Argolis and Corinth Greece; pop., 9,000; anc. shrine of Hera.

**Argosy**, a fleet of merchant ships, or a single vessel, richly laden; term derived from a corruption of Ragusa, a wealthy Dalmatian port in the Mid. Ages.

**Argot**, slang, jargon; also tech. speech of profession or trade, e.g., "painters' argot."

**Argus**, (Gr. myth.) hundred-eyed monster, guardian of Io (*q.v.*). **A.-eyes**, watchful-eyes.

**Argyll**, title in Brit. peerage: 1) the Earl-dom: **Colin Campbell**, cr. 1st E., 1457; d. 1493; his son, **Archibald**, 2nd E., killed at Flodden, 1513; **Archibald**, 4th E., first Scot. nobleman to adopt cause of Reformation, d. 1558; **Archibald**, 5th E., supporter of Mary Qn. of Scots, party to murder of Darnley, d. 1573; **Archibald**, 8th E. (1607-61) cr. Marquess, 1641; subm. to Cromwell, 1652; beheaded for treason; **Archibald**, 9th E. (1629-85), attempted invasion of Scotland, 1685; exec. for treason; 2) The Dukedom: **Archibald**, 1st Duke, s. of 9th E. (c. 1651-1703), assoc. with Massacre of Glencoe; **John**, 2nd D. (1678-1743), fought at Ramillies, Oudenarde, and Malplaquet; cr. D. of Greenwich, 1719; **George**, 8th D. (1823-1900), politician (lord privy seal, 1852; P.M.G., 1855), and religious controversialist; opp. Irish Home Rule; **John Douglas**, 9th D. (1845-1914), marr. (as Marq. of Lorne) Princess Louise, dau. of Qn. Victoria, 1871.

**Argyll and Sutherland Highlanders** (Princess Louise's), Highland infantry regt., Brit. army; union of old 91st (Argyllsh. Highlanders; raised 1794) and 93rd Foot (Sutherland Highlanders; 1800); depot, Stirling; record office, Perth; 27 battalions in World War.

**Argyllshire**, mar. co., W. Scot.; includes most of Inner Hebrides; area, 3,213 sq. m.; pop., 63,000; coast-line deeply indented by sea-lochs; surface mountainous (*Ben Cruachan*, 3,689 ft.); many inland lochs (*Loch Awe*, 24 m. long) moors, deer forests, Highland cattle, sheep; fishing, distilling; *Oban*, tourist centre; cap., Inveraray.

**Aria**, formal lyric song for voice with instr. accompaniment. *Aria di Bracura*, a special piece to display the compass and flexibility of a singer's voice.

**Ariadne**, (Gr. myth.) dau. of Minos; rescued Theseus from the Labyrinth by means of a clue of thread (*A.'s clue*); was abandoned by him on Isl. of Naxos and became bride of Dionysus.

**Arianism**, heresy orig. by *Arius*, c. 320; denied consubstantiality of Christ with God the Father; condemned by Council of Nicea, 325 (Nicene Creed).

**A.R.I.B.A.**, abbr. Associate Royal Institute of Brit. Architects.

**Arica**, coastal frontier dist., N. Chile; prov. of Peru till 1879; retained by Chile under terms of settlement of Tacna-Arica question. *See* TACNA.

**Ariège**, 1) inland dépt., S. France, N. of Pyrenees; 1,890 sq.m.; pop., 165,000; mainly mtous.; some cultivation; cap., Foix. 2) Riv. in dépt. of A., trib. of Riv. Garonne, 102 miles.

**Ariel**, sprite of the air in Shakespeare's *Tempest*.

**Aries** (*The Ram*), zodiacal constell.; 1st sign of *Zodiac* (*q.v.*) entered by sun at vernal equinox; *see* PL. ASTRONOMY, N.C.H., A.

**Arion** (fl. 7th cent. B.C.), Gr. poet and renowned player upon the cithara; said to have been thrown overboard by sailors, and rescued by a dolphin wh. he had charmed with his playing; little, if any, of his work extant.

**Arioso**, (mus.) like a song.

**Ariosto**, Ludovico (1474-1533); It. poet; epic, *Orlando Furioso*.

**Aristarchus of Samos** (3rd cent. B.C.), Gr. astronomer; anticipated Copernicus (*q.v.*) in maintaining that the earth moves round the sun. **A. of Samothrace** (2nd cent. B.C.), Gr. grammarian and critic.

**Aristides**, "The Just" (530-467 B.C.), Athenian statesman; one of the 10 generals in yr. of battle of Marathon (*q.v.*); opposed Themistocles (*q.v.*) and was ostracized; returned to Athens to take part in victories of Salamis and Plataea.

**Aristippus** (435-355 B.C.), Gr. philos., fndd. Cyrenaic School; *see* HEDONISM, CYRENAICS.

**Aristocracy**, 1) rule of a minority favoured by birth or riches; 2) a class, titled or untitled, recog. as of noble birth.

**Aristolochia**: *see* BIRTH-WORT.

**Ariston men hudor** (Gr.), but water is best.

**Aristophanes** (450-385 B.C.), Athenian comic dramatist. Opposed war and demagogu, ridiculed Socrates; chf. plays: *Lysistrata*, *The Clouds*, *The Birds*, *The Frogs*.

**Aristotle** (384-382 B.C.), of Stagira, Gr. philos., father of natural science, logician, metaphysician; *Metaphysics*, *Nicomachean Ethics*, *Poetics*, *Politics*.

**Arithmetic**, (Grk.) science of numbers; part of mathematics dealing with laws of calculation.

**Arithmetical progression**: *see* PROGRESSIONS.

**Arius** (c. 256-336) of Alexandria; fndd. Arian heresy. *See* ARIANISM.

**Ariz.**, abbr. Arizona.

**Arizona**, state in S.W. of U.S.A.; 113,956 sq.m.; pop., 333,300; gold, silver, and copper mining; wheat, cotton, and fruits (artificial irrigation); horse and cattle breeding; chf. riv., Colorado (Grand Canyon, *q.v.*); cap., Phoenix.

**Ark.**, abbr. Arkansas.

**Arkansas**, 1) riv., trib. of Mississippi Riv., U.S.A., 1,460 m. (basin, 185,000 sq.m.); rises in Colorado Rockies; flows through Grand Canyon of A., nr. Canyon City; joins Mississippi at Napoleon in 2) ("Bear," "Bowie") State, U.S.A.; 53,335 sq.m.; pop., 1,850,000; horse, cattle, and pig breeding; coal mining; petroleum wells; cotton and timber; fruit growing; rlys., 3,040 m.; cap., Little Rock (*q.v.*).

**Ark of the Covenant**, (O.T.) most anc. and sacred relig. symbol of the Jews; depository of 2 Tables of the Law (*see* DECALOGUE); set up in the Holy of Holies (*q.v.*).

**Arkwright**, Sir Richard (1732-92), Eng. inventor; cotton-spinning frame, 1769; barber by trade.

**Arllberg Pass**, in Austrian Alps, betw. the Tyrol and Vorarlberg; road climbs pass from Landeck (Inn Valley) to height of 5,900 ft., then descends to Bludenz (Ill Valley). *A. Rly.* traverses pass through tunnel, 6½ m., at height of 4,260 feet.

**Arlen**, Michael (1895- ), Brit. novelist and playwright, of Armenian parentage and Bulgarian birth; *The Green Hat*; *Babes in the Wood*, 1929; *Men Dislike Women*, 1931, etc.

**Arles**, tn., S. France, at head of Rhone delta; pop., 31,000; connected by **A. Canal** (29 m.) with Mediterranean. Cathed. (7-12th cent.); museums (Rom. remains; Provençal art); Rom. amphitheatre, still used (for bullfights). Rom. *Arelate*, favourite residence of Emp. Constantine, who re-named it *Constantia* (A.D. 307); cap. of Gaul after 418; seat of Visigoth kings, 480; of Merovingian kings, 536; cap. kgdm. of Arles in 10th cent. **Kingdom of A., Arelate**, mediæv. kgdm., S.E. France, formed by union, 933, of Provence (Cisjuran Burgundy) and Transjuran Burgundy; bequeathed by last king to the Empire, 1032; after many vicissitudes absorbed by France, 1378. **Synods of A.**, most important was council summoned by Emp. Constantine, 314 A.D., to compose differences betw. Catholics and Donatists.

**Arlington National Cemetery**, on Potomac Riv., Virginia, opp. Washington, D.C.; 408 acres; tomb of Unknown Soldier; memorial amphitheatre; Lee mansion where Robert E. Lee married Mary Ann Custis, 1831.

**Arlon**, *Aarlen*, cap. of prov. of Luxembourg, S.E. Belg.; pop., 12,000.

**Armada, The Invincible**, fleet sent by Philip II of Sp. agst. Eng. in 1588, constg. of 130 vessels carrying about 28,000 men. It was met by Eng. fleet in the Channel, and after much fighting, compelled to fly northwards. The Armada was scattered by storms, many more vessels lost, and only one-half ever returned to Spain.

**Armadillo**, S. Amer. mammal having greater part of skin transformed into bony plates, jointed so that the animal can roll itself into a ball, thus protecting its limbs and softer parts.



Armadillo

**Armageddon**, 1) equiv. to O.T. Megiddo in Palestine, scene of many battles; 2) (N.T.) scene of destruction of forces of Antichrist on Day of Judgment; now used of a great slaughter or conflict.

**Armagh**, 1) inland co., Ulster, N. Ire.; area, 489 sq.m.; pop., 110,100; surface hilly; agric., linen industry; 2) co. tn.; pop., 7,400; cathedral (archbishop).

**Armagnacs, the**, Fr. polit. supporters of D. of Orleans agst. D. of Burgundy, early 15th cent.; name taken from Bernard, Count of A., father-in-law of D. of Orleans. Bernard of A., together with c. 3,000 followers, was massacred in Paris by Burgundians, 1418; remnant of party later became lawless mercenaries and were sent by Ch. VII, who wished to rid Fr. of them, to assist Emperor Fredk. III agst. the Swiss, 1444.

**Armature**, revolving part of an electric dynamo or motor (q.v.).

**Armenia**, fertile mountainous country betw. Black Sea and Caspian; surface a high plateau (c. 2,600 ft.), with isolated mtn. peaks (*Ararat*, 17,000 ft.) and lakes Van, Urmia, and Gokcha; contains head-waters of Aras (Arares), Kura, Euphrates, and Tigris. Area has greatly varied at different times (max. extent from *Taurus Mts.* of Asia Minor to the *Caucasus* and shores of Caspian). Now divided into:

1) **Armenian S.S.R.**, inland state, member of Trans-caucasian F.S.R.; 11,970 sq.m.; pop., 1,340,000 (Armenians, Turks, Russians); agric., fruit, cattle-breeding, forestry, cotton, tobacco; cap., Erivan, with convent of Echmiadzin (q.v.) 12 m. W.



Armenian Women

2) **Turkish Armenia**, in W., on Black Sea; 68,000 sq.m.; pop., 1,534,750 (Turks and Kurds); chf. tns. Erzerum, Kars, Trebizond (port). 3) **Persian Azerbaijan** (q.v.) in S.E. Orig. inhab. of A. were non-Aryan race of Chaldeans, called *Uratu* (q.v.) by the Assyrians, with whom they were constantly at war (9-8th cent. B.C.). Indo-European invaders (c. 650 B.C.) intermarried with aboriginal inhabts. to form characteristic Armenian race; Persian c. 550 B.C.; nominally subject to Seleucids after death of Alexander the Great and to Romans after defeat of Tigranes (69 B.C.). Romans distinguished Greater A. (E. of Euphrates) and Lesser A. Occupied by Turks, 1522. Eastern A. annexed 1828 by Russia, who acquired further terr. in 1878. Formation of Armenian secret societies led up to Armenian atrocities (massacres by Turks) in 1895; repeated 1915 and 1918. Independent after Russian Revolution, 1917. Armenian S.S.R. formed, 1920.

**Armenian Church**, one of the *Eastern churches*; founded by Gregory the Illuminator, c. 300; see CATHOLICOS.

**Armentières**, tn., dépt. of Nord, N. France, on Riv. Lys; pop., 20,000; textiles; manuf. of machinery. Scene of heavy fighting in World War.

**Armes blanches** (Fr.), white arms; i.e., cold steel, side-arms.

**Arminianism**, doctrine of man's free will and salvation by faith, in opposition to Calvinistic doctrine of predestination to eternal salvation or punishment; taught by Jacobus Arminius (1560-1609); adherents addressed remonstrance of 5 points to States-General, 1609; persecuted until c. 1630.

**Arminius** (18 B.C.-A.D. 19), Ger. chieftain; defeated Rom. in the Teutoburg Forest, A.D. 9.

**Armistice**, agreement to cease hostilities, gen. in order to begin peace negotiations. **A.** betw. Germany and the Entente, Nov. 11, 1918, in Forest of Compiègne. Terms: evacuation of occupied district and Alsace-Lorraine within 15 days, surrender of war material, liberation of enemy prisoners of war, continuation of blockade. **A. Day**, 11th Nov.; anniv. of cessation of hostilities in World War (1918). Since 1919 a "two-minutes' silence" has been observed throughout the Brit. Empire at 11 A.M.; and in 27 of the United States the day is a public legal holiday.

**Armorica**, Rom. name for N.W. peninsula of France (now Brittany) inhab. by Armorici. **Armorican Chain**, W. section of high mtn. range of the Carboniferous Period, wh. stretched from S. Ireland, through S. Wales and N. France, into Belgium; now represented by a few low ranges.

**Armour**, protection from weapons for man or horse, gen. metal plates, scales, or

links; covered the whole of body in the Mid. Ages; went out of general use by the 18th cent.; revived for special purposes during World War. Name applied also to metal defensive covering of ironclads, tanks, armoured-cars, etc. **A.-piercing shell**, of hardened steel with specially hardened nose to give highest possible penetration; often fitted with delayed action fuse, so as to burst after penetrating. **A. plate**, of chrome nickel steel, often case-hardened, for protec. of battle-ships, field artillery, etc.



Armour,  
15th Century

**Armoured car**, motor vehicle, protected with armour plate, generally with armoured turret for machine-gun and riflemen.

**A. cruiser**, fast warship, protec. with armour plate, with wide field of action. **A. train**, train with locomotive and carriages

protec. by steel plate agst. rifle fire; for guarding railways and for reconnaissance. **A. turret**, revolving cylinder of armour plate, mounting a gun; sometimes (in forts) sinking below ground.

**Arms**, comprehensive term for all weapons or instruments of attack or defence; the various branches of the fighting services of a State; also armorial bearings; see HERALDRY.

**Armstrong**, William G. A., 1st Bn. (1810-1900), Brit. electrical and hydraulic engineer. Inventor of Armstrong breech-loading cannon; fndd. Elswick Works on Riv. Tyne.

**Army**, 1) armed forces of a State (land). **British A.**: establishment, incl. India, A. Reserve, etc., 651,294. *Commands*: Aldershot, Eastern, London Dist., Northern, N. Ireland, Scottish, Southern, Western. *Abroad*: China, Egy. and Sudan, Iraq (Air Force), India (divided into N.S.E. & W. commands). 2) A large body of troops formed as a unit of operations in the field. Commanded from **A. headquarters**. **A. Corps**, largest peace-time formation; part of an A. in the field.

**Army Council**, body at War Office responsible for administration of Brit. Army; head: Sec. of State for War; members: Parl. Under-Sec. for War, Chf. of Imp. Gen. Staff, Adj.-Gen., Qr.-Mr.-Gen., Master-Gen. of Ordnance, Financial Sec. of War Off. and Perm. Under-Sec. for War (sec. of Army Council).

**Army Reserve**, body of men who have completed their service with the colours and are liable for a stated period to be called up for active service in war or emergency. Officers who have resigned or relinquished their commissions pass into the *Reserve of*

.. See also MILITIA.

**Army-worm**, term applied to certain species of moth larvae



Army-Worm

of wh. have habit of marching gregariously in search of fresh food, often crops of economic importance.

**Arnatto**: see ANNATTO.

**Arndt**, Ernst Moritz (1769-1860); Ger. writer and patriot, organised War of Liberation agst. Napoleon.

**Arne**, Thomas Augustine (1710-78), Eng. composer; set many of Shakespeare's songs to music; masque *Alfred* (1740), source of *Rule, Britannia*.

**Arnhem**, tn., Holland, cap. Gelderland; manuf. textiles, furniture, tobacco; trading centre; pop., 78,200.

**Arnica**, *Arnica montana*, small plant indigenous to Cent. Europe. From the dried flowers or root a tincture is made, and applied to bruises and sprains.

**Arnim**, Bettina von (1785-1859), Ger. writer; friend and correspondent of Goethe.

**Arno**, riv. in Tuscany, Cent. Italy, 155 m.; navig. for barges as far as Florence (66 m.); rises in Apennines and flows into Ligurian Sea, nr. Pisa.

**Arnold**, Benedict (1741-1801), Amer. soldier; attempted (with Maj. André, q.v.) to betray army to Brit. during War of Indep., 1780; escaped to Brit. Army; d. in England. **A., Sir Edwin** (1832-1904), Eng. orientalist and poet: *Light of Asia*. **A., Matthew** (1822-88), Eng. critic and poet; son of Thos. A.; *On Translating Homer*; *The Scholar-Gypsy*; *Sohrab and Rustum*. **A., Sidney**, 1st Bn. (1878- ), Brit. politician; M.P. (Liberal), 1912-21; joined Lab. party, 1922; peerage, 1924; Under-Sec. for Colonies, 1924; Paymr.-Gen., 1929. **A., Thomas** (1795-1842), Eng. hist. and educationalist; headmaster of Rugby School, 1828-42.

**Arnold of Brescia** (1100-55), It. theolog. and schismatic; opposed papal claims to temporal power; put to death.

**Aromatic compounds**, org. compounds derived from benzene (q.v.), and all others with a closed chain constitution as nucleus.

**Arosa**, health resort, Switzerland, canton Grisons; alt. 5,800 to 6,000 ft.

**Árpád** (A.D. c. 900), national hero of the Magyars, fndd. dynasty of Hung. Kgs., 997-1301.

**Arpeggio**, (mus.) chord played by striking the notes in succession.

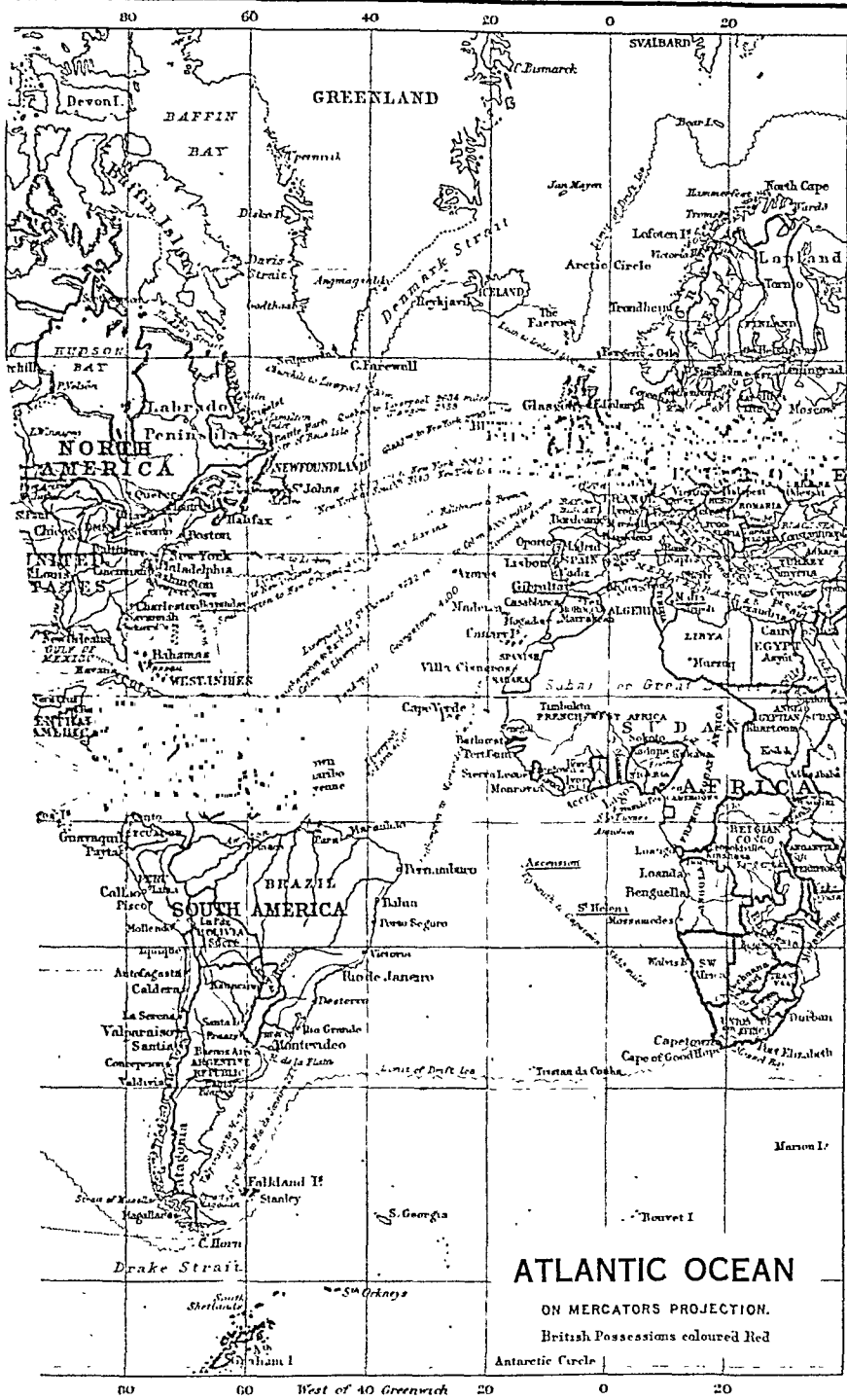
**Arquebus**, or *hackbuss*, 16th cent. match-lock or wheel-lock musket with a long barrel and gun-fork (support).



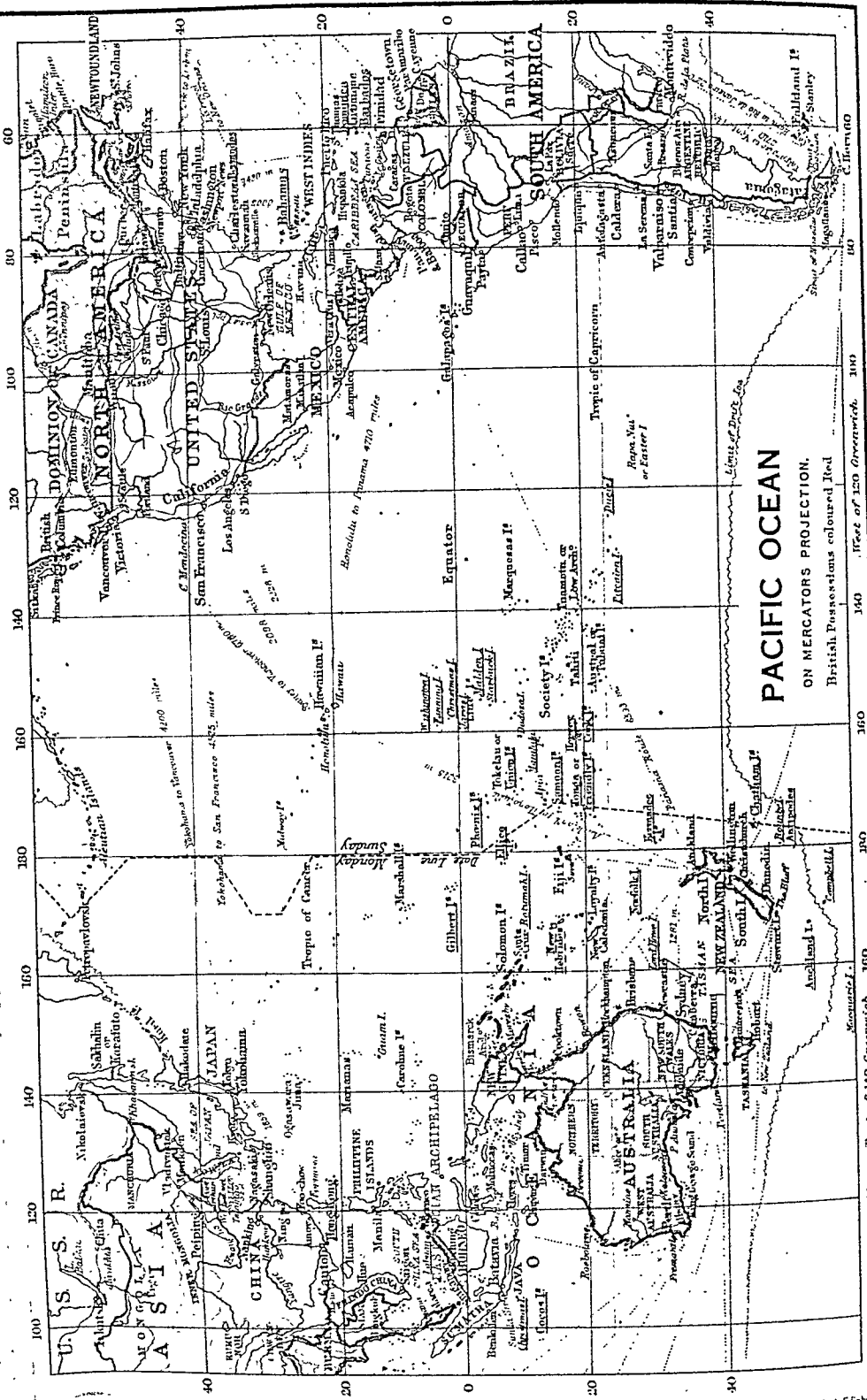
Matthew Arnold



Arpeggio







**PACIFIC OCEAN**  
ON MERCATORS PROJECTION.  
British Possessions coloured Red

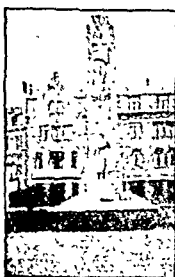
**Arrack**, *Arak*, potent spirit used in East; obt'd. by distilling rice or date juice.

**Arran** (167 sq.m.), mountainous isl., Bute-shire, Scot., 12 m. from Ayrshire coast; Goatfell, 2,866 feet.

**Arras**, cap. of Fr. dépt. of Pas-de-Calais, N. France; pop., 26,500; textiles; one of chf.



Loading an  
Arquebus



French War  
Memorial, Arras

Fr. grain markets. Scene of heavy fighting in World War, esp., Apr.-May 1917. Brit. Nat. Memorial to 35,938 missing (World War).

**Arrhenius**, Svante (1857-1927), Swed. chem. and physicist. Nobel Prize (Chem.), 1903.

**Arrhythmia**, (med.) irregularity of beating of heart.

**Arrian**, Flavius (fl. 2nd cent. B.C.), Gr. hist. and philos.; pupil of Epictetus (q.v.); *Anabasis Alexandrou*, hist. of campaigns of Alexander the Great.

**Arrière-pensée** (Fr.), mental reservation, unspoken thought, concealed purpose.

**Arrol**, Sir Wm. (1839-1913), Brit. engineer of *Forth Bridge*, *Tower Bridge*, etc.

**Arrondissement** (Fr.), subord. administrative district of department or city.

**Arrow**, missile shot from bow; straight haft of wood tipped with point of hardened wood, flint, iron, steel, or ivory, usually barbed, and fitted with feathers at the end o' give steadiness of flight by imparting rotary movement.

**Arrow-head**, *Sagittaria sagittifolia*, water plant with arrow-shaped leaves and flesh-coloured flowers.

**Arrowhead Trail**, main highway from Salt Lake City to Los Angeles, U.S.A., 725 n.; branch leads to Grand Canyon of Colorado.

**Arrowrock Dam**, Boise Riv., Idaho, U.S.A., 349 ft. high; storage capacity, 1,238 mill. gallons (1915).

**Arrowroot**, starch from the root of *Maranta arundinacea*, cultivated in the W. Indies; an article of diet for invalids and children.

**A.R.S.A.**, abbr. Associate Royal Scottish Academy.

**Arsaces**, Scythian chief who founded dynasty of Parthian kgs. (the *Arsacidae*),

c. 250 B.C., which ruled until 227 A.D., when it was overthrown by the Persians.

**Arsenal**, 1) factory and store for war material; sometimes an army museum. 2) Eng. Assoc. Football club, fndd. 1886 at Woolwich as *Woolwich A.*; moved to Highbury, N. London, after World War, and since then known as *Arsenal*. Won English Cup, 1930; League Champions, 1931, 1933.

**Arsenic**, (chem.) steel-grey element, sublimes at 450°C., melts under pressure at 500°; symbol As, at. wt. 74.93; occurs naturally in the free state, in combination with sulphur (e.g., orpiment, As<sub>2</sub>S<sub>3</sub>), or combined with metals, e.g., iron, nickel, or cobalt. **Arsenious oxide**, As<sub>2</sub>O<sub>3</sub>, used in med. as a tonic and forms basis of many rat poisons. Numerous complex organic compounds, e.g., salvarsan, used in treatment of syphilis. See ANTIDOTES; POISONING, TREATMENT OF.

**Ars est celare artem** (Lat.), art consists in the concealment of (conscious) art, i.e., in results, not in processes.

**Arshin**, Russ. linear meas., 28 in. (712 mm.); 3 arshin = 1 sazhen (q.v.).

**Arsis**, accented syll. in Eng. scansion.

**Ars longa, vita brevis** (Lat.), art is long, life short.

**Ars moriendi**, (Lat.: The Art of Dying,) early block book (q.v.), first printed in 1465 and frequently copied in 15th cent. The woodcuts, usu. facing text, show temptations to Unbelief, Despair, Impatience, etc., which beset the dying.

**Arson**, wilful setting fire to another's property or to one's own if with intent to defraud.

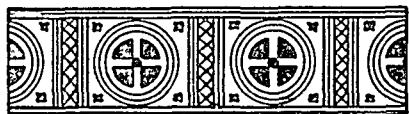
**Art, history of.** The first records of the artistic activities of man date from prehistoric times, animal-drawings of remarkable skill (perh. of magic or votive significance) being found in caves in S. France, N. Spain and (1932) Palestine. Excavations at Ur have established Mesopotamia as probable seat of the earliest civilization, the art of the Sumerian inhabitants (sculpture, metal-work, inlay) being highly developed, if not decadent, by 3500 B.C. Egyptian art, from about 3000 B.C., shows traces of Sumerian influence; it is mainly monumental and conventional, connected with funeral ceremonies (pyramids, mummy cases, Book of the Dead) and the glorification of royal dynasties (statues), but shows also examples of realism.



Mycenean Vase Ornament

In Assyrian art, deriving from Sumerian through Babylonian, convention and realism mingle (bas-reliefs: Lion Hunt). Contempo-

rary Aegean culture (Crete, Mycenae) had contacts with Egypt, but developed individual art-forms. Greek art was at first strongly influenced by Egypt, being hieratic and conventional; but by the 5th cent. B.C. it was characterized in architecture (Doric, Ionic, and Corinthian orders) and the minor arts (vases, figurines) by grace and proportion, and in sculpture by recognition of the beauty of the human form (Pheidias, Myron): the earliest art not entirely dominated by ritual or dynastic ideas; Greek painting (apparently naturalistic) not now



Greek Vase Ornament, Geometrical Pattern

extant. Decadence resulted in the prettiness of Praxiteles, and after Alexander's conquests Hellenistic art in Alexandria and Asia Minor was a mere uninspired imitation of Greek. So also was Roman, in which the dynastic motive was revived in idealized busts of the Caesars. Rome excelled in massive architecture, planned for utility and permanence rather than beauty. With the official recognition of Christianity and the transference of the capital of the Empire to Constantinople (Byzantium) (3rd-4th cent. A.D.)



Greek Vase Ornament, Classical Period

Byzantine art developed, relig. in character and semi-oriental in spirit and form; characterized by elaborate mosaics (St. Sophia, Constantinople), metal-work and illuminations. The arch supplanted the architrave



Pompeian Ornament

in building. Hence developed the Romanesque style, in which the earliest churches of W. Europe were built, the English Norman (Tower of London, Peterborough Cathedral)



Gothic Ornament

being a variation of it. In the 12th cent. the Gothic style developed in France and spread to other countries (Chartres, York, Cologne, Milan, Toledo), the pointed arch

replacing the round, with magnificent sculpture, increasing in freedom and realism, but degenerating by the 14th cent. into over-elaboration. Italian architecture developed on separate lines and Spanish showed Moorish influence. Wall-painting (tempera) began in Italy in the 13th cent. at Siena (Duccio, Simone Martini) and a little later at Florence (Cimabue, Giotto), where a great succession of relig. painters culminated in Fra Angelico. From the 14th cent. painting also flourished in Germany and Flanders, whence oil-painting, supposed to have been first employed by Hubert and Jan van Eyck, was introduced into Italy. In the 15th cent. the revived knowledge of classical art and literature, following the capture of Constantinople by the Turks in 1453, and dispersal of its treasures, produced the Italian Renaissance, and art, though still largely relig. in subject, often pagan in temper became influenced by science and learning. Masaccio introduced naturalism and Botticelli classical and allegorical subjects. Anatomy and perspective were studied, and the human form, for the first time since the great age of Greece, became the centre of interest. In painting Leonardo da Vinci, Michelangelo, and Raphael, in sculpture Michelangelo and Donatello, were the predominant figures. Venice produced a great school of colourists (Titian, Veronese, Tintoretto) who influenced and were rivalled by Rubens in Flanders. In architecture the classical orders were revived by Brunelleschi at Florence, Bramante at Rome, and Palladio at Venice, and soon spread to other countries, being adopted in England by Inigo Jones (Banqueting Hall, Whitehall) and Wren (St. Paul's) and in France by Mansart (Versailles). For public buildings the classical style was used down to the 19th cent., but after the Renaissance both England and France developed a characteristic domestic architecture. In the 16th cent. Germany produced two great painters (Dürer and Holbein); France, some exquisite ones (the Clouets) and excelled in decorative art (Bernard Palissy); and Spain, El Greco and Velazquez, whose portraits strike a new psychological note. England, whose medi-



Baroque Ornament

eval illuminators had been unrivalled, had as yet no native school except of miniaturists (Hilliard, Cooper), but Holbein, and later Rubens and Vandyck, worked there. In the 17th cent. Renaissance magnificence degenerated into the exaggerated and rhetor-

cal Baroque (*q.v.*), but France had two great classical landscape-painters, Poussin and Claude, and Holland many admirable painters of landscape (Hobbema, Ruysdael) and *genre* (Vermeer, De Hoogh)—the first school not catering mainly for ecclesiastical or aristocratic patrons—a distinguished portrait-painter, Hals, and in Rembrandt a very great artist whose pictures are the first pre-eminently to express the painter's personality. In Flanders the outstanding figures after Rubens were Vandyck and Teniers. In the 18th cent. France, freed from the pompous official style imposed by Louis XIV (Le Brun, Rigaud), gave birth to an idyllic art (Watteau and Lancret), more artificially developed by Boucher, also a fine portrait-painter, and Fragonard. Chardin excelled in *genre*, and portraits were painted by Nattier and La Tour; while Houdin was a sculptor of outstanding excellence. In England the first great native painter appeared in Hogarth, to be followed by the portraitists (Reynolds, Gainsborough,



Rococo Ornament

Romney) and landscape-painters, though the greatest of the latter belong mainly to the 19th cent. (Constable, Turner, Crome). In Italy, Venice alone produced painters of distinction (Canaletto, Guardi, Tiepolo). Towards the end of the 18th cent. French painting degenerated into sentimentalism (Greuze), but the Revolution produced a neo-classical revival (David, Ingres) which left its mark also on furniture, dress, etc. This was challenged by a romantic movement (Delacroix, Géricault) and a little later by the Barbizon school of poetic landscape (Corot, Millet, Daubigny). Realism, magnificently exemplified in Spain by Goya, was represented by Courbet and with a bias towards the grotesque by Daumier. The Impressionists (Manet, Monet, Degas, Renoir), influenced by their predecessors and also by Constable and Turner, carried realism a step farther, seeking especially the exact rendering of effects of light. Allied with them was the sculptor Rodin. England, after the decline of the portrait and landscape schools (Lawrence, d. 1830; Constable, 1837), was dominated by a school of sentimental and trivial *genre* painters (Wilkie, Mulready, Frith). Against this, the Pre-Raphaelite movement (Holman Hunt, Millais, Rossetti) was a protest; the P.-R. Brotherhood was founded in 1848, but only Hunt remained consistently true to its ideals, Millais, a superb craftsman, reverting to a more

academic style, and Rossetti developing an idiosyncratic romanticism which greatly influenced Burne-Jones and William Morris. Another painter of marked individuality, who put his art to the uses of moral allegory, was G. F. Watts. In architecture neo-Gothic succeeded to the classical, and a decorative sculptor of unique genius, recalling the great men of the Renaissance, appeared in Alfred Stevens. Towards the end of the 19th cent. the influence of French Impressionism began to be felt in England, especially on the group of painters forming the New English Art Club (Sickert, Steer). Another influential figure was Whistler, an American who had worked with the Impressionists in Paris (living afterwards in England), and, besides having much in common with them, learned much from Japanese art. In more recent times the most vital art movements have all arisen in France, though Italy produced the anarchic and short-lived Futurism. The analytical realism of the Impressionists was succeeded by a search for solidity and simplification (Post-Impressionism: Cézanne, Gauguin, van Gogh; and Cubism: Picasso, Braque). There have been many extravagances, but among the younger French painters there are many fine and sincere artists (Derain, Utrillo, Vlaminck, the sculptor Maillol). England also has many individual artists of distinction (John, Brangwyn, Epstein). Meanwhile, a new architecture has been developed to express the modern spirit in appropriate materials, most strikingly illustrated in the sky-scrapers of America, but increasingly in evidence in London (*e.g.*, Unilever House, Shell Mex and *Daily Express* offices). In architectural design Sweden and Holland have recently shown special excellence.

**Arta**, 1) prov. of Epirus, Greece; area, 680 sq.m.; pop., 53,000; 2) tn. in prov.; pop., 7,450; textiles, leather, embroidery, cattle, wine, grain, tobacco. **Gulf of A.**, part of Ionian Sea; fishing, esp. soles, eels, mullet.

**Artaxerxes: A. I.** (464-424 B.C.), Kg. of Persia. **A. II.** (405-358 B.C.), Kg. of Persia. **A. III.** (358-338 B.C.), did much to restore crumbling Persian Empire. *See also* ARDASHIR.

**Artefact: see** ARTIFACT.

**Artel**, co-operative group of peasant indus. in Russia.

**Arte mayor**, *Versos de* (lit.), Span. metre in stanzas of 7 or 8 twelve-syllabled lines, with 2 rhymes in each stanza. Predom. in 14th cent., revived by Cervantes.

**Artemis**, Gr. goddess of the chase; Rom. Diana (*q.v.*).

**Artemovsk**, *Bakhmut*, tn., cap. of prov. A.; (4,055 sq.m.; pop., 640,000),



Artemis

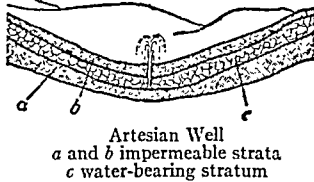
Ukrainian S.S.R.; pop., 37,800; salt mines worked since 17th century.

**Arteries**, thick-walled, strong, elastic blood-vessels, all except *pulmonary A.* (*q.v.*), conveying blood from left ventricle of heart thr. aorta to all parts of body. Chf. As. are: *occipital* (at back of head); *temporal* (forehead); *facial* (face); *carotid* (neck); *subclavian* (neck and chest); *axillary* (arm-pit); *brachial* (arm and forearm); *ulnar* (forearm); *radial* (wrist); *femoral* (thigh); *popliteal* (behind knee); *tibial* (leg below knee). Bleeding from A. is shown by spurt-ing out of bright red blood and shd. be controlled by pressure on site of wound, or on an artery nearer the heart.

**Arterio-sclerosis**, thickening and hard-ening of arteries, due to numerous causes, e.g., lead poisoning, nephritis, high blood-pressure; artery walls gradually contract, harden, and become brittle thr. deposition of calcareous salts. Usu. occurs in old age.

### Artesian

**well**, well, usu. deep and of small di-  
ameter, lined with steel tubing and penetrating to strata



where water that is present under pressure flows freely into well, sometimes escaping under pressure at the surface.

**Artevelde**, Jacob van (c. 1287-1345), the *Brewer of Ghent*, Flem. statesman; negot. commerc. treaty with England.

**Arthritis**, rheumatic inflammation of joints.

**Arthropoda**, that division of the animal kingdom the members of which have a body consisting of a definite number of segments and jointed, hollow limbs into which the muscles, etc., extend; includes crabs and other crustacea.

**Arthur**, Chester Alan (1830-86), 21st President, U.S.A., 1881-85; a lawyer, and quartermaster-gen. during the Civil War.

**Arthur**, **King**, legend, and poss. histor. ruler of Celtic Britain; earliest mention of his name occurs in *Historia Britonum* of Nennius (c. 800). A. is supposed to have lived in 6th cent.; but for great body of lit. which gathered round his name in Mid. Ages there is no known historical basis.

**Arthur's Seat**, hill (823 ft.), Midlothian, Scot., overlooking S. Edinburgh.

**Artichoke**, *Cynara scolymus*, plant resembling a thistle, the flower heads of which are cooked as a vegetable. See **CARDUON**.

**Article**, 1) class of adjectives comprising *a* or *an* (indefinite A.) and *the* (def. A.); 2) section



Artichoke

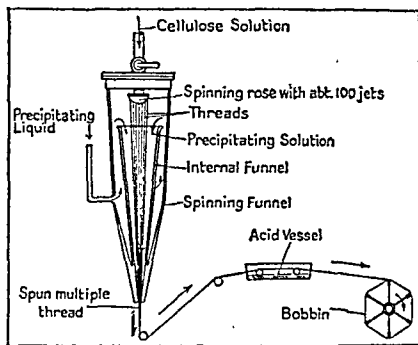
of law or treaty; 3) single lit. comp. in news-paper, magazine, etc.

**Articles of Association**: see MEMORAN-DUM OF ASSOCIATION.

**Articulation**, 1) distinct pronunciation; 2) (anat.) a joint; point of meeting of bones; 3) (bot.) junction of 2 parts of a plant, e.g., stalk and stem; a node.

**Artifact**, or **artefact**, (archaeol.) object, such as early palaeolithic flint, made and shaped by human art and skill, as opposed to natural object, shaped by weather, water, etc.

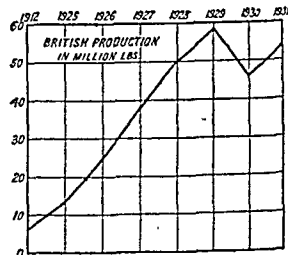
**Artificial leather**, manufd. substit. for leather; layer of felted material of leather and



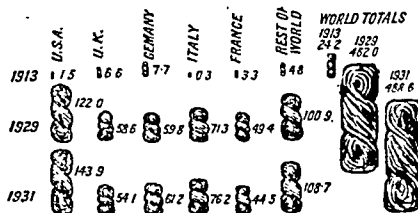
Artificial-Silk Spinning Machine

fibrous substances, spread on a textile surface and varnished with linseed oil, gum, or cellulose compounds. **A. silk**, made by forcing solution of cellulose

or cellulose compound (nitrate, acetate, xanthate) through very fine jet (spinneret) into liquid which removes sol-



ARTIFICIAL SILK (WORLD PRODUCTION IN MILLION LBS)



Industry mainly product of post-war era; U.S.A. leads world and despite 1932 decline (estimated prodn. 131,000,000 lbs.) prods. nearly twice as much as her nearest rivals, Italy and U.K. Brit. prodn. fell heavily in 1930, but recovered in 1931 and reached record figure in 1932 (est. prodn. 72,000,000 lbs.). World prodn. has maintained steady incr. of early nineteen-thirtie: culties.

vent, causing cellulose to precipitate and solidify as a fine thread. Processes: [*Char-donne*]: nitrocellulose dissolved in ether and alcohol, which evaporate as thread is forced out of spinneret; afterwards denitrated (to remove inflammability) by alkaline sulphide bath, pure cellulose being left. *Despeissis*, or *cuprammonium*: pure cotton dissolved in ammoniacal copper oxide solution; thread forced into dilute sulphuric acid. *Viscose*: cotton dissolved by caustic soda and carbon disulphide, forming xanthate thread, forced into solution of ammonium chloride. *Acetate silk* ("Celanese"): cotton or wood pulp dissolved in acetic anhydride; secret process; soluble in acetone, unlike any other artif. silk. A. silk tulle is now made directly from solution, instead of being woven.

**Artillery**, 1) troops armed with ordnance (*q.v.*): smallest unit, the battery (2-6 guns); 3 batts. gen. form an **A. brigade**. 2) The guns (or howitzers) themselves. **Garrison a.**, heavy **A. Horse a.**, light **A.** attached to cavalry; mounted gunners. **Pack or Mountain a.**, light pieces, carried in sections on mules or horses. 3) See ROYAL ARTILLERY.

**Artiodactyla**, even-toed animals, sub-order of great mammalian order Ungulata; divided into: 1) Non-ruminantia (pigs, hippopotami, etc.); 2) Ruminantia (ox, deer, sheep, goats, camels, giraffes).

**Artois**, former Fr. prov. (cap., Arras), comprising most of Pas de Calais; scene of much heavy fighting, World War, esp. Spring, 1915.

**Artibashev**, Mikhail Petrovich (1878-1927), Russ. novelist: *Sanine*.

**Aru Islands**, group, Dut. E. Indies, betw. Dut. New Guinea and N. Australia; in residency Amboina; 3,250 sq.m.; pop., 18,000.

**Arum**, (bot.) wild lily, *Arum maculatum*, also called cuckoo-pint, lords-and-ladies, wake-robin; popular name for cultivated white lily (*q.v.*).

**Arundel, Earls of**, anc. title in peerage of England, held, in 1141, by **William de Albini**, whose male line ended with **Hugh de A.**, d. 1243; through his sister it passed to the **Fitzalans**. **Richard F.** (1267-1302) fought in Scot. campaigns of Edw. I.; his son, **Edmund** (1285-1326), adherent of Edw. II, executed at Hereford by supporters of Qn. Isabella; his son, **Richard** (1307-76) regained earldom, 1331; fought at Crécy; regent 1355; his son, **Richard** (1346-97) quarrelled with Richard II; beheaded, 1397; his son, **Thomas** (1381-1415) restored to title by Henry IV; succeeded by **John Fitzalan**, Lord Maltravers (1385-1421); his son, **John** (1408-35), became Earl, 1433; **Henry F.**, 12th E. (1517-80), held high office under Qn. Mary, and was lord-steward to Elizabeth; on his death, title passed to

**Philip Howard** (1557-95), son of Henry's dau., Mary, and 4th D. of Norfolk; implicated in Throgmorton's plot; sentenced to life imprisonment, and, later, to death (sent. not carrd. out); d. in Tower of London; his son, **Thomas**, 2nd (Howard) E. (1585-1646), patron of art and letters (Arundel MSS. now in Brit. Mus. and Arundelian Marbles, *q.v.* at Oxford); cr. E. of Norfolk, 1644; d. at Padua; his g.son, **Thomas**, 4th E. (1627-77) granted dukedom of Norfolk (1660), in which the earldom was merged. Title now borne by Duke's eldest son. See NORFOLK, DUKES OF.

**Arundel**, munic. bor., W. Sussex, Eng.; castle; pop., 2,500.

**Arundelian** (or **Oxford**) **Marbles**, marble statues, busts and inscriptions from Isl. of Paros, collected by W. Petty, c. 1610; bought by Lord Arundel, whose grandson, Henry Howard (later D. of Norfolk), presented them to Univ. of Oxford, 1667.

**Aryan**: see INDO-GERMANIC.

**Aryans**, common but erroneous generic design. of all Indo-Ger. races and languages; correctly, only Indo-Ger. races of Iran and India; also 3 highest castes in India.

**Arzamas**, Russ. literary coterie, flourished at St. Petersburg (Leningrad) at beginning of 19th cent.; served cause of romanticism. Pushkin (*q.v.*) one of orig. leaders.

**As**, symbol for Arsenic (*q.v.*).

**As** (Lat.), Roman weight (12 oz.) and copper coin, value between 6d. and ½d.

**Asa**, (O.T.) Kg. of Judah (c. 918-877 B.C.); enemy of idolatry.

**Asafetida**, gum-resin obtd. from root of *Ferula fetida* (E. Persia and W. Afghanistan); adminstd. in hysterical conditions, in which its action is mainly subjective owing to its very unpleasant smell and taste.

**Asarabacca**, (bot.) perennial herb allied to the Aristolochia (*q.v.*); acrid and aromatic; root has been used medicinally; Amer. variety is known as wild ginger.

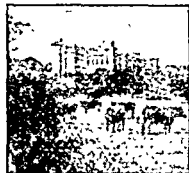
**Asbestos**, a native magnesium silicate of a fibrous, pliable structure; when mixed with lime, used for fire-proofing buildings.

**Ascalon**, or **Ashkelon**: see PHILISTINES.

**Ascaris lumbricoides**, (med.) an intestinal worm; in man is 6-16 ins. long and lives in small intestine; occurs esp. in children; often causes irritation of nose; eggs expelled in excreta and eventually returned to host by way of food.

**A.S.C.E.**, abbr. American Soc. of Civil Engineers.

**Ascendant**, (astrol.) that sign of the Zodiac (*q.v.*) wh. is above the horizon at a given time, esp. that of a person's birth, sup-



Arundel Castle

posed to influence his fortunes; (astron.) rising twds. the zenith (*q.v.*).

**Ascension Day** ("Holy Thursday"), fest. of Christian Ch. observed on 40th day after Easter, commem. Ascension of Christ into Heaven.

**Ascension Island**, solitary volcanic island in the Atlantic, discovered by the Port. on Ascension Day, 1502; Brit. since 1815; mountainous (2,870 ft.); green turtles abound; area 38 sq.m.; pop., 300; cap., George Town.

**Ascents, Songs of:** *see* DEGREES.

**Asceticism**, (philos.), a mental attitude wh. abjures material comfort and pleasure as being inimical to intellectual and spiritual health.

**Asch**, Schalom (1880- ), Pol. Jewish author; plays and novels in Yiddish dialect.

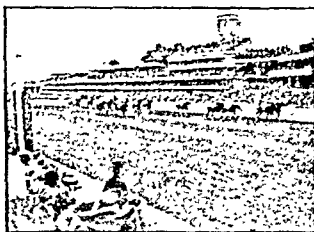
**Ascham**, Roger (1515-68), public orator, Camb. Univ.; Latin secretary to Qn. Mary, 1553; tutor to Qn. Elizabeth, 1558; wrote *The Scholemaster* and *Toxophilus*.

**Ascidia**, or sea-squirts, primitive marine animals, considered lowest form of the Vertebrata.

**Ascites**, (med.) accumulation of fluid in cavity of the peritoneum (*q.v.*); symptom of various diseases of the liver or heart, of Bright's disease, etc.

**Ascomycetes**, large family of fungi, mostly small, having spores contained in minute cell situated in the spore-bearing membrane; best-known members are truffles and morels.

**Ascot**, resid. dist., Berks., Eng., 6 m. S.W. Windsor; race-course at *Ascot*



Ascot: Grand Stand and Course

*Heath*; meeting: Tues.-Fri., third week in June; Roy. Hunt and Gold Cups; most fashionable meeting of year.

**Asepsis**, absence of bacteria.

**Asgard**, (Norse myth.) city or home of the Aesir gods, high in the heavens; connected with lower world by bridge Bifröst.

**Ash**, trees of the genus *Fraxinus* (members of the olive tribe). Produce valuable timber, especially for furniture.



Ash

**Ashanti**, dependency, Gold Coast, W. Africa, annexed to Brit. crown, 1901; area, 24,400 sq.m.; pop., 582,000; surface hilly and densely wooded; cultivated land yields cocoa, rice, millet, tobacco, kola, sugar,

gums, rubber; gold exported; cap., Kumasi. Language belongs to Tshi group. **A. wars:** 1) 1807; 2) 1824-26; 3) 1863; 4) 1871-72, when the battle of Amoafu was fought, and Kumasi (Coomassie) burnt by Sir Garnet Wolseley; 5) 1896, after wh. country was annexed by Gt. Britain.

**Ashburton**, Alexander Baring, 1st Bn.; *see* BARING, ALEXANDER. **A. Cup**, rifle-shooting prize competed for annually at Bisley by teams from public schools. **A. Treaty:** *see* WASHINGTON, TREATY OF.

**Ashby-de-la-Zouch**, mkt. tn., Leics., Eng.; castle (1474) celebrated in *Ivanhoe*, collieries; pop., 5,000.

**Ashdown, Battle of**, victory of Kg. Alfred over the Danes, 871, in Vale of the White Horse, Berks., England. **A. Forest**, an forest, E. Sussex, Eng., S.E. of East Grinstead.

**Asher**, (O.T.) 8th son of Jacob; founder of *Tribe of A.*, whose territory bordered on that of Philistines.

**Asheville**, tn., N. Carolina, U.S.A.; pop., 50,200; manuf. textiles, furniture; tannery; health and pleasure resort, nr. the Great Smoky Mt. nat. park (*q.v.*); sanatoria for tuberculosis patients.

**Ashfield**, Albtt. Hy. Stanley, 1st bn. (1875- ), 1st chmn. L.P.T.B. (*q.v.*), former chmn. London Elec. Rly., etc.; for 12 yrs. gen. man. Amer. Electr. Rlys.; M.P. 1916-20; pres. Bd. of Trade, 1916-19; raised to peerage, 1920.

**Ashkenazim**, Jews following the German ritual and using the S. and W. Ger. pronunciation of Hebrew; also Jews of N. Europe generally (from *Ashkenaz*, mediaev. rabbinical term for Germany). *See* SEPHARDIM.

**Ashkhabad**, *Poltoratsk*, tn., centre of A. prov. (75,600 sq.m.; pop., 238,800), in Turkmenistan S.S.R. (*q.v.*); pop., 51,600; short distance from Anau, site probably inhabited 3,800 B.C.

**Ashlar**, (bldg.) squared masonry in regular courses (*q.v.*), in contradistinction to random or rubble work.

**Ashmole**, Elias (1617-92), Eng. antiquary; fndd. Ashmolean Museum, Oxford.

**Ashokan Dam**, Catskill Watershed, New York State, U.S.A.; N.Y. City water supply; 252 ft. high; storage capacity, 82,188 mill. gallons (1915).

**Ashridge**, estate in W. Herts, Eng., incl. Ivinghoe Beacon (810 ft.); formerly prop. of Dukes of Bridgewater, and Earls Brownlow; on sale in 1921, part bought by National Trust (*q.v.*), incl. A. Park, Berkhamsted Common, etc. (2200 ac.); part by Zoological Society (*q.v.*) for Whipsnade Zoological Park; and further portion presented by Urban Broughton (d. 1929) to Conservative Party for estabmt. of Bonar Law Memorial College.

**Ashtaroth:** *see* ASTARTE.

**Ashton-under-Lyne**, mun. bor., Lancs., Eng., 6 m. E. Manchester; manuf. cotton, silk, hats; engineering works; pop., 51,800.

**Ashtoreth**, princ. goddess of Sidonians; identical with Astarte (*q.v.*).

**Ash Wednesday**, first day of Lent; named from Christian custom of penitents and their friends being sprinkled with ashes by bp. on that day.

**Ash-weed**: see CINERARIA.

**Asia**, largest continent; united to Europe on W.; separated from Africa by Suez Canal and Red Sea and from America by Behring Strait; bounded N. by Arctic Ocean, E. by Pacific, and S. by Indian Ocean; extreme points: Cape Chelyushkin (Siberia) in N., Cape Buru (Malay Peninsula) in S., Cape Dezhnev or E. Cape (Behring Str.) in E., and Cape Baba (Asia Minor) in W. Islands include Japan, Formosa, Philippines, Malay Archipelago, and Ceylon; area, 16,900,000 sq.m.; pop., c. 1,150,000,000 (three-fifths Mongols; remainder Caucasians, Malays, Dravidians, Negritoes).

Coast-line irregular; chf. peninsulas: Asia Minor, Arabia, India, Malay Peninsula, Korea, and Kamchatka. Surface two-thirds highland, one-third plains; mean level, 3,085 ft. Pamir Plateau in Cent. A. is nucleus of mtn. ranges with world's highest peaks: *Himalayas, Karakoram, Tien Shan, Kunlun, Hindu Kush, Altai, Great Kingian Mtns.*, and other ranges enclose Gobi Desert of Cent. A. *Urals* separate A. from N. Europe and *Caucasus* from S. Europe. Great plain extends from borders of Persia to Arctic, with inland seas and lakes (Caspian, Aral Sea, L. Balkash); other lakes include L. Baikal in E. Siberia and Lop Nor and Kuku Nor in Cent. Asia. Three great rvs. flow into Arctic: Ob and Irtysh (c. 3,300 m.), Yenisei, and Lena; Syr Darya (Jaxartes) and Amu-Darya (Oxus) flow into Aral Sea; for other great rvs., see CHINA, INDO-CHINA, BURMA, INDIA, and MESOPOTAMIA.

**Climate**: As N. part of A. is in Arctic Circle and Malay Archipelago partly on the Equator, climate is subject to extremes; Verkhoyansk in E. Siberia is coldest inhab. spot on earth (winter min.: -94° F.), whilst trop. heat in S. reaches 165° F. Cent. A. has hot summers and cold winters. Monsoon climate in India and E. China.

**Geogr. Divisions**: N. Asia (Siberia), tundras, with reindeer, wolves, bears, and fur-bearing animals; Central A., desert steppes (camels, yaks); S. Asia, tropical (tigers, leopards, apes, elephants, reptiles).

**Political Divisions**: Whole of N. Asia occupied by Siberia (Sib. area, U.S.S.R.); in E. are Mongolia, Manchuria, China, and the Korean penins.; in S.E. is penins. of Indo-China (Burma, Siam, Fr. Indo-China, Malaya); in S., Brit. India and Afghanistan

(bounded N. by Tibet and various Soviet repubs.); in S.W., Persia, Iraq, Arabia, Palestine, Transjordan, Syria, and Turkey.

**History**: Mesopotamia tradit. cradle of human race (Garden of Eden) and seat of anc. empires (Assyrians, Babylonians); A. Minor, home of prehistoric civilization (see TROY) and of Greek colonists (on W. coast). Empire of Medes 7th-6th cents. B.C., of Persians 6th-5th cents. B.C. Alexander the Great invaded India 326 B.C.; the Chinese built Great Wall in 3rd cent. B.C. against N. invaders. Genghis Khan conquered Cent. Asia in A.D. 1218-21; Timur (Tamerlane), Persia, Cent. A., and part of India in 1370-1402. Mogul Empire in India in 16th cent.; Queen of England Empress of India, 1877.

**Exploration**: Marco Polo visited Kublai Khan, Mongol emp. of China, 1275-92; Vasco da Gama sailed to E. Indies, 1497-99; Magellan crossed Pacific and discovered Philippine Is., 1520; Younghusband visited Lhasa (Tibet) in 1904; Arctic coast explored by Nansen 1893-96 (see ARCTIC REGIONS); Centr. A. by Sven Hedin (1894-1931), Sir Aurel Stein, and Roy Andrews.

**Asia Minor**, S.W. penins. of Asia, comprising largest part of Turkey; lies betw. Black Sea (N.) and Mediterranean (S.); separated from Europe by Bosphorus, Sea of Marmora, and Dardanelles; bounded, on landward side, E. by Armenia and Persia, S. by Iraq and Syria. Area, 199,000 sq.m.; pop., c. 7,000,000 (Turks, Kurds, Turkomans, Armenians). Many isls. off W. coast, incl. Imbros, Lesbos, Chios, Samos, Rhodes (Dodecanese). Interior a plateau (2,600-4,000 ft.), surrounded by mtn. ranges (*Taurus* and *Anti-Taurus*, up to 11,500 ft.). Erjish Dag, a triple-peaked extinct volcano, rises from plateau up to 13,000 ft.; many well-known passes (Cilician Gate, Syrian Gate, etc.); steppe country with salt lakes. Rivers Kizil Irmak (Halys), Yeshil Irmak (Iris) and Sakaria (Sangarius) flow into Black Sea, Menderes Chai (Maeander) into Aegean, Menderes Su (Scamander) into Dardanelles.

Land generally fertile; cattle and Angora goats bred; wheat, barley, apricots, grapes, tobacco grown. Chf. city: Angora (cap. of Turkey); ports: Smyrna, on Aegean, Samsun and Trebizond on Black Sea. Chf. means of communication, Anatolian Rly (640 m.); few roads.

Inhabd. by Hittites c. 1900 B.C.; city of Troy (*q.v.*) in N.W.; succeeded by Phrygians; Lydians fndd. a flourishing kgdm., which (under Croesus, *q.v.*) subjugated Ionian cities on W. coast (Miletus, Ephesus, etc.). After destruction of Sardis (546 B.C.) Persians became dominant nation. Persian wars with Gr. states (from 490 B.C.) ended with invasion of A. Minor by Alexander the Great



in 334. After Alexander's death country split up among Ptolemies, Seleucids, etc. Indepnt. State of Pergamon in 3rd cent. B.C. A. Minor, Roman, 190 B.C. Mithridates, Kg. of Pontus, defeated by Pompey and died 63 B.C. Country part of Eastern Empire A.D. 395, Turkish since 15th century.

**Asiago**, tn., Venetia, Italy, on plateau of A.; scene of unsuccessful Austr. offensive agst. Ital. front in World War, 14-30 May, 1916.

**Asir**, dist., S.W. Arabia, on Red Sea, betw. Hejaz and Yemen, now part of kgdm. of Saudi Arabia (formerly Hejaz and Nejd); area (including Farisan Isls. off coast), c. 13,870 sq.m.; pop., 750,000; cap., Sabia; chf. port, Jizan.

**Askari**, native soldiers, E. Africa.

**Asklepios**: see AESCULAPIUS.

**Asmodeus**, kg. of demons in later Jewish tradition; loved Sara, daughter of Raguel, and slew her seven husbands on their marriage nights; driven by Tobit into Egypt; plays large part in Solomon legends; chief character in Le Sage's *Le Diable Boiteux*.

**Asodake**, **Aso-take**, volcano (5,545 ft.), Kyushu, Japan; world's largest crater; c. 100 sq.m.; walls 2,000 ft. high.

**Asoka**, emp. of India c. 268-226 B.C., first to embrace Buddhism and accord it recognition; some 35 valuable and interesting inscriptions on rocks and pillars, etc., ascribed to him, mainly of relig. or moral import.

**Assp**, any small venomous snake, esp. the *Vipera aspis* of S. Europe and the *Cerastes cornutus*, or horned adder, of N. Africa, which, acc. to tradition, Cleopatra used as means of suicide.

**Asparagus**, *Asparagus officinalis*, plant of the lily tribe with small scale-like leaves; cultivated for sake of the young shoots, used as edible vegetable; in med., a diuretic; recommended in cardiac dropsy.

**Aspasia** (fl. 440 B.C.), Athenian hetaira, mistress of Pericles (q.v.).

**Aspect**, (astrol.) relative position of planets at a given time, supposed to exercise influence for good (semi-sextile, sextile, quintile, trine, and biquintile aspects) or bad (square, semi-square, sesqui-quadrant, and opposition aspects).

**Aspen**, species of poplar (q.v.).

**Asperges**, short service before High Mass, when altar, clergy and people are sprinkled with holy water. **Aspergillum**, small brush used for such sprinkling. **Aspersorium**: see STROUP.

**Aspern**, vil., nr. Vienna, where Napoleon, at hands of the Archduke Charles of Austria, suffered his first defeat, 1809.

**Asphalt**, nat. pitch; black, resinous substance used for surfacing roads; found near Dead Sea, and in Albania and Trinidad.

**Asphodel**, (bot.) flowering plant of the lily tribe; white and yellow varieties are common garden flowers; (class. myth.) the flower which blooms eternally in the fields of the dead.

**Asphyxia**, suffocation, often leads to death. Artificial respiration (see FIRST AID) should be tried immediately.

**Aspic**, jelly made from calves' feet, usu. used as a casing for cold meats, etc.

**Aspidistra**, plant native to China and Japan; has large leaves and small flowers close to ground. The cultivated variety is *A. lurida*, with variegated leaves.

**Aspidium**, a variety of fern.

**Aspirate**, sound produced by breathing out, e.g., *h*.

**Aspiration**, (surg.) tapping a cavity of the body by means of hollow needle to draw off liquid, as in cases of fluid in the chest.

**Aspirin**, *Acetylsalicylic acid*,  $C_6H_4(COOH)O.CO.CH_3$ , synthetic drug prep. from coal tar and admin. to relieve headache, neuralgic and rheumatic pains and to avert common cold; sedative and antipyretic. Resembles salicin, wh. is obtd. from willow bark.

**Aspropotamos** (*Achelous*), Gr. riv. flowing from Epirus into Ionian Sea.

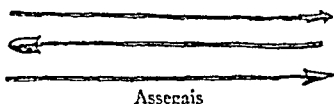
**Asquith**, Herbert Henry, 1st E. of Oxford and Asquith (1852-1928), Eng. Lib. statesman; Premier, 1908-16; led Coalition Govt. (1915), superseded by Lloyd George, 1916.

**Ass**, odd-toed ungulate of same family as the horse, but of smaller size under domestication, the donkey. Found wild in dry open country in Asia, N. and E. Africa. Offspring of cross between ass and mare is a *mule*; between stallion and ass a *hinny*.

**Assagal**, or *assegai*, spear or lance of hard wood, tipped with iron, used as throwing



Asquith



Assegais

or stabbing weapon by Zulus and other S. African tribes.

**Assai**, (mus.) very.

**Assam**, Brit. prov., N.E. India; area, 61,500 sq.m., incl. territory of Manipur (q.v.); pop., 7,606,200; bounded on N. by Tibet and Bhutan, W. and S. by Bengal, and on E. and S. by Burma; mainly in valley of R. Brahmaputra, bordered by mtns. (*Himalayas* in the N.); much jungle (elephants, tigers, and other big game); cultivated land produces tea, rice, cotton; exports also silk, rubber, ivory, gold; coal and oil fields. Cap., Shillong (pop., 17,200). Con-

tains rainiest dist. in the world (*see* **CHERRA-PUNJI**).

**Assassins** (drinkers of *Hashish*, *q.v.*), sect of 13th-cent. Moham. fanatics in Palestine whose chief object was to stab Crusaders.

**Assault**, attempt unlawfully to apply force to the person of another; threat of so doing or use of a gesture giving reasonable cause to apprehend it. *See also* **BATTERY**.

**Assault-at-arms**, public display of fencing, etc.

**Assay**, quantitative chem. analysis (*q.v.*) of a metal or mineral. **A. balance**, spec. sensitive balance with small pans. **A.-ton**, measure of weight used in assay (*q.v.*) of minerals; contains as many milligrams (32,670, *i.e.*, 1.151 oz. av.) as the ton contains Troy ounces.

**Assaye**, **Battle of**, decisive victory of Brit. forces under Wellesley (Duke of Wellington) over Mahrattas, 23 Oct., 1803, near vill. of that name, Hyderabad, India.

**Assayer**, official at mint who applies chem. tests to bullion and coin.

**Assembly**, (tech.) final putting together of machinery or other complicated appar. from finished component parts.

**Asser**, Eng. monk, fl. 9th cent., renowned for his learning; lived at Court of Alfred the Great; a Latin life of Alfred has been ascribed to him, but authorship is doubtful.

**Assessor**, 1) one apptd. to fix amt. of taxes payable by pers. or societies; 2) (insur.) pers. who estimates compensation payable in cases of loss by fire.

**Assets and liabilities**, items making up amt. of property owned and amt. owing; must be shown in balance sheet of limited companies, banks, etc.

**Asshur**: *see* **AS-SYRIA**.

**Assignats**, paper money of Fr. Rev. 1790-96; 45,000,000,000 francs issued; became worthless, largely owing to forgeries.

**Assignment**, (commer.) written instruction to hand over to a 3rd party money, securities, or goods.

**Assimilation**, (physiol.) the changing of food into the tissues of the body.

**Assisi**, tn. in Umbria, cent. Italy, 15 m. E. of Perugia; pop., 19,000; birthplace of St. Francis.

**Assiut**: *see* **AS-SYUT**.

**Assizes**, courts for trial of civil and crim. cases, held in chief prov. tns. by a travelling judge of Kg.'s B. Division.

**Associated Powers**, 23 States wh. joined Allied Powers (Eng., Fr., and Russ.) in

World War. Co-signatories of the Treaty of Versailles (*q.v.*).

**Association**, union. **A. of ideas**, involuntary sequence of thoughts, in wh. one idea suggests the other, by reason of some former connection.

**Association Cup**, prize inaugurated by the Eng. Football Association in 1872 to be competed for annually by Assoc. Football teams on the knock-out principle; the competition has steadily grown in popularity and number of entrants; won by professional teams since 1885; final tie—the "Cup Final"—has been played at Wembley Stadium since 1923.

**Assonance**, imperfect rhyme in wh. accented vowel sounds correspond, but not consonants, *e.g.*, "joker" and "sober."

**A.S.S.R.**, abbr. Azerbaijan Socialist Soviet Republic.

**A.S.S.T.**, abbr. Autonomous Soviet State of Tajikistan.

**A.S.S.U.**, abbr. American Sunday School Union.

**Assuan**: *see* **ASWAN**.

**Assumption of the Virgin Mary**, R.C. Feast (Aug. 15th), commem. taking up of Mary's body into Heaven.

**Assumptionists**, congregation of Augustinian friars (*q.v.*) whose chf. object is to promote reunion of Eastern Churches with R.C.Ch.; founded 1847.

**Assyria**, ancient Mesopotamian kingdom, formed *c.* 2000 B.C.; later became an empire; named after cap., Assur; cap. in 7th cent. B.C., Nineveh; overthrown by Medes and Chaldeans (612 B.C.). Last important Kg., Ashur-bani-pal, 668-626 B.C.

**Assyrian Art**, allied to Babylonian Art. Chief monuments: Ruins of the Anu and Adad temples at Assur (*c.* 1000 B.C.); statue and obelisk decorated with reliefs of Ashurnasir-pal II; Obelisk of Shalmaneser III (both Kgs., 9th cent. B.C.); alabaster reliefs of Sennacherib and Ashur-bani-pal from Nineveh (7th cent.); scenes of war and hunting, cherubim, colossal winged lions and bulls; reliefs in glazed tiles. Most A. antiquities in London, Paris, and Berlin. **A. language**: *see* **LANGUAGE SURVEY**, *E. Semitic*.

**Assyriology**, study of Assyro-Babylonian antiquity (cuneiform script, etc.).

**Astarabad**: *see* **GORKAN**.

**Astarte**, Syro-Phoen. goddess of Love and Fertility. *See* **ISHTAR**.

**Astatic**, (phys.) uninfluenced by position or orientation. **A. galvanometer** has moving magnet-system so constructed as to be uninfluenced by earth's magnetic field.

**Aster**, *China A.* (*Callistephus*), favourite autumn-flowering garden plant. The



Assignat



Aster

Sea Aster or Starwort (*A. tripolium*) grows 30 in. high, has a handsome purple and yellow flower.

**Asteroids:** see PLANETOLDS.

**Asthenia**, bodily weakness. **Asthenic type**, slightly built, slender, weak.

**Asthma**, difficulty in breathing, accomp'd. by cough and feeling of suffocation. *Cardiac A.*, A. due to heart disease.

**Asti**, Ital. tn. and epis. see (pop. 25,000) in prov. of Alessandria; noted as b.-place of Alfieri, and for its sparkling wine (*A. spumante*).

**Astigmatism**, defect in shape of the cornea or crystalline lens whereby the eye is rendered unable to focus objects clearly. May be corrected by suitable spectacles.

**Aston, Francis Wm.** (1877- ), Eng. chem.; Nobel Prize (Chem.), 1922; author: *Isotopes*.

**Aston**, formerly a mun. bor. N.E. of Birmingham, Warwicksh., Eng.; since 1911 united with Birmingham; residential and industrial.

**Aston Villa**, Eng. Association Football club, fndd. at Villa Cross, Birmingham, 1874; became professional 1897; has ground at Aston; won Assoc. Cup 1887, '95, '97, 1905, '13, '20, and League Championship 1894, '96, '97, '99, 1900, and 1910.

**Astor, John Jacob** (1763-1848), Amer. merchant of Ger. origin; went to U.S.A., 1783; establd. himself in fur trade and acquired his own fleet of ships, setting up trading posts along Missouri and Columbia rivers; endowed Astor Library, New York. **A., Nancy Witcher** (1879- ), b. in Virginia; m., 1906, as 2nd husband, 2nd Visc. A.; first woman to sit in Brit. H. of Commons, 1919. **A., Waldorf** (1879- ), 2nd Visc., son of Wm. Waldorf A.; Brit. politician; repredtd. Plymouth in H. of Commons, 1910-19; acquired *Observer* newspaper, 1915. **A., William Waldorf** (1848-1919), 1st Visc., Amer. polit. (1877-81); U.S. min. to Italy; naturalized as Brit. subject, 1899; newspaper proprietor (*Pall Mall Gazette*); created Baron, 1916, Viscount, 1917.

**Astragalus**, bone of ankle supporting bone of leg or tibia.

**Astrakhan**, the curly-piled pelt of newborn Pers. lambs obtd. from Cent. Pers.; an imitation made from plush.

**Astrakhan**, 1) prov. of Russian S.F.S.R., near mouth of Volga, on Caspian Sea; 10,800 sq.m.; pop., 576,800; 2) tn., admin. centre of Kalmuck auton. area; Russia's largest inland port; pop., 195,200; fishing; export of caviare.

**Astral**, pertaining to the stars. **A. body**, (theos.) a 2nd human body consisting of highly rarefied form of matter, usu. invisible. **A. world**, (occult.) stellar space, supposed to be occupied by spirits of the dead.

**Astringent**, (med.) substance wh. causes contraction of tissues and mucous surfaces, thus checking discharges and secretions.

**Astrolabe**, obsolete astron. instrument for ascertaining positions of the heavenly bodies; kind of primitive sextant. **A. Bay**, bay in E. of New Guinea (mandated territory).

**Astrology**, pseudo-scientific study of the stars, by wh. it is claimed that a man's character and fate are determined by the relative position of the stars at a given hour, usu. that of birth; see HOROSCOPE.

**Astronomy**, scientific observation of entire universe beyond limits of earth's atmosphere; divided into *Astrometry*, wh. is A. in its strictest sense and deals with dimensions and movements of heavenly bodies and their relation to one another, and *Astrophysics* (*q.v.*), wh. deals with their physical properties. Astrometry divided into *Theoretical A.*, wh. by mechanical and geometric means calculates and deduces the positions and movements of heavenly bodies; and *Practical A.*, concerned with astronomical instruments, the principles of their use, and application of laws of light to astron. observation.

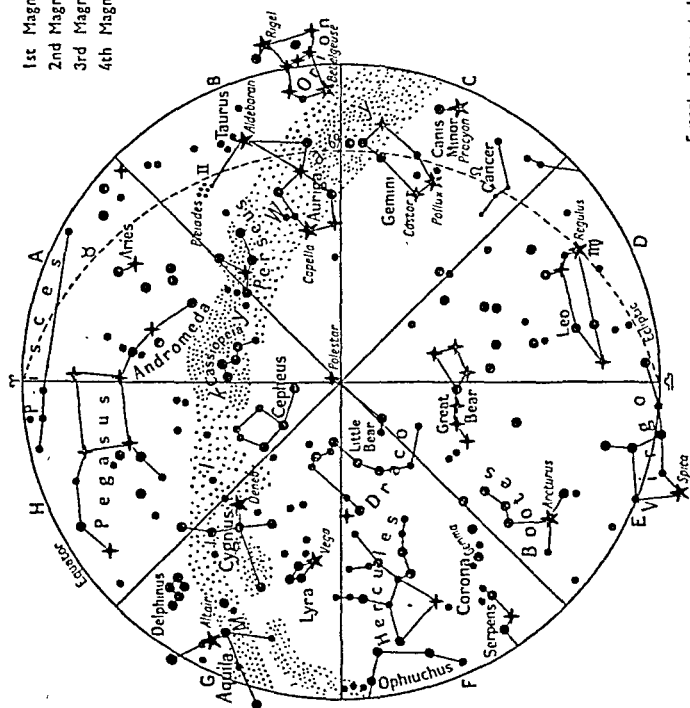
**INSTRUMENTS:** *Equatorial Telescope*, revolves on axis parallel to that of earth and so follows a star in its motion; *Refractor*, a telescope with a concave mirror wh. renders rays of light convergent and forms an image magnified by the eye-piece; *Reflector*, wh. deflects rays of light in required direction; *Transit Circle*, by wh. the altitude, ascension and declination of a star are determined; *Spectroscope*, wh. analyses spectra of rays emitted by luminous bodies; *Photometer*, wh. measures and compares the intensity of light emitted by different bodies; *Photographic Cameras*.

**ASTRON. OBSERVATORIES:** best situated outside a town and in climate favourable for observation (*e.g.*, California, S. Africa), often on a mountain (*e.g.*, Mt. Wilson, Cal.).

**HISTORY:** A. the oldest of the sciences; in 3rd millennium B.C. the Chinese determined the solstices and equinoxes; as early as 2000 B.C. Assyrians, Babylonians, and Egyptians could calculate occurrence of eclipses of sun and moon; Gr. A. began in 7th cent. B.C.; Eratosthenes establd. obliquity of the ecliptic (*q.v.*) and made fairly accurate calculation of size of earth; most imp't. ancient astronomers were Hipparchus and Ptolemy; Arab astron. derived from Gr., flourished 9th-10th cents. A.D., provided many astron. terms still in use (*e.g.*, azimuth, alidade, nadir, zenith) and names of stars (*e.g.*, Altair, Aldebaran); founder of mod. astron. Copernicus, who, 1543, proved the sun to be centre of the planetary system; Tycho Brahe developed high degree of accuracy in measuring movements of celest. bodies; Kepler formulated laws of motion; Galileo developed mechanics

## ASTRONOMY

- 1st Magnitude ★  
 2nd Magnitude +  
 3rd Magnitude ●  
 4th Magnitude •



Exterior letters indicate segment to which reader is referred in articles on the individual constellations, &c

NORTH  
CELESTIAL  
HEMISPHERE

SOUTH  
CELESTIAL  
HEMISPHERE



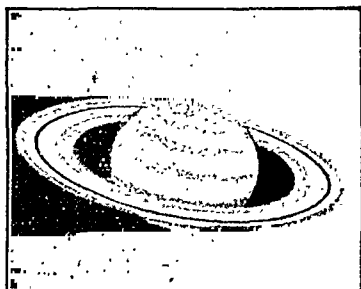
Giant Telescope, Reflector with  
Lens 257 cm. in Diameter



Crater ("Copernicus") of  
the Moon



Sun, Showing Sunspots



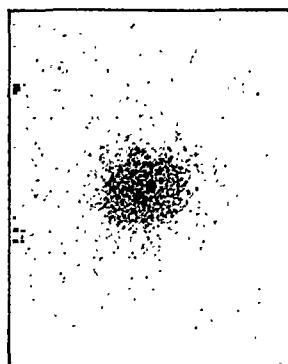
Saturn with Rings



Comet 1908/III. (Morehouse)



Spiral Nebula M 101 in the Great Bear



Spherical Star-Group M 13  
in Hercules

of astron. observation; Newton related laws of motion with his discovery of laws of gravity; 19th cent. saw development of astron. technique, introduction of spectro-scope and photography; 20th cent., statistical methods, close relation of astron. with physics, esp. physics of atoms.

**Apparent rel. position of the stars in the heavens usu. shown by means of celestial spheres, i.e., cartographical representations (either in the round or on a plane surface) of the N. and S. celestial hemispheres, on wh. stars are repd. accdg. to their position and magnitude. (See Pl., ASTRONOMY, in wh., owing to overlapping of marginal zones, the outer stars are shown on both charts.) For orientation, hold the chart of the northern celestial hemisphere northward and when finding the constellations begin with the North Star (q.v.). Astronomical position of a star is determined in relation to its co-ordinates, i.e., position of observer, centre of earth, centre of sun, etc.; also by reference of its lat. and long. to the ecliptic, or of its declination and right ascension to the equinoctial (see separate headings).**

**Astrophotometry**, calculation of comparative brightness of heavenly bodies.

**Astrophysics**, branch of astronomy dealing with the physical and chem. properties of planets and stars by observation of the spectrum (q.v.) and its emanations. Cf. ASTRONOMY.

**Asturias**, former prov., N.W. Sp., on B. of Biscay; since 1833 Oviedo (q.v.). Establd. as kgdm. c. 718, united with León (q.v.) in 10th cent. **Prince of A.**, title of heir to throne of Sp., 1388, until abolition of monarchy, 1931.

**Astyages**, last Kg. of Media, conq. by Cyrus (q.v.), 559 B.C.

**Asunción**, cap. and port of Paraguay, on left bank of Riv. Paraguay; pop., 102,000; leather, tobacco, sugar.

**Aswan**, tn., on right bank of Nile, in Upper Egypt, opposite Isl. of Philae; pop., 13,000; health resort; dam completed, 1902.

**Asylum**, (law) any refuge or place of security. **Right of A.** is granted to polit. offenders, refugees from other States, at discret. of Home Secretary.

**Asymmetry**, non-correspondence of the two sides of a fig. or body. Ant.: Symmetry.

**Asymptote**, (geom.) a straight line which constantly approaches a curve, but does not meet it within finite space. May be defined as tangent to a curve at infinity.

**Asynchronous**, contrary of synchronous (q.v.). **A. motor**, elec. motor (q.v.) with short-circuited armature, driven by multi-

phase (usually three-phase) elec. current, the induced armature currents not being in synchronism with the supply.

**Asyut**, *Assiut*, cap. of Upper Egypt, in prov. A. on Nile; pop., 57,000; Nile barrage to regulate irrigation.

**A t.**, (mus.) abbr. *a tempo* (It.), revert to original time.

**Atacama**, 1) desert, Chile; salt deposits, salt lakes, volcanoes; 2) prov.; area, 30,770 sq.m.; pop., 64,000; cap., Copiapo; gold, silver, copper.

**Atalanta**, (Gr. myth.) fleet-footed Arcadian maiden who undertook to marry her conqueror in running; Milanion dropped three golden apples during the race, Atalanta paused to pick them up, and she was beaten. She accompanied the Argonauts (q.v.) and took part in hunt of Calydonian boar (q.v.).

**Atavism**, reversion; appearance of ancestral but not parental characteristics in a descendant.

**Ataxia**, inco-ordination of movements due to certain diseases of brain or spinal cord.

**Atbara**, or *Black Nile*, riv. (785 m.), N.E. Africa; last trib. of the Nile; rises Abyssinia; brings down silt; floods in July-Sept.; joins Nile at Atbara (Anglo-Egypt. Sudan). **Battle of A.**, victory of Brit. and Egypt. forces, under Kitchener, over dervishes, under Mahmud, 4 Apr., 1898.

**Atchison**, tn., Kansas, U.S.A.; on Missouri Riv.; pop., 13,000; St. Benedict's (R.C.) College; flour mills; grain and lumber; fndd. 1854, by pro-slavery groups, led by David R. Atchison, U.S. Senator. **A., Topeka and Santa Fé Railway**, U.S.A., connects Kansas and New Mexico States with Chicago, San Francisco, and Galveston; 9,630 miles.

**Ate**, 1) (Gr. myth.) goddess of mischief and, later, of vengeance; expelled from Olympus, lived among men; followed by *Lilai* (prayers), who were ready, when besought, to remedy the mischief done by her. 2) A slanderous hag in Spenser's *Faerie Queene*.

**Atelier** (Fr.), studio, workshop.

**Atellan Farces**, *Ludi Osci*, native rustic comedy, farce, or burlesque performed at Atella, Campania in early Roman times; not based on Gr. models.

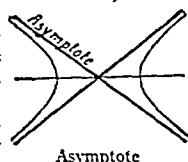
**A tempo**, (mus.) return to the previous tempo; in strict time.

**A tergo** (Lat.), from behind.

**Athabaska**, 1) riv. (750 m.), Alberta, Canada; rises Rocky Mts., flows generally N. into Lake A. 2) Lake, Alberta and Saskatchewan, Canada; 3,085 sq.m.; outlet, Slave River. See also MACKENZIE RIVER.

**Athalia**, oratorio by Handel (q.v.), 1738.

**Athaliah**, (O.T.) dau. of Ahab and Jezebel, wife of Jehoram, Kg. of Judah; on death of her son, Ahaziah, caused all but one of her



grandchildren to be massacred and usurped throne; d. c. 836 B.C.

**Athanasian Creed:** *see* CREED.

**Athanasius**, St. (295-373), Father of Church, Patriarch of Alexandria; defndd. orthodox faith agst. Arius (*q.v.*). Outstanding leader in difficult period of early Church; commm. May 2nd.

**Atheism** (Gr.), negation of existence of God.

**Atheling:** *see* AETHELING.

**Athelney**, low-lying area nr. junction of rivs. Tone and Parrett, Som., Eng., formerly surrounded by marshes; Kg. Alfred said to have retreated here, 878; Alfred Jewel (*q.v.*) found here.

**Athelstan** (c. 895-940), son of Edward the Elder, Kg. of Wessex and Mercia; defeated Danes, Welsh, and Scots at Brunanburh, 937, and became overlord of all England.

**Athenæum**, in anc. Gr., temple of Athene, now literary club or society; most famous, **A. Club** (London, Eng.), fndd. by Sir Walter Scott and Thomas Moore (1824).

**Athena**, *Athene*, Gr. goddess of wisdom; Rom. Minerva; protectress of the Arts, sprang fully armed from head of Zeus; her attributes are the owl and serpent. *A. Parthenos*: the maiden. *Pallas A.*: the lance-wielder.

**Athens**, cap. of Greece, built on series of low hills in centre of Attic Plain, 4 m. from Phaleron Bay in Gulf of Aegina; pop., 452,900; extends S. and S.W. to port of Piræus (trading, shipping, and commercial centre), S.E. to *Mt. Hymettus*, N. to Patisia, and N.E. beyond *Mt. Lycabettus* (910 ft.). **ANTIQUITIES:** Acropolis (*q.v.*), with Propylæa, Parthenon, Erechtheum; Theatre of Dionysus; Stadium; Theseum; Areopagus; Ceramicus, etc. Nat. Museum; Brit., Amer., Fr., Gr., etc., archaeological schools; Univ. **HISTORY:** Acropolis fndd. by Cecrops (?c. 1581 B.C.), Lower City by Theseus; last absolute king, Codrus; archonship instituted 1088; reforms of Solon, 594. After abortive attempt by Cylon (632), tyranny estab. by Pisistratus (560), lasting until the deposition of his son, Hippias (510), ushered in era of democracy. After Persian Wars (Marathon 490, Salamis 480, Plataea 479) A. assumed leadership of Gr. world and gained command of the sea, with institution of Confederacy of Delos. Under Pericles (460-29) were built the masterpieces of Gr. architecture. Peloponnesian War (431-404) ended in downfall of Athens and temporary reinstatement of Sparta. 4th cent. period of culture (Plato, Xenophon, Isocrates). New danger from Macedon unheeded, despite warnings of Demosthenes; decisive victory of Philip of Macedon at Chaeronea in 338. Aristotle



Pallas  
Athene

taught at the Lyceum, 335-23. Macedonian rule exchanged in 168 for Roman, A. retaining certain privileges as seat of learning. St. Paul preached in or nr. Areopagus in A.D. 54. City embellished by Hadrian 120-18. Schools of philosophy suppressed by Justinian, 529. Under Latin dukes, 1205-1308, and after succession of Christian rulers, seized by Turkey, 1458. Parthenon damaged in Venetian bombardment, 1687. After War of Independence (1821-30), A. became cap. of Greece in 1834.

**Atheroma**, (med.) 1) a sebaceous cyst; swelling filled with a cheese-like substance; gen. formed on the scalp; 2) degeneration of walls of arteries, occurring in old age.

**Athletics**, any form of physical exercises, esp. contests in running, hurdling, and walking, (*track A.*), jumping (long and high), pole-vaulting, weight-putting, hammer, javelin and discus throwing (*field A.*). *See under sep. sports.*

**Atholl**, territorial dist. of Perthsh., Scotland.

**Athos**, 1) (*Agion Oros*), mtnous. peninsula, Macedonia, Greece, extending into the Aegean. 2) Mtn., at end of peninsula, 6,000 ft., famous community of Gr. Orthodox monks.

**Atlanta**, cap., Georgia, U.S.A.; pop., 270,400; educ. centre: Georgia inst. of technology; Emory univ.; Atlanta univ. for coloured students; airport; commerc. centre; manuf. cotton, furniture, and machinery. Scene of fighting in Civil War, 1864.

**Atlantic City**, seaside resort of New Jersey, U.S.A.; pop., 66,200; the "Boardwalk," 60 ft. wide, extends 8 m. on sea front.

**A. Coast Railroad**, U.S.A., connects states of Virginia, N. and S. Carolina, Georgia, Florida, and Alabama; 5,157 miles. **A. Highway**, from Calais, Maine, to Miami, Florida, U.S.A., 2,240 m.; connects with historic places of the 13 original states; borders the Atlantic for much of its course; much fine scenery. **A. Coastal Highway**, follows much the same course, except in Virginia and Georgia. **A. Ocean**, part of ocean betw. Old and New Worlds, Europe and Africa in E., N. and S. America in W. Mean depth, 12,900 ft.; est. area, c. 31,525,000 sq.m. **A.-Pacific Highway**, from New York City to San Diego, California, U.S.A.; abt. 3,000 m.

**Atlantis**, legendary island in Atl. Ocean, said to have been submerged; Plato's *Timæus* and *Critias* contain the germ of the theory, wh. later became assocd. with traditions of an "earthly paradise."

**Atlas**, 1) (Gr. myth.) a giant who supported the heavens and (later) the earth. 2) Volume of maps.

**Atlas Mountains**, series of ranges



Atlas

(1,500 m.), N.W. Africa, extending from W. Morocco to Tunisia. Three main parallel ranges in Morocco: *Great Atlas* (av. height, 11,000 ft.; Tizi n'Tagharat 15,000 ft.), with *Anti Atlas* (5,000 ft.) to S. and *Middle Atlas* (c. 7,000 ft.) to N. Two parallel ranges in E., *Maritime* or *Tell Atlas*, from Span. Morocco (*Rif Mts.*) through Algeria (*Jebel Jurjura*, 7,550 ft.) into Tunisia; *Saharan Atlas* to S. (*Jebel Aures*, 7,640 ft.). Betw. these two ranges are plateaux with salt lakes (*Shott*) and pastures (alfalfa). See ALGERIA.

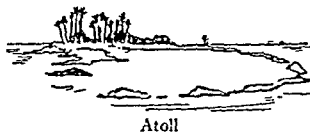
**Atlas powder**, explosive for blasting; mixture of nitroglycerine with wood-pulp or sawdust and sodium nitrate.

**Atmo.**, (phys.) abbr. atmosphere.

**Atmosphere**, gaseous envelope of the earth, the air (*q.v.*). Divided, acc. to density, composition, and phys., processes, into: *Troposphere*, extending from surface upwards about 6 m. at the Poles and 10 m. at the Equator; realm of phys. phenomena (wind, clouds, thunderstorms) and *Stratosphere*, which is of same composition as T. but has no vertical currents of air and an almost constant temp.; abt. 40 miles thick. Above these two regions containing nitrogen is a very rarefied layer of hydrogen, where the Aurora Borealis (*q.v.*), shooting stars, and meteorites become visible; small but important percent. of ozone at height of about 3.0 miles.

**Atmospheric (barometric) pressure**, exerted by wt. of column of air above unit area (abt. 15 lbs. per sq. in. at sea level). This pressure diminishes with incr. in height, and depends also greatly on weather (see DEPRESSION, CYCLONE). It is measured by barometers (*q.v.*) and usu. expressed as height of a mercury column exerting an equal pressure on unit area, e.g., abt. 30 in. at sea level. **A. electricity**, properly potential diff. betw. earth's surface and atmosphere; in gen. all elec. phenomena in atmos., e.g., lightning, Aurora Borealis, St. Elmo's fire; air is positively charged with respect to surface of the land and sea.

**At. no.**,  
abbr. atom-  
ic number:  
See ATOM.



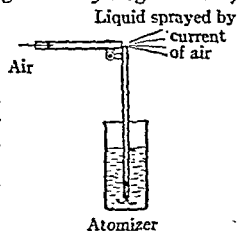
Atoll

**Atoll**, coral isl.; belt of coral-reef surrounding a lagoon.

**Atom**, smallest particles of chem. elements. Accdg. to most recent theories, atoms consist of a nucleus with a positive elec. charge, round wh. revolve negative electrons, like planets round a star. All atoms are alike, differing only in numbers of their nuclear charges, which corres. to number of negative electrons. Number of nuclear charge = ordinal number of element in the

periodic system (*q.v.*). **Atomic weight** of an element = numerical ratio of the elem. to Oxygen, taken as an arbitrary unit, i.e. 16.00. **Atomic transmutation**, changing of one element into another; goal of the old alchemists; occurs in nature by decomposition of *radio-active* elements (*q.v.*). **Atomic volume**, content of a *gramme-atom* (*q.v.*) of an element in a solid state at a temp. of 0°C., expressed in c.cm. **Atomic heat**, specific heat (*q.v.*) of a *gramme-atom*; in all metals, = 6.4 accdg. to law of Dulong-Petit (*q.v.*). **A., splitting of the**, artific. transmutation of atoms (Rutherford, 1921) by bombardment of elements (up to present, only boron, nitrogen, fluorine, sodium, aluminium, and phosphorus), with alpha rays (positively charged helium atoms of high velocity); nuclei of the atoms give off hydrogen nuclei, and change into elements one ordinal number lower in the periodic system.

**Atomizer**, spraying appliance for liquids: 1) centrifugal, e.g., for drying milk; 2) air pressure, e.g., scent A.; inhaling devices; internal combustion engines; 3) steam pressure; 4) effervescence.



**Atonal**, (mus.) without established tonality or key.

**Atonement, Day of**, (Hebr.: *Yom Kippur*) 10th day of Jew. New Year, a solemn day devoted to fasting and prayer (Lev. xvi, xxiii, etc.). See REDEMPTION.

**Atony**, (med.) slackness of muscles, tendons, and tissues; congenital or caused by illness and lack of exercise.

**À tout prix** (Fr.), at any price, at all costs.

**Atreabates**, Belgic tribe living in territ. of modern Artois; subdued by Julius Caesar, 57 B.C., and conquered by Franks in 5th cent. One branch of tribe settled in S. Britain.

**Atreus**, legend. Gr. Kg., grandson of Tantalus (*q.v.*). His sons, the **Atrides**, were Agamemnon and Menelaus.

**Atrium**, main apartment or court of house in anc. Rome; in early Christn. churches A. was an open colonnaded court reserved for penitents.

**Atropa belladonna**: see DEADLY NIGHTSHADE.

**Atrophy**, wasting of tissues thr. disease, nervous affection, or old age.

**Atropine**,  $C_{17}H_{23}O_3N$ , alkaloid obtd. from deadly nightshade (*Atropa belladonna*), used medic. as a nerve stim. and as a mydriatic (*q.v.*); also given to relieve spasmodic asthma.

**Atropos**, (Gr. myth.) one of the Three Fates (*q.v.*).



**Attacca**, (mus.) continuing without a break.

**Attaché**, subordinate official on staff of an ambassador; often (with prefix *commercial*, *military*, etc.) a member of the diplomatic service entrusted with spec. functions.

**Attainder, Act of**, parliamentary declaration "attainting" (outlawing) a person, used in Mid. Ages for securing destruction of polit. opponents. Employed in banishment of Despensers, 1321; largely used during Wars of the Roses; Thomas Cromwell was attainted in 1540, Strafford in 1641; last case of attainder and execution, that of Sir John Fenwick (1697) for participation in Assassination Plot.

**Attar of roses**, distilled with steam from petals of roses, esp. in the Balkans and Pers.; 1 oz. requires about 150 lbs. of rose petals; a synth. substitute commonly in use to-day.

**Attenuation** of signals, in wireless, reduced in strength. Principal cause, disturbance in the Heaviside layer (*q.v.*), wh. reflects signals back to Earth from upper regions of atmosphere.

**Atterbury**, Francis (1662-1732), Eng. divine and politic.; Bp. of Rochester and Dean of Westminster.

**Attic**, (archit.) strictly, upper storey of a bldg. above the main cornice; generally, low rooms in a roof.

**Attica and Boeotia**, prov. and peninsula of Greece. Area, 2,410 sq.m.; pop., 1,025,000. Mtns. *Cithaeron*, *Parnes*, and *Pentelicus* form amphitheatre round Attic Plain, in wh. lies Athens.

**Attic salt**, elegant wit; **Attica** (Athens), nursery of intellect in antiquity.

**Atticus**, Titus Pomponius (109-32 B.C.), Roman scholar, friend of Cicero, with whom he corresponded for many years. None of his writings is now in existence.

**Attila** (c. A.D. 406-453), the "Scourge of God," Kg. of the Huns. Ruled over large part of Europe. Defeated by Aëtius at Châlons, 451 A.D.

**Attock**, tn. and fort, Punjab, India, at confluence rivs. Kabul and Indus, on border N.W.F.P.; rly. bridge (five spans) over river.

**Attorney**, one authorised to act for another; esp., before 1873, and since then in popular usage, a solicitor. **A.-general**, chief legal officer of Eng. Crown, a member of the ministry in power. **Letter, or warrant, of A.**, document by which authority is given by a person to another to act for him; **power of A.**, the authority thus conferred.

**Attrition**, wearing away by friction; (theol.) sorrow for sin arising from fear of punishment; cf. CONTRITION.

**Atwood's machine**, apparatus for testing and explaining laws of motion and gravity, consisting of cord passing over friction-pulley, having weights on either side,

and means for suddenly removing and replacing them.

**At. wt.**, abbr. atomic weight.

**Au** (chem.), symbol for Gold.

**Aube**, 1) dépt., N.E. France, area 2,328 sq.m.; pop., 230,000; cap., Troyes. 2) Riv., trib. of Seine, rises in Langres Plateau, 154 miles.

**Auber**, Daniel François (1782-1871), Fr. operatic composer: *Masaniello*; *Fra Diavolo*.

**Aubergine**, egg-plant (*q.v.*).

**Aubrey**, John (1626-97), Brit. antiquary; assisted Anthony à Wood to compile his *Athenae Oxonienses*, *Natural History and Antiquities of Surrey* (pubd. 1719); *Miscellanies*.

**Auburn**, tn., New York State, U.S.A.; on the Yellowstone Trail; pop., 36,650; manuf.: woollen goods, carpets, Diesel engines, and surgical instruments. On Fort Hill is anc. stronghold of Cayugas, with monument to Chief Logan, friend of early settlers.

**A.U.C.**, abbr. *anno urbis conditae* (Lat.), in the year from the foundation of the city (start of anc. Rom. Era, 753 B.C.).

**Aucassin and Nicolette**, anon. Fr. romance, c. 1180, partly in prose, partly in *laissez* (*q.v.*) of assonant seven-syllabled lines, and described accordingly as *chanter-fable* or *cante-fable* (song-story).

**Auchinleck MS.**, Scot. MS. of c. 1330-40, preserved in Advocates' Library, Edinburgh; contains verse-romances (Carolingian, Arthurian, Oriental), fables, "débats," sacred pieces, political satires, one "conte dévot," etc.

**Auckland**, 1) prov., North Island, New Zealand, comprising three-fifths of island;



Auckland

area, 25,400 sq.m.; pop., 424,900; many safe harbours; dense forests (Kauri pine); grazing, dairy-farming, fisheries; gold and coal mines; exports gold, flax, timber, Kauri gum. Contains hot lake dist. (Rotorua). 2) **A. City**, cap. of prov., largest city in N. Zealand, former cap. of country; pop., 213,330; two harbours; univ. coll.; Anglican and R.C. cathedrals; shipbuilding, sawmills, brick, cement, and glass works. 3) **A. Islands**, uninhabited volcanic group, 300 m. S. of New Zealand; whaling station.

**Au contraire** (Fr.), on the contrary.

**Au courant** (Fr.), with the current; well informed.

**Auction**, 1) public sale to highest bidder; regular trade As. are held esp. for important products, e.g., wool, furs, rubber, spices, etc.; A. is a usu. method of disposal of real estate, works of art, antiques, etc. 2) Card-game devel. from Bridge (*q.v.*), in wh. rt. to "make trumps" and "play the hand" is decided by "bidding," value of suits being: clubs 6; diamonds 7; hearts 8; spades 9; "no-trumps" 10.

**Auctioneer**, person licensed to sell property by auction; cost of licence in Gt. Brit. is £10, payable every July 5th; A. is responsible for goods in his custody and for truth of their description for purpose of sale.

**Aude**, dépt. in S. France, on the Mediterr.; 2,450 sq.m.; pop., 296,880; minerals, agric., wines, wool; cap., Carcassonne.

**Audi alteram partem** (Lat.), hear the other side.

**Audiometer**, instrument for measuring the intensity of noise or total sound. Can measure only total energy present in the form of sound waves, but not the effect on the hearer.

**Auditor**, expert apptd. by the shareholders of a company who examines the books and issues a legally sworn certificate as to correctness of financial statement.

**Audley End**, seat (Ld. Braybrooke), nr. Saffron Walden, Essex, Eng.; built 17th cent.; picture gallery.

**Auersperg**, Ct. Anton Alexander von (1806-76), Austr. poet; see GRÜN, ANASTASIUS.

**Au fait** (Fr.), to the fact, expert, well informed; skilled.

**Au fond** (Fr.), at the bottom, essentially.

**Auf Wiedersehen** (Ger.), *au revoir*, until we meet again.

**Augeas**, (Gr. myth.) Kg. of Elis; Hercules (*q.v.*) cleansed the **Augean Stables** as one of his 12 labours.

**Auger**, tool for boring wood, with cylindrical cutting point and long spiral shaft; used in *brace* (*q.v.*).

**Aughrim**: see AGRIM.

**Augier**, Émile (1820-89), Fr. playwright: *Le Gendre de M. Poirier*; *Les Fourchambault*.

**Augite**, (mineral) silicate of calcium, iron, magnesium, and aluminium; a rock-forming mineral, usually black or dark green, a variety of pyroxene (*q.v.*).

**Au gratin** (Fr.), with a browned crust of grated cheese, breadcrumbs, etc. A culinary term.

**Augsburg**, cathed. tn., Bavaria, Ger., betw. rvs. Lech and Wertach; pop., 165,522; indust.: textiles. Rom. Colony 15 B.C., bpric. (St. Ulric) 832; free imperial city, 1276; became import. in Mid. Ages as centre of art and industry (Holbein, Fugger, etc.); Protestant since 1537; annexed to Bavaria,

1805. **Alliance of Augsburg**, 1686, betw. Emperor, Sweden, Sp. and Imperial States agst. France. **Confession of A.**, chf. symbol or statement of evangelistic Christianity, drawn up by Melancthon and presented to Emp. Charles V at Imperial Diet of A. (1530). **League of A.**, coalition (1682) of Emp., Sp., Nethlds., Swedn., Bavaria, and other States agst. Louis XIV. **War of the L. of A.**, 1688-97, ended in Peace of Ryswick.

**Augurs**, Rom. priests; interpreted the flight of birds. **Augurs' Laugh**, lit., allusion to laugh of initiated at credulity of outsiders.

**August**, 8th month, of 31 days; orig. *Sexilis* (6th mo. of the Roman calendar), in 8 B.C. it was renamed, in his own honour, by the Rom. Emp., Augustus.

**Augusta**, 1) cap., Maine, U.S.A., on site of Indian vill.; pop., 17,200; museum; publishing centre; manuf.: cotton, paper, shoes. 2) Tn., Georgia, U.S.A.; pop., 60,350; medical dept. of Univ. of Georgia; presbyt. manse where Woodrow Wilson spent boyhood; manuf.: cotton and automobile tires. Site of Fort Augusta (1735).

**Augustan Age**, period in Rom. hist. of the reign of Augustus (27 B.C.-A.D. 14), the Golden Age of Rom. lit. (Horace, Virgil, Tibullus, Propertius, Livy, Dionysius of Halicarnassus, etc., with Maecenas, Agrippa, etc., as patrons). Hence, the Golden Age of any other national literature, esp., in Gt. Brit., that of the time of Qn. Anne.

**Augustans**, orig. Lat. authors of time of Augustus Caesar (*q.v.*), usu. regarded as best period of Lat. lit.; include Virgil, Horace, etc.; applied to Eng. writers of reigns of Anne and George I, regarded as correspondg. zenith of Eng. Lit., or as period of class. correctness and purity of style; actual limits of Eng. Augustan age have been put at 1700-26; includes Pope, Thomson, Addison, etc.

**Augusta Victoria** (1858-1921), Empress of Germany and Qn. of Prussia; dau. of Pr. Frederick of Schleswig-Holstein, m. Wilhelm II, 1881.

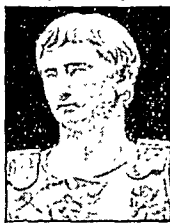
**Augustine (Austin)**, 1) (354-430), great-est theol. of Chr. Ch.; in youth a Manicheean; baptised 387; Bp. of Hippo (N. Africa.), c. 395; *Confessions*; *City of God*; commem., Aug. 28th. 2) Saint, (d. 604); Rom. missionary to Britain (597); 1st Abp. of Canterbury; commem. May 26th.

**Augustines**, order of nuns, said to have been founded by St. Augustine at Hippo.

**Augustinians**, order of Canons Regular of St. Augustine, claim to have been founded by St. Augustine; known in Eng. as *Black Canons*. **Augustinian Hermits** (*Austin Friars* or Begging Hermits), arose in 1265; in Eng. now possess houses at Hoxton, Hammersmith, and Hythe (Kent); Luther was member of the house at Wittenberg.

**Augustulus, Romulus**, last Roman emp. of the West (475-76); made emperor by his father, Orestes, who had deposed Julius Nepos. Forced to abdicate after defeat and death of Orestes at Pavia (q.v.).

**Augustus**, title conferred on Gaius Julius Caesar Octavianus (63 B.C.-A.D. 14), great-nephew and private heir of Julius Caesar; apptd. *Triumvir* with Antonius and Lepidus; after Battle of Actium (31 B.C.) became 1st Emp.; favoured art and letters: see AUGUSTAN AGE.



Augustus

**Augustus II** (1670-1733), Friedrich August, *The Strong*, Elect. of Saxony, 1694; Kg. of Poland, 1697; with Russia, Denmark, and Poland formed Northern Alliance agst. Sweden; 1700.

**Auk**, bird of order Alcae. **Lesser A.** (razorbill), breeds in large numbers on rocky islets of N. Atlantic; winter visitor to Gt. Brit. **Great A.** (garefowl), extinct during 19th cent. owing to wholesale slaughter; resembled razor-bill, but with rudimentary wings; was fnd. in large numbers in Newfoundland and N. Amer. coast.



Auk

**Auld Lights** (Scot.), claimed to be original seceders from episcopacy and stood out from *United Presbyterian Church* (q.v.) at its formation in 1847.

**Aulic Council**, one of two supreme courts of old German Empire, instituted by Maximilian I at Vienna, 1506, decisions of which were final; abolished 1806.

**Aulis**, (anc. geogr.) harbour, Boeotia, on the Euripus, place of assembly of Gr. fleet before Trojan War; scene of intended sacrifice of Iphigenia (q.v.).

**Aumâle**, Ducs d': 1) **Claude de Lorraine** (1523-73), Fr. R.C. leader agst. Huguenots. 2), **Henri Eugène d'Orléans**, (1822-97), 4th s. of Kg. Louis-Philippe; Gov.-Gen. of Algeria, 1847; expelled from France, returned 1889.

**Au mieux** (Fr.), at the best; on the best of terms.

**Au naturel** (Fr.), food served raw, or very plainly cooked.

**Aunjetitz Culture**, phase of Bronze Age (q.v.) activity; fl. c. 1900 B.C. Named after Aunjetitz, in Silesia.

**Au pair** (Fr.), on an equal footing; term usually applied to a condition under which a person resides with a foreign family with free board and lodging in exchange for various advantages accruing to the family from such a visit.

**Au pied de la lettre** (Fr.), at the foot of the letter; strictly literally, with no regard to the spirit of a thing.

**Aura**, in occultism, the invisible ethereal emanation of a body.

**Aurangzeb** (1618-1707), Mogul Emperor; one of greatest Moslem monarchs of India.

**Aurea mediocritas** (Lat.), the golden mean.

**Aurelian**, Lucius Domitius (c. 212-75), Rom. Emp.; defeated Alamanni, 271, and Zenobia, Qn. of Palmyra, 272-73. Given by Senate title *Restoror of the Roman Empire*.

**Aureole**, luminous radiance surrounding sacred figures in art (cf. HALO).

**Auric**, Georges (1899- ), Fr. composer; one of group *Les Six*; music for Diaghilev ballet *Les Matelots*.

**Auricle** (physiol.): see HEART.

**Auricula**, bear's ear, so called from shape of leaves. Alpine plant (*Primula auricula*) with yellow flowers; many cultivated varieties.

**Auriga**, the Charioteer, constell.; chf. star, Capella, with 76 times more light than the sun; see PL. ASTRONOMY, N.C.H., B.

**Aurignacian Culture**, divn. of Upper (Later) Palaeolithic Period (q.v.), named after a cavern at *Aurignac*, vil. in dépt. Haute-Garonne, France, 40 m. S.W. of Toulouse. Here gravers, scrapers, and other flint implements were found. Period of Cro-Magnon man. Cave-paintings and wall-engravings, e.g., at Altamira (q.v.).

**Aurillac**, cap. dépt. Cantal, Fr.; pop., 17,150.

**Aurochs**, extinct European wild ox, ancestor of most modern European domestic cattle; extant in Lithuania until 17th cent.; ranged in N. Europe; remains found in Lincolnsh. (Eng.) and Scotland.

**Aurora**, 1) (Gr., *Eos*) goddess of Dawn. 2) (*Polaris*) red, green, or yellow flickering rays in sky, apparently emanating from the Poles; almost daily phenomenon in polar regions; caused by electric action of sun on upper atmosphere. This theory recently proved by imitating the phenomenon in a laboratory. Designated *A. Borealis*, or Northern Lights, in N., and *A. Australis*, or Southern Lights, in South.

**Auscultation**, act of listening to heart sounds and sounds of respiration with ear or with stethoscope.

**Ausonius**, Decimus (c. 310- c. 395), foremost Latin Christian poet of 4th century.

**Auspices**, omens indicating future events, esp. natural phenomena such as flight of birds, regarded as prophetic signs by anc. Romans.

**Aussig** (*Ústí nad Labem*), tn., Bohemia, Czechoslovakia, on Riv. Elbe; pop., 40,000, mainly Ger.; grain and coal depot, glass and chem. industry.

**Austen, Jane** (1775-1817), Eng. novelist: *Sense and Sensibility*; *Pride and Prejudice*; *Mansfield Park*; *Emma*; *Northanger Abbey*; *Persuasion*.

**Austenite:** see STEEL.

**Austerlitz, tn.,** Moravia, Czechoslovakia; pop., 4,000; in 13th cent. property of Teutonic Order; Napoleon defeated Austrians and Russians, 1805 ("Battle of the Three Emperors").

**Austin, Alfred** (1835-1913), Eng. Poet Laureate, 1896.

**Austin, cap. of Texas, U.S.A.,** on Colorado Riv.; pop., 35,000; Capitol; univ.; library; centre of trade: cotton, grain, cattle, timber.

**Austin Friars:** see AUGUSTINIANS.

**Australasia,** generic term for Australia (incl. Tasmania), New Zealand, Papua (New Guinea), New Ireland, New Britain, New Hebrides, and New Caledonia. **Australasian Colonies,** obsolete term for Australia and New Zealand.

**Australia,** smallest continent, Brit. dominion in S. Hemisphere (see also AUSTRALASIA: OCEANIA); bounded on W. by Indian Ocean, on S. by Southern Ocean, and on E. by Pacific; separated on the N. from New Guinea by Torres Strait and from Dutch E. Indies by Arafura and Timor seas, and on the S. from Tasmania by Bass Strait; greatest length, from Steep Point (W.) to Cape Byron (E.), c. 2,400 m.; width from Cape York (N.) to Wilson's Promontory (S.), c. 1,970 m.; area (incl. Tasmania), 2,974,581 sq.m.; pop., 6,439,000 (excluding c. 60,000 Aborigines).

Coast-line uniform (cf. AFRICA), the greatest indentation being Gulf of Carpentaria in the N. Most of the natural harbours are on the E. and S.E. S. coast stormy and inhospitable, Great Australian Bight offering no shelter for 500 m. The principal island is Tasmania (q.v.).

Interior is crossed from N. to S. by *Great Dividing Range*, the edge of a tableland rather than a mtn. chain, which runs roughly parallel and close to E. coast, falling steeply towards the sea and gently inland. *Australian Alps* (7,350 ft.), in the S. of the range, provide the highest summit in Australia. In the centre of A. rises the *MacDonnell Range* (c. 4,000 ft.), in S. Australia are the *Musgrave* (4,500 ft.), *Flinders* (3,100 ft.), and *Lofty* (2,235 ft.) ranges; in S.W., parallel with the W. coast, is another series of ranges (1,500-3,500 ft.); in N.W. of Western A. *Mt. Bruce*, 4,024 ft.



Jane Austen

River system is defective, vast tracts of Central, S., and W. Australia being waterless. Most important riv. is the Murray (q.v.), draining into the Southern Ocean and fed by great tribs., all flowing E. and S. from Dividing Range. E. coast rivs. mostly short and rapid; several important rivs. (incl. the Flinders) flow into the Gulf of Carpentaria. Fitzroy, Ashburton, Gascoyne, Murchison, and Blackwood drain W. Australia. Several rivs. disappear into the earth, others (e.g., Cooper and Diamantina) flow into one or other of the great *Salt Lakes*: Eyre, Gairdner, Torrens, and Frome in S. Australia, L. Amadeus in the N. Territory, and the lakes of the W. Australian goldfields. W. centre of A. is largely desert, incl. the Great Sandy Desert, Great Victoria Desert, and Nullabor Plain.

*Climate*, temperate, except in the N., is generally dry, about 37% of the area having a rainfall of under 10 in.; but owing to the irregularity of precipitation, droughts and floods alternate. Region E. of Dividing Range has most rain; driest part is region of the S. Australian salt lakes. Vegetation corresponds. E. coast well wooded, with characteristic eucalyptus (some over 300 ft.), jarrah, karri, and gum trees. In the endless bush-country of the plains are found the acacia shrub (wattle), shrub eucalypts, saltbush, and spinifex.

Characteristic *fauna* include the kangaroo, wallaby, wombat, and other marsupials, the ant-eater, and the platypus. Well known birds are the emu, cassowary, lyre-bird, "laughing jackass," black swan, white eagle, parrots, and cockatoos; reptiles: lizards and snakes.

*Aborigines* (c. 60,000) are dark-skinned totem-worshippers, isolated race, renowned as trackers, well developed but of low mentality; weapons include the boomerang.

*Politically*, A. is a federal commonwealth, estab. 1901 with fed. cap. at Canberra. The members of the federation are Victoria, New South Wales, Queensland, S. Australia, W. Australia, and Tasmania. The Fed. Govt. administers the N. Territory (known as N. and Central A. for a few years), Papua (New Guinea), and the former Ger. colonies (Ger. New Guinea, Samoa, Solomon Is.) under mandate.

*Production and Industry:* Pasture is very important. A. has over 100 million sheep, Australian wool being among the best in the world. Cattle-raising and dairying are profitable. Principal crops are wheat, oats, barley, rye, and maize. Minerals include gold (mainly in W. Australia), silver, lead, tin, iron, and coal. Manufactures absorb over 400,000 hands.

*Communications:* Railway system hampered by the differences of gauge; fed. lines

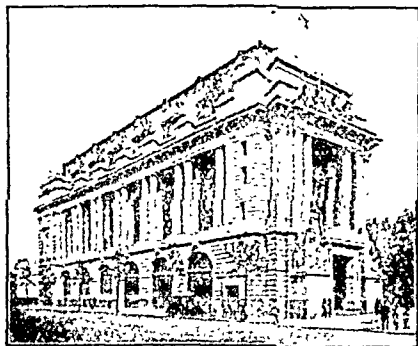


(incl. new construction) are on standard gauge of 4 ft. 8½ in. Transcontinental rly. unites E. and W. Australia; N.-S. transcontinental line under construction. Air services have received impetus from successful England-Australia flights; several subsidized air-mail routes.

**Discovery:** The Spaniard Torres is credited with the first sight of A. in 1606; in the same cent. Dutch navigators (Pelsart, Tasman) and the Englishman Dampier made important discoveries; in 1770 Capt. Cook sailed up the E. coast; in 1788 a penal settlement was established at Botany Bay; settlers arrived abt. 1820. Gold rush in 1851.

**Australia, Central,** former division of Australia, now included in Northern Territory (q.v.).

**Australia House,** London offices of Commonwealth of Australia, in Strand, London.



Australia House, Strand, London

Building commenced before World War, completed, 1918; reading-room, records, statistics, etc., information bureau, exhibits of Australian produce, cinema depicting life in Australia, etc.

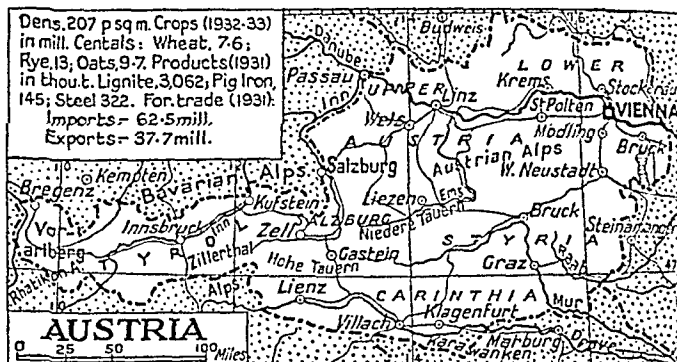
**Australian Alps,** range S.E. Australia, part Great Dividing Range; contains highest mtns. in Australia; Mt. Townsend, 7,550 ft., Mt. Kosciusko, 7,336 ft. **Great A. Bight,** bay, S. coast W. and S. Australia; practically harbourless for over 500 miles. **A. languages:** see LANGUAGE SURVEY.

**Australopithecus Africanus,** prehist. ape-man, known through the *Taungs Skull*, discovered in 1924 at Taungs, Bechuanaland, S. Africa; referred to Miocene Period; earliest known.

**Austrasia,** kgdm. of eastern Franks on both sides of R. Rhine; cap., *Metz*. Founded

when sons of Clovis divided their father's territories, 511, and ended when Pépin became sole Kg. of Franks, 747.

**Austria,** federal repub., Cent. Europe;



bounded N. by Bavaria and Czechoslovakia, E. by Hungary, S. by Yugoslavia and Italy, and W. by Switzerland; area, 32,370 sq.m.; pop., 6,700,000 (mainly German-speaking R.C.). Divided into 9 provs. ("Länder") of Vienna, Lower A., Upper A., Salzburg, Styria, Carinthia, Tyrol, Vorarlberg, Burgenland. Surface mountainous, crossed by E. Alps (Hohe and Niedere Tauern); extensive forests; lake dist. in N.; rivs. Danube, Mur, Enns, Inn. Iron and lead in Styria; salt-mines in Salzkammergut; shortage of coal partly offset by extensive use of waterpower. Rye, wheat, oats, barley, tobacco grown; cattle, pigs, sheep and horses bred; timber and wood-pulp exported; manuf. iron and steel, automobiles, furniture, textiles; clothing. Rlys., 4,200 m. Cap., *Vienna*. Constitution of 7 Dec., 1929, provides for President (4 yrs.). National Assembly (*Nationalrat*) elected by popular vote, and Upper House (*Bundesrat*), of deputies from the provincial assemblies.

**HISTORY:** Originally the Ostmark, or eastern margravate of Charlemagne's empire; ruled by Babenberg dynasty 794-1246; then occupied by Ottokar of Bohemia, who was killed in battle on the Marchfeld (nr. Vienna), against Rudolph of Habsburg in 1278. House of Habsburg, by marriages and treaties, acquired Lower Austria (through marriage of Maximilian I to Maria, heiress of Charles the Bold of Burgundy, in 1477), and Bohemia and Hungary (through m. of Ferdinand I to Anna of Bohemia and Hungary, 1526). Much weakened by war with Turkey and by Thirty Years' War in 16th-17th cents. Dual Monarchy, 1700; large part of Italy acquired, 1714. Male line of Habsburgs extinct, 1740; Maria Theresa, 1740-80; after War of Austrian Succession Silesia lost to Prussia. Shared in first partition of

Poland, 1772. Involved in Napoleonic Wars under Emp. Francis I, who renounced imperial throne, 1806. Revolution of 1848 produced amendments in constitution; accession of Francis-Joseph (1848-1916). War with Germany, 1866; Bosnia and Herzegovina annexed, 1908. Collapse in World War. Republic established, Nov., 1918, out of remaining Crownlands of the former Austro-Hungarian monarchy—extent defined by Treaty of St. Germain (10 Sept., 1919) and Treaty of Trianon (4 June, 1922). Plebiscite in South Carinthia, 10 Oct., 1920, in favour of Austria. **Lower A., Austria below the Enns**, largest prov., Austria; 7,452 sq.m.; pop. (excluding cap., Vienna), 1,500,000; mountainous in S.; farms and vineyards on Riv. Danube, which divides prov. into two. **Upper A., Austria above the Enns**, prov., N. Austria; 4,626 sq.m.; pop., 900,000; mountainous; watered by Danube; many lakes; forests; agric.; cattle-breeding; mining; ironworks at Steyr; textiles at Linz; salt at Hallstadt and Ischl; cap., Linz.

**Austria-Hungary**, former empire, Centr. Eur.; received name of *Austro-Hungarian Monarchy*, 1868 (in place of *Austrian Empire*); two indept. States (Austria, or Cisleithania, and Hungary, or Transleithania); hence "Dual Monarchy"; 239,980 sq.m.; pop. (1910), 51,282,800. Divided after World War among Austria, Hungary, Czechoslovakia, Yugoslavia, Italy, Poland, and Rumania.

**Austrian language:** see LANGUAGE SURVEY, *H. German*.

**Austro-Asiatic**, native of Upper India and Indo-China. **A.-A. languages:** see LANGUAGE SURVEY, *Mongol. languages*.

**Austro-Prussian War**, of 1866, betw. Aus. and Pruss. for hegemony of Ger. and settlement of Slesvig-Holstein question. Aus. supported by Cent. and S. German States, Pruss. allied with It. Decisive Pruss. victory at Königgrätz, Peace of Prague. Aus. leaves German Confed.; Pruss. gains Hanover, electorate of Hesse-Nassau, Sles-Holstein and Frankfurt and founds N. German Confederation.

**Aut Caesar aut nullus** (Lat.), either Caesar or nobody; inscription on bust of a Rom. Emperor; applied to a detestation of half-measures.

**Auteuil**, W. suburb, Paris, nr. Bois de Boulogne; race-course (steeplechasing).

**Authors, Society of**, Incorp'd. Soc. of Authors, Playwrights and Composers; Brit. soc., fndd. 1884, to afford protection and advice to authors. Membership, over 4,000.

**Autochrome process**, meth. of printing in sev. colours, in wh. each colour is printed separately by means of a lithographic stone.

**Autochthones**, aborig. natives of a land, excluding settlers.

**Autoclave**, (phys.) strong closed vessel for heating of substances under pressure.

**Autocracy**, similar to absolute monarchy, but used espec. when head of State not hereditary.

**Auto-da-fé**, act of faith, ceremonial wh. accomp. exec. by civil power of those condemned by Inquisition (*q.v.*) for heresy.

**Autogyro**, aeroplane on the helicopter (*q.v.*) principle, invented by de la Cierva, 1923. Carries automat. device, similar to sails of a windmill, rotated by pressure of air when machine is in motion. Enables pilot to land or take off safely in small space.

**Autolytus**, (Gr. myth.) a famous and wily thief, son of Hermes; Shakespeare gave the name to a cunning pedlar in *The Winter's Tale*.

**Automatic machine**, name given to any machine performing its operations without attention. Many classes: 1) *Slot machines* released by coins for selling goods, weighing persons, etc.; 2) special tools of lathe class, for producing objects by turning, cutting, stamping, spinning, etc.; working without attention of any kind except occasional replenishment of material; 3) machines for packing, labelling, filling bottles, testing sizes, weights, etc., of objects, and performing all kinds of processes; 4) automatic transport machines of all kinds; ships and aeroplanes can be steered automatically; 5) automatic recording and regulating apparatus, controlled by instruments such as thermometers, pyrometers, pressure and level gauges, etc. **AUTOMATIC PISTOL:** see BROWNING.

**Automaton**, mechanical figure of animal or human being, provided with mechanism and motive power enabling it to perform various characteristic actions. Chiefly associated with clocks, figures striking hours, also emitting sounds, *e.g.*, cuckoo clock. In modern times mechanical clock-work toys, also life-size figures worked by electricity. Figures made to write and draw; but chess-playing, etc., performed by concealed confederate.

**Automobile:** see MOTORCAR.

**Autonomy**, criterion of independence among States. Also used of local authorities or other bodies to indicate legal freedom to act within their own spheres.

**Autopsy**, inspec. and exam. of organs of a dead body, *e.g.*, for purpose of ascertaining cause of death.

**Autos sacramentales**, Span. sacred plays in honour of Blessed Sacrament, esp. those by Calderón and Lope de Vega.

**Auto-suggestion**, psychotherapeutical method of inducing self-hypnosis, whereby the mentally exaggerated expectations and wishes of the patient are so directed as to

produce particular mental or physical reactions.

**Auto-transfusion**, re-injection of patient's own blood, or blood serum.

**Autotype**: *see* PROCESS BLOCK.

**Autres temps, autres mœurs** (Fr.), other times, other manners.

**Autumn**, 3rd season of year, between summer and winter; popularly Aug.-Oct. (Gt. Brit.) or Sept.-Nov. (U.S.A.); astronomically, Sept. 23-Dec. 21 in N. hemisphere, March 21-June 21 in S. hemisphere: also called the "fall." Period of fruition and incipient decay.

**Autun**, tn., dépt. Saône-et-Loire, Fr.; pop., 14,000; oil, leather, metal-founding, marble, machin., furniture, cattle, timber; 12th cent. cathed.; remains of Rom. roads and buildings.

**Auvergne**, bare highlands, S. Fr., with c. 600 extinct volcanoes (Mont Dore, 6,180 ft.; Puy-de-Dôme, 4,800 ft.); fertile valleys, vines, fruit, grain; isolated deposits of iron and coal.

**Auxerre**, cap. dépt. Yonne, Fr.; pop., 21,980; cathedral.

**Auxiliary verb**, one wh., in conjunc. with another, forms moods and tenses, *e.g.*, *have*, *be*, *may*, *must*.

**A.V.**, abbr. Authorized Version (Bible).

**Av.**, **Avdp.**, abbr. avoidrupois.

**Ava**, anc. cap. of Burma (1364-1782 and 1823-37), on Riv. Irrawaddy, below Mandalay.

**Aval**, guarantee for payment of a bill, on behalf of bill debtor, by a 3rd party; marked on bill by adding *p.a.* (*per aval*); renders guarantor equally liable with debtor; term not in use in England.

**Avalanche**, mass of snow and ice, loosened by thaw, moving down mountain-side, gathering more snow and earth in its descent.

**Avalon**, **Isle of**, in Arthurian Legend, home of heroes to which King Arthur was borne by three queens; fancifully identified with Glastonbury, Somerset, England.

**Avanturine**, rare form of quartz (*q.v.*) containing spangles of mica and other minerals. A. glass, or artificial A., contains innumerable brilliant spangles of metallic copper. Used esp. for mosaic work.

**Avars**, Turk. tribe, from 6th cent. to Mid. Ages occupying Danube basin; in 796 Pepin destroyed their power.

**Avatar**, term used in Hindu mythology for incarnation of the Deity; *Vishnu* (*q.v.*) variously accredited with 10 to 22 different incarnations.

**Avdp.**, abbr., avoidrupois.

**Avebury**, John Lubbock, 1st B. (1834-1913), Eng. banker and naturalist; intro. Bank Holidays Act, 1871; auth.: *The Pleasures of Life*, etc.

**Avebury**, vill., Wilts., Eng., 6 m. W. Marlborough; prehistoric stone circle.

**Ave Caesar, morituri te salutant** (Lat.), Hail Caesar! those about to die salute thee; gladiators' salute to the Rom. Emperor before engaging in combat in the arena.

**Avellaneda**, tn., Argentina, S. suburb Buenos Aires; pop., 209,500; meat-packing, wool-washing.

**Ave Maria**, or **Ave** (R.C.Ch.), devotional address or prayer to the B.V.M.

**Avens**, (bot.) popular name for two species of *Geum* (*q.v.*), occurring in Gt. Brit.; *Geum urbanum*, a common hedgerow plant with yellow flowers, also called herb bennet; **Water A.**, *Geum rivale*, has larger, orange-coloured flowers.

**Aventine**, southernmost of the Seven Hills of ancient Rome.

**Aventurine**, *avanturine* (*q.v.*).

**Average** (shipping): *see* GENERAL AVERAGE; PARTICULAR AVERAGE.

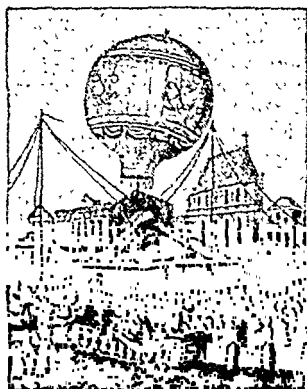
**Avernus**, **Averno**, small lake, Campania, Italy, in volcanic crater, 9 m. W. Naples; celebrated, in class. myth., as entrance to the Lower World; on S. is Grotto of Cumæan Sibyl, whence Aeneas descended.

**Averroës**, Ibn-Roshd (c. 1126-98), Arab. philos. and physician of Cordova; commentator on Aristotle.

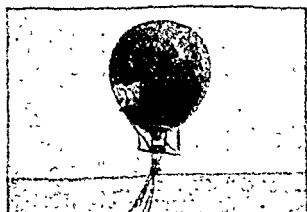
**Avesta**, collec. of sacred writings of Zoroastrians; contains: 1) *Yasna*, principal liturgical book; 2) *Vispered*; 3) *Vendidad*, priestly code of Parsees; 4) *Yashts*; 5) *Khordad Avesta*. *See* LANGUAGE SURVEY, *Iranian*; also ZOROASTRIANISM.

**Aveyron**, dépt. in S. Fr., 3,385 sq.m.; pop., 323,782; watered by Riv. Aveyron (155 m.); minerals, cattle- and pig-breeding, wool, cheese (Roquefort); cap., Rodez.

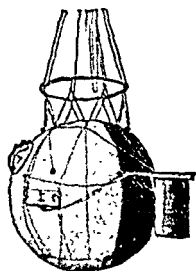
**Aviation**, science and art of flight thr. the air by mechanical means. Navigation of air by any means involves aerodynamics, wh. treats of the motion of bodies in air and of air around solid bodies. In the construction of vessels for aerial navigation all parts, so far as possible, are shaped to give *streamline flow* (to avoid loss of power through forming eddies), and propulsion is effected by means of air-screws driven by internal-combustion engines of minimum attainable weight per h.p. The instruments include the compass, wireless direction-finder, barograph for indication of altitude (above sea-level), turn indicator (enabling straight course to be kept), air-speed indicator, and inclinometer; no wholly satisfactory instruments indicating speed relative to that of earth, or height above it, yet developed. First human aviation was by balloon, bodies lighter than air; still in course of development in form of rigid airships. Much greater development has taken place in mechanical flight, by which bodies heavier than air are sustained in it



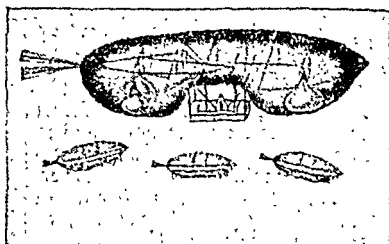
Warm Air Balloon of the Brothers  
Montgolfier, 1783



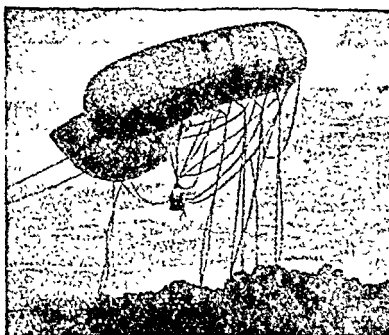
Free Balloon with Sail and Tow Rope,  
André, 1897



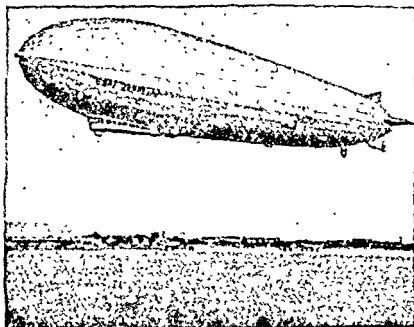
Gondola of Prof. Piccard's  
Stratosphere-Balloon



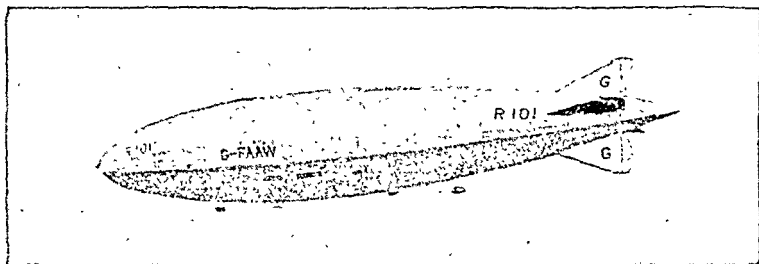
Navigable Airship, Design of 1789



Captive Balloon



Airship "Graf Zeppelin"  
LZ 127



British Airship, R 101: destroyed by fire with loss of 48 (out of 54) lives, nr. Beauvais,  
France, 5 Oct., 1930. See AIRSHIP



and made to move in desired direction. Three principal systems are possible in perfectly still air: 1) wing-flapping as used by birds and insects, but never successfully by man; 2) propulsion of slightly inclined "plane" or aerofoil by means of screw, resulting pressure of air producing lifting force; universal in all aeroplanes but not found in nature. Minimum forward speed is necessary to sustain machine; if speed is lower, machine stalls. 3) Helicopter (*q.v.*). In turbulent air, *gliding flight* is possible, as used by eagle, albatross, and other large

birds and by man in "engineless" flying. Advantage is taken of upward currents and gustiness of wind. Upward currents exist near hills and cumulus clouds. See GLIDER.

HISTORY: Model of flying device to be attached to the person made by Leonardo da Vinci (*c.* 1500); research by G. A. Borelli, 1680; helicopter model by Sir George Cayley, 1796. Hot-air balloons constructed by brothers Montgolfier, 1783; 1st hydrogen balloon, Prof. Charles, Aug., 1783. Successful gliding experiments by Lilienthal, 1806. Count Zeppelin's first rigid dirigible airship,

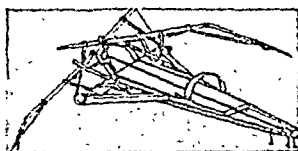
SOME NOTABLE AEROPLANE FLIGHTS

	AVIATOR	FLIGHT	DISTANCE	TIME
1903	Orville Wright	Kitty Hawk, N. C.	852 ft.	59 secs.
1909	Blériot	English Channel	26 m.	37 mins.
1919	Sir John Alcock and Sir J. W. Brown	Newfoundland-Ireland	1,890 m.	16h., 12 m.
1919*	Sir Ross Smith and Sir Keith Smith	Eng.-Australia	11,295 m.	*124 hrs.
1924*	L. Smith, E. Nelson and others of U.S. Army	Round the World	27,000 m.	*336 hrs.
1926*	Franco	Spain-S. America	6,259 m.	*59½ hrs.
1926	Cmdr. R. E. Byrd (U.S. Navy)	Spitsbergen - N. Pole and back	1,300 m.	15¼ hrs.
1926*	Sir Alan Cobham	Eng.-Australia and back	28,000 m.	*230 hrs.
1927	Col. C. A. Lindbergh	New York-Paris	3,639 m.	33½ hrs.
1927	Chamberlin and Levine	N. Y.-Eisleben (Ger.)	3,923 m.	42¾ hrs.
1927	Byrd and others	New York-Ver-sur-Mer (Fr.)	3,600 m.	42 hrs.
1927	Costes and Lebriz	Senegal-Natal	2,600 m.	21½ hrs.
1928	Bert Hinkler	London-Port Darwin	10,340 m.	15½ days
1930	Miss Amy Johnson	Eng.-Australia	10,200 m.	20 days
1930	Capt. Kingsford-Smith	Eng.-Australia	10,200 m.	9d., 22h., 51m.
1930	C. W. A. Scott	Eng.-Australia	10,200 m.	9d., 4h., 11m.
1930	Costes and Bellonte	Paris-New York	3,700 m.	37 hrs.
1931	Glen Kidston	Eng.-Cape Town	7,000 m.	6½ days
1931	C. W. A. Scott	London-Port Darwin	10,340 m.	9d., 30m.
		Port Darwin-London	10,340 m.	10d., 16h.
		London-Tokyo	10,500 m.	10 days
1931	Miss Amy Johnson and Humphreys	Eng.-Australia	11,295 m.	9d., 2h., 29m.
1931	A. C. Butler	Eng.-Cape Town	7,000 m.	5d., 8h., 30m.
1932	Miss Peggy Salaman and Stone	Eng.-Cape Town	6,255 m.	4d., 17h., 30m.
1932	J. A. Mollison	Eng.-Australia	10,200 m.	8d., 20h., 44m.
1932	C. W. A. Scott	Harbour Grace-Londonderry	2,026½ m.	13 hrs. 30 min.
1932†	Miss Amelia Earhart	France-Cape Town	6,562 m.	3d., 19h.
1932	Goulette and Salel	Cranwell Lincs., Eng.-Walvis Bay, S. W. Africa (non-stop)	5,340 m.	57 hrs., 25 m.
1933	Sq.-Leader Gayford and Flight-Lt. Nicholetts	Lympne-Port Natal, Brazil	4,600 m.	3d., 10h., 8m.
1933	J. A. Mollison	Round the World	15,596 m.	7 d. 18 h. 50 m.
1933	Wiley Post	New York-Rayak	5,881½ m.	55 h. 44 m.
1933†	Codos and Rossi			

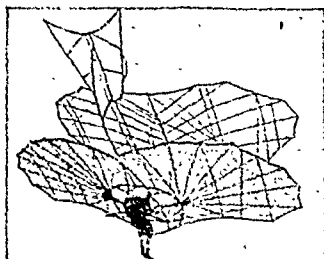
\*Actual flying hours shown.

†Solo flight.

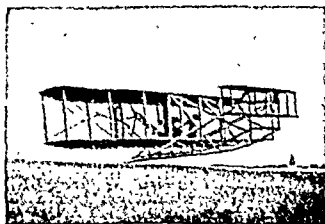
‡Record non-stop flight.



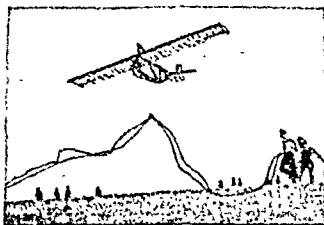
Flying Machine after Design of  
Leonardo da Vinci, c. 1500



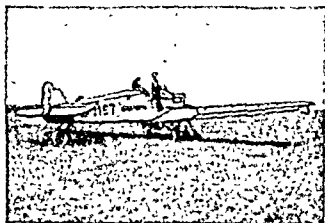
Gliding Plane of Otto Lilienthal, 1896



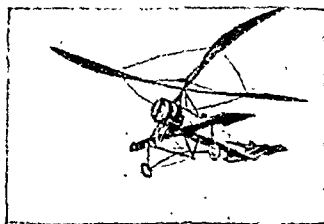
Biplane of the Brothers Wright, 1906



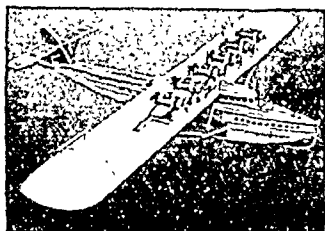
Glider, with starting rope, 1931



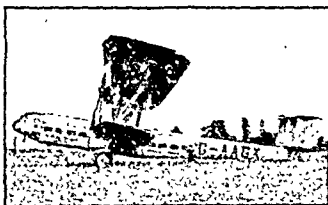
Seaplane "Bremen," Köhl.  
von Hünefeld, Fitzmaurice, 1928



Cierva Helicopter, 1930

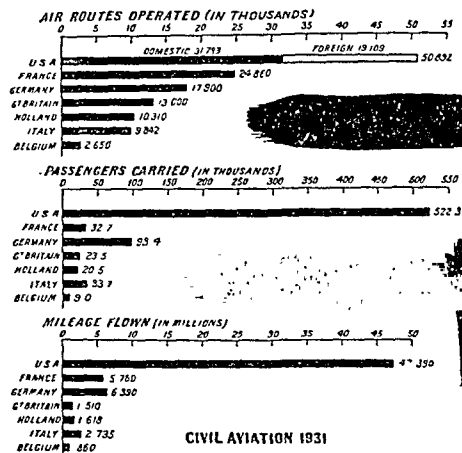


Giant Flying Boat, Do X, 1930



Imperial Airways' Liner of the  
"Herakles" class

1900; Santos-Dumont's dirigible flew round Eiffel Tower, Paris, 1901. Wright brothers' biplane, 1903-05. Long Zeppelin flights during World War (Bulgaria-Khartoum and back, 4,230 m. in 95 hrs.). Brit. airship R34 crossed Atlantic, 1919. First trans-Atlantic flight E. to W. (Ireland to New-



Flying in U.S.A. a stage ahead of rest of world; that country exhibits largest number of passengers carried and mileage flown per air routes operated; Fr. and Germ. lead in Europe

foundland), by Köhl, Hünefeld, and Fitzmaurice, 1928. Flight of Ger. airship, "Graf Zeppelin," round the world, 1930. Pangborn and Herndon, first non-stop trans-Pacific flight (Tokio-Seattle), July, 1931. Prof. Piccard, balloon ascents into stratosphere, 1931 and 1932, to height of 10½ m. See AEROPLANE: AIRSHIP.

#### WORLD RECORDS

ALTITUDE: (aeroplane) 43,976 ft. by Capt. Cyril Unwin, Bristol, 1932; (balloon) c. 10½ m., by Prof. Piccard.

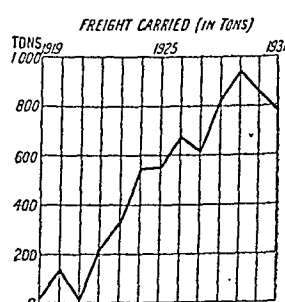
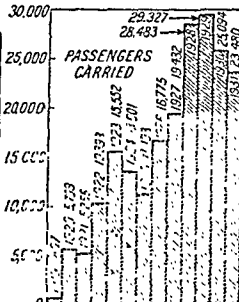
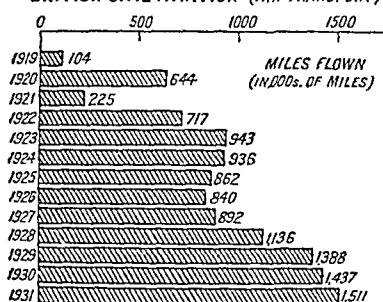
SPEED: 423.76 m.p.h. by Francesco Agello (Italy), 1933; previous record, 407.5 m.p.h., by Flt.-Lieut. G. H. Stainforth, 1931.

DURATION: 553 hrs. 41 mins. 30 s. by John and Kenneth Hunter, U.S.A., 1930, with re-fuelling during flight; record without re-fuelling is 84 hrs. 53 mins., by W. Lees and F. Brossy, U.S.A., 1931. NON-STOP: 5,910 m. in 55 h. 44 min. from New York to Rayak (50 m. N.W. of Damascus, Syria) by MM. Codos and Rossi (French), Aug. 1933.

**Aviation, Civil, regular services in Eur.** date from Aug., 1919. Passengers carried to Eur. countries by Brit. aircraft rose from 5,799 in 1920 to 29,327 in 1929, and 35,280 in 1932. Empire and Continental services maintained by Imperial Airways (q.v.), 130 air stations served from London; 27 air transport cos. operating from Europe, 1 in Gt. Britain, 4 in France, 1 each in Holland (K.L.H.), Belgium (Sabena) and Germany (D.L.H.). Regular services to Cape Town and Delhi (Brit.), Tunis or Dakar, Senegal (Fr.), thence by fast mail-ships to S. America; Bagdad-Saigon, Indo-China (Fr.); Moscow-Tashkent-Teheran, Trans-Siberian rail and aeroplane to China (Russian); Salonika and Istanbul (Ital.); Amsterdam-Batavia (Dutch). Germany best-covered country (50 aerodromes served daily). Coastal and trans-Andean services in S. America. Trans-Atlantic service could be started at any time; and a subsidy of £1,000,000 p.a. would enable all first-class mails to the Brit. Emp. to be carried by air. There are now 24 private flying clubs in Gt. Britain with about 1,800 members.

**Aviation, military, in chf. countries:** France: Army air serv., navy air serv., and central air dept. in colonies under adminstr. of Air Minister. Army air serv. has 2 commands, with total of 135 squadrons; 2,200 first-line aircraft. Italy: Air Force (constitd. 1925) possesses 2,600 aeroplanes. Japan: Air personnel of 8 regiments, 900 aeroplanes. Russia (U.S.S.R.): c. 1,700 to 2,000 aeroplanes. U.S.A.: Attached to army, c. 1,700 aeroplanes, 14,500 personnel; to navy, c. 1,600 aeroplanes, 15,000 personnel, all battleships

#### BRITISH CIVIL AVIATION (AIR TRANSPORT)



Apart from depression years, as in 1921 and from 1929 onwards, progress has been uninterrupted, while even since 1929 the mileage flown has increased

carry 3 seaplanes. *Germany*: Military aircraft disallowed under Treaty of Versailles. For *British*: see ROYAL AIR FORCE.

**Avicenna**, Ibn-Sina (980-1037), Arab. philos. and physician of Bokhara; his works standard textbks. in mediaeval Europe; sur-named *Prince of Physicians*.

**Avignon**, cap. of dépt. Vaucluse, Fr.; pop., 50,000; silk, oil, liquorice, leather, chemicals, soap; chf. commercl. centre for grain and wines of S.E. Fr.; Rom. colony on Rhone, 48 B.C.; cathed., Palace of the Popes; ("Babylonian Captivity," 1309-77).

**A vinculo matrimonii** (Lat.), from the bonds of marriage, legal phrase applied to divorce; cf. A MENSA ET TORO.

**Avison**, Charles (1710-70), Eng. composer; best remembered by his *Essay on Musical Expression*, 1752.

**A vista** (It.), at sight, of a bill of exchange.

**Avitaminosis**, (med.) disease caused by absence or deficiency of vitamins (*q.v.*) in the diet.

**Avoca (or Ovoca), Vale of**, wooded glen, Co. Wicklow, sung by Thomas Moore.

**Avocado pear**, fruit of tree, *Persea gratissima*; native of W. Indies and tropical America; has soft, buttery flesh inside tough outer skin; eaten as main dish at meal or as salad, etc.; name from Aztec *ahuacatl*.

**Avogadro's Law**, estd. by Ital. physicist A. Avogadro (1776-1856); under same conditions of temp. and pressure, equal volumes of all gases contain same number of molecules.

**Avoidupois**, system of wts. used in all English-speaking countries for all articles, except precious metals and medicines; one pound avoidupois = 16 oz. See TROY and APOTHECARIES' WEIGHT.

**Avon**, name of three Eng. rivers. 1) **Upper A.**, trib. of Severn, 96 m. long, nav.; Stratford-on-A. (*q.v.*), birthplace of Shakespeare, the *Swan of A.* 2) **Lower A.**, rises in Cotswolds, flows past Bath and Bristol into Bristol Channel at Avonmouth. 3) **East A.**, rises in Wilts, flows past Salisbury into Eng. Channel at Christchurch.

**Avonmouth**, port of Bristol, Glos., Eng.; pop., 3,000.

**Avranches**, tn., N.W. France, dépt. Manche, on Riv. Sée, at head Bay of St. Michel; pop., 6,800; leather-dressing, brewing, fisheries.

**Avunculate**, applied to common custom among prim. tribes, whereby uncle (mother's brother) has status equiv. to a father; e.g., exercises discipline, educates, bequeathes property, etc., to his sisters' children.

**Awe, Loch**, lake, Argyllsh., Scot.; 23 by  $\frac{1}{2}$ -3 m.; Kilchurn Castle (16th cent.) at N.E. end; outlet (from N.W. end), **Riv. Awe** (to Loch Etive); salmon- and trout-fishing.

**Awl**, bodkin, pointed instr. used for making holes by shoemakers, leather workers, printers, etc.

**Awn**, bearded or bristle-like growth appearing on ears of certain grasses, e.g., barley.

**Awning**, tilt; 1) coarse linen cover for open vehicle (tilt wagon); roof-like protec. from sun; 2) (naut.) part of poop-deck of a ship.

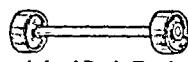
**Axholme, Isle of**, tract of fertile flat land N.W. Lincs., Eng., surrounded by rivs. Trent, Don, Idle.

**Axiom**, proposition or principle universally accepted as truth.

**Axis**, imaginary central line; in analytical geom., lines from wh. co-ordinates (*q.v.*) are measured. **A. of symmetry**, line drawn thr. a figure or solid so that parts of same are symmet. arranged with reference to it.

**A. of crystal**: see CRYSTAL. **A. of rotation**, axis about wh. rotation takes place. Earth's A. passes through the poles.

**Axle**, transverse beam on wh. or with wh. a wheel or wheels revolve (cf. BEARINGS); also the ends of this (wh. is also called **a-rod** or **a-tree**) inserted in the hub of the wheel. A rotating A. is known as a **live-a.**, and a non-rotating as a **dead-axle**.



Axle of Bogie Truck

**Axminster**, mkt. tn., Devon, Eng.; once noted for carpets; pop., 2,200.

**Axolotl**, Mexican name for the permanent aquatic larval form of the N. Amer. salamander, *Amblystoma*. Formerly believed that the two forms were totally distinct animals, as the A. was known to breed in captivity. Under favourable conditions the tadpoles from the A. eggs complete their metamorphosis and crawl out of the water to land as typical salamanders.

**Ayacucho**, 1) dept. of cent. Peru; area 18,200 sq.m.; est. pop., 300,000; mntainous., with fertile valleys; Indian corn, potatoes; silver mines; part of orig. home of Incas. 2) cap. of A.; pop., c. 22,000; 8,850 ft. above sea-level; nr. source of Rio Mantaro; rich mercury mines; episc. see.

**Aye-aye**, a small aberrant lemur, native of Madagascar; nocturnal; feeding upon sugar-cane and large wood-boring caterpillars, the long and slender fingers of its fore-paws being specially adapted to extract the grubs; coat black, eyes and ears large; chisel-like incisors.



Aye-aye

**Ayesha** (c. 611-76), favourite wife of Mohammed (*q.v.*)

**Aylesbury**, co. tn., Bucks, Eng.; dairy produce; pop., 13,400.

**Aylesford**, vill. and parish, Kent, Eng.,

3½ m. N.W. Maidstone; site of battle, in 5th cent. A.D., betw. Britons and Saxons; 1½ m. N.E. is Kit's Coty House (*q.v.*). Indus. vil. and sanatorium of Brit. Legion at Preston Hall.

**Aylesham**, colliery tn., Kent, Eng., 4 m. N. of Dover; pop., 2,000.

**Aymon, Four Sons of**, Alard, Richard, Guiscard, and Renaud; heroes of the *Charlemagne cycle*; see Huon de Villeneuve's *Les Quatre Fils d'Aymon*; Ariosto's *Orlando*.

**Ayr**, co. tn., royal burgh; seaport; associatns. with Robt. Burns; pop., 36,800; famous bridge; race-course. Manuf.: carpets, woollens, leather; exports coal and iron; shipbuilding. **Ayrshire**, mar. co., S.W. Scot., comprising districts of Cunningham, Kyle, and Carrick; area, 1,240 sq.m.; pop., 285,200; "Land of Burns"; undulating moorland in interior (*Blackcraig*, 2,300 ft.); Loch Doon in S.E.; *Ailsa Craig* 10 m. off W. coast; dairy-farming, agric.; woollens, cotton; coal, iron, limestone, sandstone; Kilmarnock assoc. with Burns.

**Aytoun**, Wm. Edmonstone (1813-65), Scottish poet, humorist and critic; contributed to *Blackwood's Magazine* from 1836; *Lays of Scottish Cavaliers* (1848); *Collection of Ballads of Scotland* (1858); parodies, etc.

**Azalea**, ornamental N. Amer. and Asiatic shrub; akin to rhododendron.

**Azariah**, (O.T.) 1) see ABEDNEGO; 2) see UZZIAH.

**Azerbaijan**, 1) Socialist Soviet repub. of Trans-Caucasian Federation, on Caspian Sea; 25,500 sq.m.; pop., 2,315,000; includes Nakhichevan S.S.R. and Nasorni Karabakh auton. region; oil industry, grain, tobacco, silk; cap., Baku (*q.v.*). A. declared indept., May 1918; became Sov. Repub., 1921. 2) Mtnous. prov., Persia, c. 31,500 sq.m.; pop. c. 1,500,000; *Mt. Ararat*, 17,200 ft.; dried fruit industry; cap. Tabriz (*q.v.*).

**Azides**, salts of hydrazoic acid, azoimide,

HN<sub>3</sub>; both acid and its salts are highly explosive. Lead A. is used as detonator (*q.v.*).

**Azilian culture**, phase of Mesolithic Period (*q.v.*), named after *Mas d'Azil*, vil., Ariège, France; bone and flint implements inferior to those of preceding Magdalenian culture; painted pebbles (purpose unknown).

**Azimuth**, (astron.) distance of a star in angular degrees from N. or S. point of the meridian. **A. compass**, comp. with vertical sights, for observing the A. of a star.

**Azo-compound**, (chem.) organic compound in which the group of two nitrogen atoms, -N:N-, is attached by its two valencies to different carbon atoms. Aromatic azo-compounds are strongly coloured (*e.g.*, methyl orange, methyl red, Bismarck brown) and are used as indicators and dyes.

**Azolla**, minute floating water-plant.

**Azores**, archipelago, Atlantic Ocean, Port. possession; 9 large isls.; area, 924 sq.m.; pop., 230,000; of volcanic orig.; fertile, mild climate (aver. temp., 62° to 64° F.); cable and meteorol. stations; much traffic; cotton fabrics, spirits, pineapples, tobacco, whale-fishing.

**Azov**, 1) tn. on Riv. Don, N. Caucasian area of R.S.F.S.R.; pop., 18,000; fishing. Taken from Turks by Peter the Great, 1696, and annexed, 1774. 2) Inlnd. sea, S. Russia, connected with Black Sea by Strait of Yenikale (Kerch); 16,210 sq.m.; shallow.

**Aztecs**, aborig. natives of Mexico; A. Emp. destroyed by Cortez, 1519-1521; high degree of culture, art, archit., State organ., but a grim, bloody religion. **A. Ruins**, nat. park (1923) in New Mexico, U.S.A.; 17 acres; remains of prehistoric bldg. covering 4½ acres.

**Azurite**, 2CuCO<sub>3</sub> + Cu(OH)<sub>2</sub>, blue min., basic carbonate of copper; smelted down for copper; also used as a colour in painting and for colouring glass and enamel.

# B

**B.**, abbr. *Band* (Ger.), volume of a book.  
**B**, chem. symbol of boron (*q.v.*) (mus.), 7th note of scale of C major.

**Ba**, chem. symbol for barium (*q.v.*).

**B.A.**, abbr. *Baccalaureus Artium* (Lat.), Bachelor of Arts.

**Baal**, sun-god and chf. male deity of anc. Syro-Phoenicians; in O.T. name given to local deities (*Baalim*) of Canaanites.

**Babbacombe**, vill. and seaside resort, Devonsh., Eng., 1½ m. N.E. Torquay.

**Babbage**, Chas. (1792-1871), Eng. mathematician.

**Bab Ballads**, *The*, collection of humorous and semi-satirical verse by W. S. Gilbert, 1868; many of the themes and songs reappear in the Savoy Operas.

**Babbitt metal**, an anti-friction alloy used for bearings, containing approx. 11% antimony, 6% copper, and 83% tin.

**Babel** (O.T.), city on Euphrates (Babylon). Bldg. of **Tower of B.** stopped by confusion of tongues (Gen. xi).

**Babell**, William (1690-1723), Eng. composer; harpsichord player, organist, and violinist.

**Bab-el-Mandeb**, strait (14 m.) betw. Red Sea and Gulf of Aden.

**Baber** (**Babar**) **Mohammed**, surnamed Zahir-al-din (1483-1530), founded Mogul Empire in India, completing his conquests 1525-26. Wrote memoirs in Tatar lang., aftwds. translated into Persian and European languages.

**Babeuf**, François Noël (c. 1762-97), Fr. Communist, conspired agst. Directory to est. Commun. State, and guillotined.

**Babism**, development of Shiite Mohammedanism led by Mirza Ali Mohammed in Persia, 1844; further developed into Bahaiism (*q.v.*) after fndr.'s execution in 1850.

**Babington**, Antony (1561-86), plotted agst. Qn. Elizabeth; correspondence with Mary Qn. of Scots led to her execution.

**Babirusa**, wild swine of the isl. of Celebes with immense tusks piercing skin of face and curving backwards over the eyes; short-bodied and long-limbed, small ears, and very wrinkled skin.

**Baboon**, large, powerful ape, native of Abyssinia,



Baboon

N.E., Western Equatorial, and S. Africa, and S. Arabia; social in habit; hunts in organised bands, feeding on cereals, fruits, lizards, nestlings, and insects.

**Babylon**, **Babel**, cap. of Babylonian Empire (3rd mill. B.C. and onwards); rebuilt by Nebuchadnezzar II, 6th cent. B.C.; centre of anc. Mesopotamian culture; in ruins by time of Christ n. Era.

**Babylonia**, bib. *Shinar*, betw. Euphrates and Tigris, inhabited in S. by Sumerians.

**Babylonian Captivity**, deportation of Jews to Babylon betw. conquest of Jerus. and the restoration (586-537 B.C.).

In Church history, forced exile of Popes in Avignon, 1309-77.

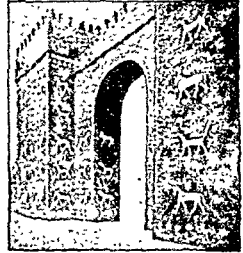
**Babylonian art**, discd. middle of 19th cent. and reaches back into 4th mill. B.C.; excavations by var. expeditions. Brick bldgs. with beautiful mosaics; artistic work in temples, heads of animals and figurines of rulers dedicated to the gods. Temples in form of towers (*Tower of Babel*). Princ. monuments: glazed tile reliefs of the Processional Way and throne-room of Kg. Nebuchadnezzar II (604-561 B.C.), both reconstructed in Pergamon Museum, Berlin. After conquest of Babylon by Pers. under Cyrus (539 B.C.) B. art, as such, disappeared. Assyrian art (*q.v.*) is allied to B. art. **B. Language**: see LANGUAGE SURVEY, *E. Semitic*.

**Baccarat**, gambling card game, in wh. points are counted by number of "pips," tens being ignored; 8 or 9 forms a "natural." The "bank" is put up for auction.

**Bacchus**, a name for Gr. god of wine; see DIONYSUS. **Bacchanalia**, wild orgies, orig. festivals of B. in anc. Rome. **Bacchante**, priestess and devotee of Bacchus.

**Bacchylides** Gr. lyric poet, fl. c. 470 B.C.; papyrus containing his odes discovered in Egypt, 1896, and deposited in Brit. Museum.

**Bach**, **Joh. Sebastian** (1685-1750), Ger. composer and organist; Oratorios, Masses,



Babylon, Gate of Ishtar



Bacchus

48 Preludes and Fugues; *Passion According to St. John*, *Passion According to St. Matthew*. His son, **Philip Emmanuel** (1714-88), also a distinguished composer.

**Bachelor** (academ.): see DEGREE.

**Bachofen**, Joh. Jak. (1815-87), Swiss jurist and histor.; *Mutterrecht*.

**Bacilli**, rod-shaped bacteria, reproducing by partition. **B.-carriers**, healthy persons who carry and spread to other persons the B. of infectious diseases, e.g., typhoid-carriers.

**Backfisch** (Ger.), flapper, young girl.

**Backgammon**, game for 2, played with dice, and 15 pieces a side, on a double board.

**Back pressure**, (mechan.)

term used in connection with flow of fluid in pipes, meaning the loss of pressure in a certain section from any cause. **B.-p. turbine**, turbine inserted in a main, carrying steam or other fluid, and absorbing only a part of the available energy thereof.

**Backlash**, (mechan.) "lost motion" of a mechanism by which force is transmitted, e.g., train of toothed wheels, levers, etc. If force is reversed in direction, it must drive through a certain distance before transmission begins again.

**Backsight**, in firearms, a notch in wh. the blade or bend of the foresight must be aligned with the target when aiming.

**Back's River**: see GREAT FISH RIVER.

**Back-stroke**, (swim.) resembles breast-stroke (*q.v.*), but swum lying on back.

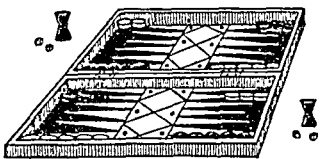
**Backwardation**, reduction, diff. in rate; (Stk. Exch.) pymt. of a sum by seller to buyer for allowing postpmt. of delivery; occurs only when large *bear* accs. are open; see BEAR.

**Backwash**, suction of receding wave after it has broken on seashore; swell or wake caused by a ship in motion.

**Bacon, Francis**, (1561-1626) 1st Bn. Verulam, Visc. St. Albans; Eng. statesman, lawyer, philos.; Ld. Chanc., 1618, dismissed for neglect and corrupt practices; planned system of philos. to replace Aristotle's; revived Empiricism; *Es-*



J. S. Bach



Backgammon



Francis Bacon

*says*; *Novum Organum*. cf. BACON-SHAKE-SPEARE. **B., Roger** (c. 1214-94) Franciscan friar, scientist, and natur. philos., "Doctor Mirabilis," (*q.v.*).

**Bacon**, pig's flesh cured by salting, pickling, or other means; curing process may be dry or wet, and results in **green b.**, which is usually subjected to further process of smoking. Principal cuts of B. are back, gammon, collar, and cheeks or Bath chops. B. is produced in Gt. Brit. and Ireland, and in most parts of the civilized world. **B. beetle**, a small beetle of wide distribution; often destructive to dried animal matter: skins, bacon, etc.

**Bacon-Shakespeare theory**, contention that the plays and poems ascribed to Shakespeare were, in fact, the work of Francis Bacon (*q.v.*); first suggested, 1769; rests on negative assumption that Shakespeare, so far as can be ascertained, was incapable of being the author, on certain parallelisms in Bacon's works and the 1st Folio, and on alleged cryptogram in the Folio proving Bacon's authorship; has periodically had considerable following in Eng. and elsewhere, reaching the extravagant length of ascribing the greater part of Elizabethan lit. to Bacon. Critics attach little or no weight to this theory.

**Bacteria**, unicellular, microscopic forms of life, found everywhere in air, earth, and water; some cause disease. Divided into 3 groups accdg. to their shape: 1) Spherical, or *cocci*; 2) straight rods, or *bacilli*; 3) twisted rods, or *spirilla* or *spirochaetes*. **Bacteriology**, study and science of bacteria.

**Bacteriophage**, a form of life of extreme minuteness, which seems to be a natural parasite on bacteria; akin to virus (*q.v.*). Of growing importance in medicine, for combating infectious diseases.

**Bactria** (**Balkh**), anc. dist. on upper Oxus; Pers. prov. 545 B.C.; under Alex. the Great 329; Arab. c. 624; Turk. and Mongol from 10th cent.; Afghan since 1841.

**Bacup**, munic. bor., Lancs, Eng., on Riv. Irwell; pop., 20,700; cotton mills, iron foundries.

**Badajoz**, cap. of prov. of Badajoz, Spain, fortress on Portug. frontier; on Riv. Guadiana; pop., 40,000; episc. see; transit trade with Port.; textiles, pottery. Taken by storm by Wellington, with heavy loss, 1812.

**Bad Ems**, tn., Hesse-Nassau, Prussia, on Riv. Lahn, S.E. Coblenz; pop., 6,500; mineral springs.

**Baden**, 1) Repub., S. Germany, bounded W. by Riv. Rhine (Alsace and Bavarian Palatinate), N. by Hesse and Bavaria, E. by Württemberg, Hohenzollern, and Bavaria, and S. by Switzerland; 5,819 sq.m.; pop., 2,312,500 (1,300,000 R.C.). Forests 2,265 sq.m.; Black Forest in S. (*Feldberg*, 4,900 ft.), with source Riv. Danube; Riv. Neckar in

N.; Lake of Constance in extreme S.E. Forestry, cereals, vines, tobacco, cattle, pigs, sheep; salt, potash, building stone; manuf. clocks, mus. instruments, toys. Chf. tns., Mannheim, Karlsruhe (cap.), Freiburg, Pforzheim, Heidelberg. Orig. a margravate (1112); grand-duchy, 1806; repub., 1918. 2) Or **Baden-Baden**, spa in above, on Riv. Oos, in Black Forest; min. springs (111-147°F.); pop., 25,692. 3) Tn., Switzerland, canton Aargau; pop., 9,300; sulphur springs (118°F.). 4) Tn., Austria, in Wiener Wald, 16 m. S. of Vienna; pop., 23,000; hot sulphur springs.

**Badenoch**, mountainous dist., Inverness-sh., Scotland, watered by Riv. Spey. **Wolf of B.**, Alexander Stewart, E. of Buchan (1343-1404), natural s. of Robert II.

**Baden-Powell** of Gilwell, Robert S. S. B.-P., 1st Bn. (1857- ), Eng. soldier, defended Mafeking (q.v.) in 2nd Boer War; fndd. Boy Scouts (q.v.) 1908, and, with his sister, Agnes Baden-Powell, Girl Guides, 1910; auth. *My Adventures as a Spy*, etc.



Baden-Powell

**Badge**: see HERALDRY.

**Badger**, plantigrade mammal, with thick body and very short legs, pointed muzzle, and powerful jaws. Nocturnal; living in deep burrows; omnivorous; found in Britain, Europe, Asia, N. America.

**Badger State**: see WISCONSIN.

**Badinage** (Fr.), banter and chaff.

**Badminton**, game for 2 or 4 players with racquets and shuttlecocks (q.v.), which are struck over a net and must not touch the ground. **B. House**, seat (Duke of Beaufort), Glos., Eng.; built, 1682, in Palladian style.

**Bad Wildungen**, tn., Waldeck, Ger.; 918 ft. above sea-level; pop., 5,500; chalybeate and carbonic acid springs.

**Baedeker**, Karl (1801-59), Ger. publisher. Inaug. (1839) long list of Continental and other Guide Books.

**Baer**, Karl Ernst von (1792-1876), Russ. biol., noted for research in embryology.

**Baeyer**, Adolf von (1835-1917), Ger. chem.; discoverer of many aniline dyes, e.g., eosin.

**Baffin**, William (1584-1622), Eng. navigator and explor.; named **B. Bay**, betw. W. Greenland and **B. Island** (c. 238,000 sq.m.), Canada.

**Baffy** (golf): see SPOON.

**Bagatelle**, game in which 9 ivory or compo. balls are propelled with a cue (q.v.)

into 9 numbered holes at end of an oblong board.

**Bagdad**, (**Baghdad**), 1) vilayet, Irak, betw. Persia and Syrian desert; c. 113,850 sq.m.; pop., 1,360,300. 2) cap. of vilay.; lies on both sides of Tigris; pop., c. 250,000; dates, textiles, bitumen, copper, petroleum. Headquarters of Caliphate in Mid. Ages; captured by Brit. forces under Gen. Maude, 11 Mar., 1917. **B. Railway**, standard-gauge line projected by Germany (concession granted, 1899), to connect Constantinople, Bagdad, and Basra, on Pers. Gulf ("Berlin-Bagdad"). In construction at outbreak World War. Sections completed: Koniah (term. Anatolian Rly.) Nisibin (Anatolia), and Shergat-Bagdad (Irak). Present line from Bagdad to Basra (metre gauge) not part of orig. scheme.

**Bagshot**, Walter (1826-77), Eng. economist and journalist; called to Bar, 1852; ed. of *Economist*, 1860-77; *The English Constitution*, 1867; *Lombard Street*, 1873; *Literary Studies*, 1879; *Biographical Studies*, 1881.

**Bagni di Lucca**, watering-place, Italy, 10 m. N.E. of Lucca; hot chalybeate springs (86-122°F.).

**Bagni di San Giuliano**, health resort, 5 m. N.E. of Pisa, Italy many Rom. remains; mineral springs; 84°-100°F.

**Bagpipe**, wind instr. of ancient origin, known to Hebr. and Gr., survives in many countries, chiefly mountainous: Calabria, Galicia (Spain), Brittany, and esp. Scotland. Skin bag acts as wind-reservoir or bellows.

**Bagshot beds**, (geol.) a series of various coloured sands and pebble beds immediately above the London Clay (q.v.); extend over large areas in southern England.

**Bahalism**, relig. developed fr. Babiism (q.v.), mainly by Baha Ullah (d. 1892) and Abdul Baha (d. 1921), emphasizing fundamental unity of all relig. beliefs and necessity of social service; chfly. found in Persia; small communities in Europe and America.

**Bahamas**, Brit. group of coral islands N. of Greater Antilles, W. Indies; largest, Andros; area 4,400 sq.m.; pop., 60,000 (mainly Negroes); cap., Nassau. On New Providence I.; chief products: sponges, sisal, tomatoes, mahogany, ebony, satinwood, etc.

**Bahia**, State, Brazil, 240,000 sq.m.; pop., c. 4,000,000; cap. São Salvador (pop., 330,000); sugar, coffee, cacao, tobacco; piassava fibre. **B. Blanca**, caapt., Argentina; pop. 42,200; natural harbour; naval base.

**Bahr**, Hermann (1863- ), Austr. writer; essays, novels, dramas: *Das Konzert*. **Bahr** (Arab. river), **B.-el-Ablad**, **B.-el-Azraq**, **B.-el-Ghazal**, **B.-el-Jebel**, see NILE.



Badger



Bagpiper



**Bahrein Islands**, archipelago in Persian Gulf; area 213 sq.m.; pop., 120,000 Arabs and 11,000 Negroes; cap., Manama (pop., 25,000); pearl fisheries; under Brit. protection.

**Baht**, coin, unit of Siamese currency (44.24 cents, U.S.A.); 11 B. = £1 at par.

**Baiae**, pleasure resort of anc. Romans, nr. Naples; assoc. with Nero and Hadrian; ruins of temples to Mercury, Diana, and Venus.

**Baikal, Lake**, S.E. Siberia, 13,200 sq.m., c. 1,400 ft. ab. sea-lvl.; deepest lake in world, 800-6,550 ft.; very rich in fish (salmon, sturgeon), with seal and crab. **B. Mtns.**, 6,500 ft.; gold and other precious metals. **B.**, tn., sit. on L. B. at mouth of Riv. Angara.

**Bail**, 1) (Law) to set at liberty a person arrested or imprisoned, on security (wh. is also called B.) being taken for his appearance in court. 2) (Cricket) one of 2 cross-pieces surmounting the 3 stumps. See CRICKET.

**Baile Atha Cliath**, Gaelic name for Dublin; in use since 1924.

**Bailee**, person to whom goods are entrusted for some special purpose.

**Bailey**, Philip Jas. (1816-1902), Eng. poet: *Festus*, 1839; *Angel World*, 1850.

**Bailliff**, 1) originally a kg.'s officer, such as sheriff, mayor, etc. Now, **sheriff's B.s** are officers employed to execute writs, distrains, etc.; they are bound to the sheriffs by sureties and are called **bound B.s**; also known as **bum B.s** from their practice of touching a debtor on the back when serving a writ. 2) In Channel Islands, leading civil officer of each island, apptd. by Crown for life. 3) Land agent, one who manages a farm for a landowner. 4) In Scotland, city magistrate, also called *Bailie*.

**Bain-marie**, large pan, containing boiling water to depth of 4 in., in wh. is fitted a set of small saucepans to cook and keep food hot without burning or reducing.

**Baiouarii**, anc. Germanic tribe (Marco-manni), parent stock of Bavarians.

**Bairam**, two great Moham. festivals; 1st B. follows *Ramadan* (q.v.), and lasts 3 or more days; 2nd B., 70 days after 1st, lasts 4 days.

**Baize**, heavy woollen or cotton cloth, felted; usu. green or red.

**Bajazet I** (1347-1403), 1st Ottoman Sult.; annexed Bulgaria, Macedonia, Thessaly; deftd. by Mongol Khan Timur, 1402; cf. TAMERLANE. **B. II** (1447-1512), succd. his father, Mohammed II, 1481; fought agst. Venice, Poland, etc.: dethroned by his son, Selim, 1512.

**Bajer**, Frederick (1837-1922), Dan. politician; establ. Danish Peace Assoc.; Internat. Peace Bureau, Berne, 1891; Nobel Peace Prize, 1908.

**Bakelite**, moulded composition (synthetic resin, q.v.) made by heating phenol (carbolic acid) with formaldehyde. Used largely for electrical insulation, moulded objects, etc.

**Baker, Sir Benj.** (1840-1907), Eng. engineer; constructor of London tubes and joint designer of Forth Bridge. **B., Sir Herbert** (1862- ), Brit. archit.; *Bnk. of England*; *India House*; collab. with Sir E. Lutyens (q.v.) in New Delhi. **B., Sir Sam. White** (1821-93), Eng. explorer; fndd. settlement and sanatorium in Ceylon, 1847; explored Blue Nile, 1861-62; discd. Lake Albert Nyanza, 1864; commanded Egyptian expeditn. to suppress slave-trade and open up the country; *Eight Years' Wanderings in Ceylon*, 1855; *The Albert Nyanza*, 1866; *Ismailia*, 1874.

**Bakerloo**, electric tube railway, London, opened 1906, so called from its original termini at Baker St. and Waterloo; now extended to Elephant and Castle (S.E.) and to Watford (N.W.).

**Bakewell**, mkt. tn., Peak Dist., Derbysh., Eng.; pop., 3,000; Chatsworth House (q.v.) is 3 m. north-east.

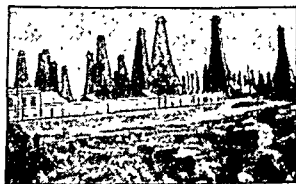
**Baking powder**, substance used as substitute for yeast (q.v.) for raising dough thr. action of carbonic acid; usu. sodium bicarbonate, tartaric acid, with small proportion of flour or starch.

**Baksheesh** (Pers.), gratuity, tip.

**Bakst**, Leon (1866-1924), Russ. artist; designed scenery and costumes for Diaghilev ballets.

**Baku**, chf. port on Caspian Sea, S. of

Apsheeron penins.; cap. of Azerbaijan S.S.R.; pop., 452,900 (Turks, Armenians, Russians); 65 ft. abv. sea-lvl.: important centre of oil industry; pipe-line to Batum (530 m.); 11,000,000 tons produced 1930; 50,000 men employed. Brit. troops engaged against Bolsheviks, 1918.



Oil-boring towers at Baku

**Bakunin**, Mikhail Alexandrovich (1814-76), Russ. anarchist; founder of Nihilism; expelled from Socialist Internat., 1872.

**Bala, Lake**, lake, Merionethsh., N. Wales, S.W. vil. of B. (pop., 1,500); largest Welsh natural lake (1,085 acres). See VYRNWY.

**Balaam**, (O.T.) prophet or magician among Moabites; **B.'s ass** (Num. xxii).

**Balaclava, Battle of** (near Sevastopol), 1854; engagement in Crimean War, memorable for gallant but disastrous charge of Light Brigade, under Lord Cadogan.

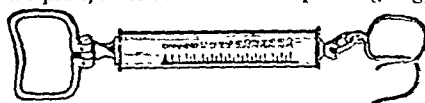
**Balakirev**, Mily Alexeivich (1836-1910), Russ. composer: *Tamara*, *Islamy*, etc.

**Balalanka**, Russ. mus. instr.; strings plucked.

**Balance**, instr. for ascertainment of bodies. **Beam b.** by comparison with known weights; simplest form is B. beam with equal arms, resting with its centre on knife-edges, a pan hanging from each end. In the *weigh-bridge* arms are unequal, so that a small wt. can be used to weigh a much heavier body. In **decimal b.** ratio of wt. to goods weighed is as 1:10. **Counter scales** (2 B. beams kept parallel by links), whereby the weighing is independent of the position of the objects on the pans; in common use for rapid weighing,



Balalanka



Surveyor's Spring Balance

**steel yard** (q.v.). **Spring b.**, one in which wt. is indicated by the extension of a spiral spring. **B. of account** (book-keeping), amt. by which total of entries on debit side of a ledger acct. is more or less than that of entries on credit side. **B. forward**, B. of an acct. at end of one period, which is brought forward and included among entries at beginning of a new period. **B. of power**, a Eur. principle in late 18th and nearly whole of 19th cents., to the effect that no nation should have such a preponderance of power as to endanger the independence of others. This theory is now obsolete. **B. of trade**, relation between values of import and export trade of a country over a certain period; when there is an excess of exports over imports, B. is popularly called *favourable* and excess of imports over exports, *unfavourable*. **B. sheet**, document showing in tabular form financial position of a firm by setting forth various items of debit and credit (q.v.), for the purpose of showing relationship of assets and liabilities to capital. **B. wheel**, oscillating wheel of a watch, controlled by spiral (hair) spring; oscillation takes two-fifths of a sec.; controls rate of watch through escapement (q.v.).

**Balanced armature**: see PICK-UP.

**Balance of international payments**, relation between sum of trade and financial payments into and out of a country. Items include imports, exports, loans, interest on capital invested abroad or on foreign capital invested at home, tourist expenditure, insurance payments, commissions on banking services, shipping services, short-term capital movements and import and export of gold. Terms of influx and efflux must, in long run, balance. Items other than imports and exports of goods are called *invisible* imports and exports, according as payments go out or come in respectively.

Brit. balance in 1932, in millions of £, is as follows:

CREDITS		DEBITS	
Net shipping income	70	Excess of imports	280
Income from overseas investments	140	"govt. payments	25
Income from commissions short int., etc.	30		
Miscellaneous receipts	15		
Total credit	255	Total debit	314
		Debit balance	59
Excess of bullion exported	18	Overseas capital issues	20

**Bala series**, (geol.) topmost division of Ordovician System (q.v.); composed of slates and grits and shales with volcanic ash and limestone and many fossil remains.

**Balata**, substitute for gutta-percha (q.v.); derived from the *Mimusops balata*, a tree of same native order as gutta-percha tree, occurring in W. Indies and S. Amer.; largely used for belting, etc.

**Balboa**, Vasco Núñez de (1475-1517), Span. explorer; disc. Pacific Ocean, 1513.

**Balbriggan**, seapt., Co. Dublin, I.F.S.; pop., 2,200; cotton, woollens, fisheries.

**Balcony**, projecting upper-story platform outside a house, usu. in front of window or above door; in theatres, tier of seats between dress-circle and gallery.

**Baldachino**, (archit.) ornamental canopy or awning supported by columns; over altar, monument, throne, bed, etc.

**Baldness**: see HAIR.

**Baldoye**, vil., 5 m. N.E. Dublin, I.F.S.; race-meetings, Mar. and June-Oct.; steeplechases, Jan. and February.

**Baldrick**, broad band worn diagonally across the body as ornament, or to suspend horn, sword, dagger, etc.

**Baldung**, Hans, commonly called *Grün* (c. 1475-1545), Ger. painter: *High Altar at Freiburg im Breisgau*.

**Baldur, Baldr**, in old German legend, god of light and personification of summer.

**Baldwin**: **B. I** (1058-1118), Kg. of Jerusalem, took part in 1st Crusade. **B. I**, Ct. of Flanders, (1171-1205) estab. empire at Constantinople, 1204.

**Baldwin**, Stanley (1867- ), Brit. Conservative statesman; Chanc. of Exchequer, 1922; Pr. Min., May, 1923-Jan., 1924, and Oct., 1924-June, 1929; Lord Pres. of the Council in National Govt., 1931.



Stanley Baldwin

**Bale**, (cotton and wool wt.) Brit. and U.S. wt., varying from 160 to 500 lb. **B. of paper**, 5 bundles or 10 reams.

**Bâle**: see BASEL.

**Balearic Islands**, Span. archipelago off E. coast of Sp. in Medit. Sea; area 1,937 sq.m.; pop., 352,926; princ. isls., *Majorca* and *Minorca* (qq.v.).

**Baleen**: see WHALEBONE.

**Balfe**, Michael William (1808-70), Ir. singer, violinist and composer; operas incl. *The Bohemian Girl*.

**Balfour, Arthur James**, 1st Earl of B. (1848-1930), Eng. statesman and philos.; Prime Min. 1902-05; For. Sec. 1916-19; published BALFOUR DECLARATION (q.v.) 1917 (see ZIONISM); auth. of *The Foundations of Belief*, etc. His bro. **Gerald Wm.**, 2nd Earl of B. (1853- ), Eng. polit.; pres. of Local Govt. Board, 1885-86; and 1905-06; chf. Secretary for Ireland, 1895-1900; pres. of Board of Trade, 1900-05.



Balfour

**Balfour Declaration**, declaration by Brit. For. Sec. (Mr. A. J.—aftwds. Lord—Balfour), 2 Nov., 1917, approving suggestion for establishment in Palestine of a Nat. Home for the Jews, provided that civil and relig. rights of resident non-Jewish communities be unimpaired. This principle is recognized in the mandate under wh. Gt. Brit. administers Palestine. See ZIONISM.

**Bali**, *Little Java*, isl. of Dut. E. Indies; area 2,160 sq.m.; pop., 980,500; forms with Lombok one administ. unit; cap., *Singaraja*; pop., 10,510.

**Ballila**, in Italy a Fascist milit. organisation of boys aged 8-14 years.

**Baliol**, Scot. family, fndd. in Gt. Britain by **Guy de Baliol**, a Norman bn. who received lands in N. Engl. from Wm. II. His son, **Bernard**, blt. Castle Barnard, Durham; aided Kg. Stephen in civil war; took part in battle of the Standard, 1138. His son, **Bernard**, raised siege of Alnwick; captured Wm. the Lion, 1174; succ. by his sons **Eustace** and **Hugh**. Hugh's son **John** (d. 1269) m. Devorguila, dau. of Earl of Galloway; regent during minority of Alex. III; deprived of power on charge of treason; supported Hy. III in Barons' War, 1263-65; with his wife, fndd. Balliol College, Oxford, c. 1263; his son, **John** (1249-1315), Kg. of Scotl.; claimed right to Scotl. after death of Maid of Norway; recogn. by Edw. I; crowned at Scone, 1292; alliance with Philip of France, 1295; ravaged Cumberland, 1296; renounced alleg. to Edw.; compelled by Edw. to relinquish crown; captured; d. in exile. His son, **Edward** (d. 1363), claimed Scot. throne; landed in Scotl., 1332; crowned at Scone after 7 weeks' campaign; driven across border by Douglas; restored by Edw. III after battle of Halidon Hill, 1333; expelled by David Bruce, 1341.

**Balk**, 1) (agric.) piece of land left unploughed betw. furrows; 2) (archit.) large timber or beam of a house; 3) (sport) division at one end of billiard-table from wh. play begins.

**Balkan Peninsula**, E. peninsula, S. Europe, bounded N. by rivs. Danube and



Save; includes Yugoslavia, Albania, Bulgaria, Dobruja, Turkey in Europe, Greece; chf. rivs.: Drina, Morava, Vardar. Rom. prov. of Illyricum; wars betw. Byzantium, Bulgaria, and Serbia in Mid. Ages; advance of Turks 14th cent.; Gr. war of independence, 1821; Bulgaria independent after Russo-Turkish war, 1878; Balkan League (Bulgaria, Greece, Serbia, and Montenegro), 1912; **First B. War** betw. Balkan League and Turkey, 1913: **Second B. War**, Bulgaria against her former allies, Rumania, and Turkey, 1913. See WORLD WAR.

**Balkans**, fold-mtns., Bulgaria, continuation of Carpathians; 375 m., 12-38 m. wide, and up to 7,800 ft. high *Shipka Pass*, 4,360 ft.

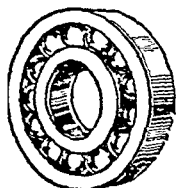
**Balkash**, fresh-water lake with outlet in Kazak, A.S.S.R., Asia, 7,120 sq.m.; receives Riv. Ili.

**Balkh**, cap. of anc. Bactria (q.v.).

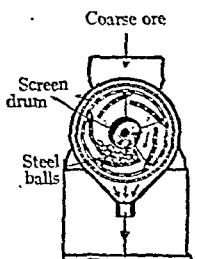
**Ball, John** (d. 1381), Eng. priest, expounded doctrines of Wyclif, esp. social equality; imprisoned and excommunicated; largely responsible for Peasants' Revolt, 1381; captured and executed; termed by Froissart the *Mad Priest of Kent*. **B., Sir Robt.** (1840-1913), Brit. astronomer; prof. of A., Camb. University.

**Ball-and-socket joint**, solid ball rotating inside a hollow sphere; form of *universal joint* (q.v.) used when freedom of motion in all directions is nec. (human limbs, gas-brackets, stands, etc.).

**Ball-bearing**, (mechan.) bearing in wh. shaft is surrounded by a circle of steel balls running in a *race* and *casing*, so that rubbing friction is replaced by rolling friction. Much used in machinery on account of its low



Ball-Bearings

Finely ground ore  
Ball-Mill

coefficient of friction.

**B.-mill**, large rotating iron drum, gen. lined with quartz or flint lining, in wh. ore is broken up and prepd. for dressing by steel or quartz-pebble balls. Also used for pulverising cement, and coal for fuel. **B. of meal**, measure of wt. = 140 lbs.

**Ballad**, narrative poem of folksong type, half lyrical, half epic; mostly handed down by oral tradition.

**Ballade**, poem of 3 stanzas of 7 or 8 lines, each endg. w. same line as a refrain, and usu. an envoy; now freq. used of any poem in stanzas of equal length. **B. royal**, see RIME ROYAL.

**Ballantyne, James** (1772-1833), Scot. printer and pub. of works of Scott. **B. Robt. Mich.** (1825-94), Brit. story-writer; served Hudson's Bay Company in Canada, 1841-47; *Coral Island*, 1857; *The Dog Crusoe*, 1860.

**Ballarat**, tn., Victoria, Australia; pop., 42,000; famous gold mine; pasture, agriculture.

**Ballast**, 1) (naut.) movable weights, of stone, cement, or pig iron, placed in double-bottom structure of ship, after construction, to improve stability, immersion of screw, or other hydro-dynamical qualities of ship, in light and in loaded sea-going condition. 2) Coarse-grained porous mat. (broken stones, pebbles, gravel, etc.) in wh. the sleepers of railway lines are embedded; absorbs vibration and dries quickly after rain.

**Ballater**, police burgh, on Riv. Dee, Aberdeensh., Scot.; tourist resort; pop., 1,200.

**Ballerina**, female ballet-dancer. **Prima b.**, princ. dancer in ballet.

**Ballet**, stage performance combng. dance, music, and pantomime.

**Ballhaus Platz**, *Ballplatz*, square in Vienna, site of Austro-Hungarian Foreign Ministry; hence, name used to denote Aus-Hung. Foreign Dept., until dissolution of Empire (1918).

**Ballin**, Albert (1857-1918), Ger. ship-owner, director Hamburg-America Line.

**Baliol College**, Oxford; fndd. 1262 by John de Baliol. Benjamin Jowett and Asquith (Lord Oxford) were among its members.

**Ballista**, anc. Rom. milit. engine with cross-bow for throwing large stones.

**Ballistics**, study of shooting, esp. of the trajectory of missiles.

**Ballon d'essai** (Fr.), trial balloon; proposal or statement as a "feeler" to test public opinion.

**Ballonet** (Fr.), air-bag inside an airship, to maintain gas pressure and keep the envelope taut; also, one of the separate gas-bags of semi-rigid airships.

**Balloon**, lighter-than-air aircraft, consisting of large spherical bag of impermeable material, inflated by gas, usu. with "car" or basket suspended beneath. Non-dirigible, floats with wind; course may be altered by throwing out ballast (to rise) or releasing gas (to sink), so as to reach a favourable air-current. First successful method of flight by man. Now used for purposes of scientific or milit. observation. See KITE BALLOON; AIRSHIPS; AVIATION.

**Ballot**, voting orig. with balls (still used, e.g. for admitting or rejecting members in social clubs: hence "to blackball"). Name now applied to any voting method except oral or show of hands. Elective authorities usu. chosen by "secret ballot," printed papers being marked and placed in sealed box by voter.

**Ballymena**, urb. dist. Co. Antrim, N. Ire., on Riv. Braid; linen; pop. 11,400.

**Ballyshannon**, seapt. and mkt. tn., Co. Donegal, I.F.S., on Riv. Erne; salmon fisheries; pop., 2,100.

**Balm**, sweet balm, lemon balm, *Melissa officinalis*, herbaceous labiate, resembling dead nettle. Taste and odour like lemon. Used to make a cooling drink. **B. of Gilead**: see MYRRH.

**Ballmoral Castle**, Aberdeensh., Scottish residence (1853) of British sovereigns; 9 m. W. of Ballater.

**Bal paré** (Fr.), ball at which the guests appear in full dress.

**Balsam**, aromatic resin of various trees; used in perfumery and medicine. **B. of Peru**, oleoresinous liquid obtained by wounding trunk of *Myroxylon Percire*, tree growing in Cent. Amer. Used internally as an antiseptic and externally as an ointment for skin diseases, scabies, etc.; aromatic odour, acrid taste.

**Balt.**, abbr. Baltimore.

**Balta**, tn., Moldavian A.S.S. Repub.; pop., 23,030 (mostly Jews); grain, horses.

**Balthasar**, name given in Mid. Ages to one of the Magi (*q.v.*).

**Baltic, The**, (mercantile and shipping exchange, London), deals in all kinds of grain. Orig. (18th cent.) an association of merchants trading with Baltic ports who met at a coffee-house. Membership, now abt. 3,000.

**Baltic languages**: see LANGUAGE SURVEY, *Indo-Ger. B. group*.

**Baltic Port**, ice-free, free port, Estonia, at entrance to Gulf of Finland; pop., 1,500; naval base. **B. Provinces**, former Russ. provs. of Courland, Livonia and Estonia; now divided betw. indept. republics of Lithuania, Latvia, and Estonia. **B. Sea**, Indian sea connected with North Sea by Skagerrak and Kiel Canal; area 157,200 sq.m., av. depth, 180 ft., max., 1,520 ft; salinity, barely 1% (water in Gulf of Bothnia drinkable); pract. no tide, hence serious storm floods; freq. ice-bound along coasts in winter and entirely frozen in N.E. area.

**Baltimore**, cap. Maryland, U.S.A., on Patapsco Riv.; pop., 804,850; Johns Hopkins Univ. (1876); canning; wheat, cotton, meat, copper, chemicals. **B. and Ohio Railroad**, U.S.A., connects Maryland with New York, Illinois, and Missouri; 5,658 miles.

**Baltistan**: see LADAKH.

**Baluba**, Bantu (*q.v.*) people of the Congo region, agric.; excellent workers in wood, iron, and cloth.

**Baluchistan**, country, Asia, under Brit. influence; bounded W. by Persia, N. by Afghanistan, N.E. by N.W. Frontier Prov. and Punjab, E. by Sind, S. by Arabian Sea. Surface mountainous (*Sulaiman Mts.* in N.E.). Divided into **Brit. B.**, prov. of India, in N. (54,250 sq.m.; pop., 463,500; Bolan Pass from Indus valley to cap., *Quetta*); and **B. States** (Kalat and Las Bela); 80,470 sq.m.; pop., 405,100; cap., *Kalat*. Inhabts. pastoral nomads (Sunni Moslems).

**Baluster**, (archit.) small columns of a balustrade (*q.v.*), capital and base of wh. are usu. enriched by mouldings. Balusters of Renaissance period are freqtly. carved in relief.

**Balustrade**, handrail with small column supports on stairs, balconies, etc.

**Balzac**, Honoré de (1799-1850), Fr. novelist. Novel-cycle *La Comédie Humaine*: *Le Père Goriot*, *La Femme de Trente Ans*, *Illusions Perdues*, *Splendeurs et Misères des Courtisanes*, etc.; *Contes drolatiques*.

**Bambara**, Afric. negroid race of Upper Nile and Senegambia.

**Bamberg**, tn., Bavaria, Ger., on Riv. Regnitz; pop., 54,000; episc. see, cathed.

fndd. 1004 by Henry II, with notable specimens of 13th-cent. art; cotton-spinning, rope-making, tobacco; market gardens.

**Bamberger**, Ludwig (1823-99), Ger. econ. and politician.

**Bambino**, term applied in Italian art to images of the infant Christ.

**Bamboo**, tree-like grasses found in tropical countries; princ. variety, *Bambos bambos*, has stems wh. may attain a diameter of 6 in.; are used in bldg., for furniture, and a variety of other purposes suggested by lightness, strength and cheapness. The young shoots are edible.

**Bamburgh**, vill., Northumb., Eng., once cap. of Bernicia (*q.v.*); birthplace and tomb of Grace Darling. **B. Castle** (6th cent.), traditional seat of Kg. Ida.

**Bampton**, John (1689-1751), Eng. divine; fndd. Bampton Lectures on Bambo divinity at Oxford, of which the first series of eight were given by Jos. White, 1780.

**Bamra**, native State, Brit. India, prov. Bengal; 1,990 sq.m.; pop., 130,000; forestry. **Banal** (Fr.), flat, common, vulgar.

**Banana**, *Musa sapientum*, tall tree-like tropical plant with broad leaves; the long yellow fruit is edible, and many thousands of bunches are exptd. to U.S.A. and Eur. esp. from West Indies, Colombia, and Centr. America. *Manila hemp* is prepared from fibre of a species growing in the Philippines.

**Banat**, dist., form. S.E. Europe (11,250 sq.m.), inclgd. counties of Torontál, Temes, Krasso-Szorény, now divided betw. Rumania and Jugoslavia; Rum. cap., *Temesvar*; **B. Mts.**, S. portion of Transylvanian Alps. **Banbury**, munic. bor. and mkt. tn., Oxon., Eng.; anc. cross; B. cakes; pop., 14,000.

**Banca Commerciale Italiana**, Ital. Bk. of commerce, fndd. Milan, 1883; deposits (lire, end 1932) 7,677,870,399, total assets, 19,117,507,780.

**Bancroft**, George (1800-91), Amer. historian and diplomat; negotd. with Prussia 1st international recognition of right of expatriation. **B., Sir Squire** (1841-1926), Eng. actor and actor-manager; produced comedies of T. W. Robertson, and other modern dramas; knt., 1897.

**Banda Islands**, group, Dut. E. Indies, in **B. Sea**, betw. Moluccas and Timor; 20 sq.m.; pop., 10,400; export nutmegs.



Bambino



Bamboo



Banana



Balzac

**Bandages**, long strips of calico, cloth, flannel, gauze, muslin, india-rubber or "crêpe" for holding dressings or fractures in position, maintaining pressure on veins, etc. Usu. length 6 yds.; width varies from  $\frac{1}{2}$  in. to 6 in. **Triangular b.** used for supporting arms, e.g., a sling; **crêpe b.**, for varicose veins.

**Bandanna**, orig. fabric of silk and cotton mixt., with white or brightly coloured spots printed upon red or dark ground, imported from India, esp. as **B. handkerchiefs**; now made in cotton in vari. qualities.

**Bandelier**, nat. monument (1916) in New Mexico, U.S.A.; 22,075 acres; numerous cliff-dwellings.

**Bandello**, Matteo (c. 1480-1562), Ital. bp. and writer; *Novelle*, source of Shakespeare's *Romeo and Juliet*, *Much Ado about Nothing*.

**Bandar Abbas**, port in S. Persia, on Pers. Gulf; pop., 8,000; dates, almonds, raisins, wool, cotton, carpets.

**Banderillero**, bull-fighter, who irritates bull by waving a red cloak, and with barbed darts (*banderillas*) having paper streamers.

**Banderole**, (heraldry) small armorial flag, carried at funerals and placed over the tomb. In art, a scroll bearing an inscription or device.

**Bandicoot**, one of several kinds of small marsupials of burrowing habits, natives of Australia, Tasmania, Papua, etc.; they include the **Rabbit b.** and the **Pig-footed b.** **B. rat**, a large species of rat found in India and Ceylon.

**Band of Hope**, name of various societies for the inducement of children to take the pledge of total abstinence from alcohol; first formed at Leeds, Yorks, 1847. **B. of H. Union** formed, 1851.

**Bandola**, Span. stringed instr., of lute type, played with a flexible plectrum of horn.

**Bandolier**, shoulder-belt in wh. cartridges are carried.

**Band-saw**, endless strip of flexible steel, furnished on one edge with saw-teeth, and passing like a belt over 2 pulleys, one of wh. is power-driven.

**Bandy legs**, bow-legs; outward curvature of shin-bones, often due to rickets (rachitis).

**Baneberry**, (bot.) Europ. perennial herb allied to ranunculus (*q.v.*), occurring rarely in N. Eng.; bears nearly black, poisonous berries.

**Banér**, Johan (1596-1641), Swed. gen. in Thirty Years' War.

**Banffshire**, mar. co., N.E. Scot.; area 641 sq.m.; pop., 54,800; low-lying coast, mountainous in N.; chief river, Spey; agric., cattle-raising; distilling, fishing; granite and slate quarries. **Banff**, co. tn., royal burgh, seaport; pop., 3,500.

**Bang**, Hermann Joachim (1857-1912),

Dan. auth.; novels: *Families without Hope*, *Englen Michael*.

**Bangalore**, city, largest tn. and admin. hqrs., Mysore, India; univ. coll.; silks, carpets; pop., 306,365.

**Bangkok**, cap. and chf. port of Siam; pop., 931,200; built on piles on banks of Menam Riv.; many palaces and pagodas; trading centre for Indo-China.

**Bangor**, 1) city and seaport, on Menai Strait, Carnarvonsh., N. Wales; cathed.; univ. coll. (constituent of Univ. of Wales); slate exports; pop., 11,000. 2) seaport, Co. Down, N. Ire.; pop., 13,000. 3) seaport, Maine, U.S.A.; lumber trade; pop., 29,000. **B. Iscoed**, **Bangor-on-Dee**, vil., Denbighsh. and Flint, N. Wales, on Riv. Dee, site of oldest Brit. monastery (2nd cent.), destroyed, with 1,200 monks, by Ethelfrith of Northumbria, c. 610. See BARDSEY ISLAND.

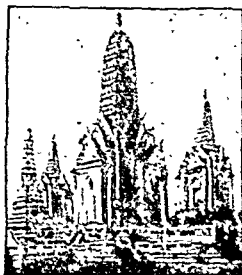
**Bangorian Controversy** (C. of E., 1717-20), outcome of sermon by Bp. of Bangor, preached before George I, which raised question of royal supremacy in eccles. matters, and of ch. discipline and govt. generally.

**Bangweulu**, shallow lake (c. 1,500 sq.m.) in N. Rhodesia, 3,700 ft. abv. sea-level; formed by headwaters of Congo.

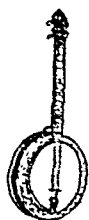
**Banjermasin**, cap. of Dut. S.-E. Borneo, on Riv. Martapura; pop., 50,000; built on piles; gold, gums, resin, coal, wax.

**Banjo**, American Negro stringed instr., with a long neck and drum-like body; powerful guitar-like tone.

**Bank**, enterprise engaged in lending in var. ways of funds entrusted to it; facilitates circul. of credit and produc. and exch. of goods. First bnkg. operations in It. in 12th cent; deposit bnkg. 1st effected in Eng. by Lond. goldsmiths (17th cent.), who kept coins for customers, giving notes as receipt; subseqtly. lent part of deposits and thus discovd. profit-making possibilities of deposit bnkg.; notes finally recognd. as medium of exchange. Princ. kinds: 1) **Deposit b.**, mainly for receiving deposits from customers on acc. and lending funds, a) to its customers as *advances*, b) to *discount market*, c) on *acceptance business* (*q.v.*). Primary considtn., safety of depositors' money, hence lending is for comparatively short periods with safeguard in form of realizable securities. Banks



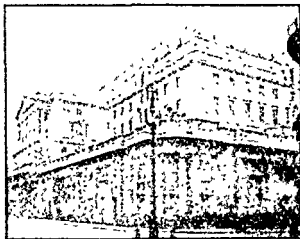
Temple in Bangkok



Banjo

lend large proportn. of their deposits, retaining abt. 10% in cash (*i.e.*, coin and notes, balances at Bk. of Eng.); loans are for varying periods; certfd. proportn. callable at notice; most Eng. D.B. are Jt. Stk. Cos. and therefore often referred to as *Jt. Stk. Bs.*; 5 large B. predominate (*see* BANKS, BIG FIVE). 2) **Private or merchant b.**, receiving few or no deposits; engaging in var. finan. bus., *e.g.*, foreign exch., loans on security, issuing of loans (*see* ISSUING HOUSES); also sometimes incl. *discount and acceptance houses* (*qq.v.*). 3) **Issuing b.** (*q.v.*) or **Central b.**: *see* B. OF ENG.; BANQUE DE FRANCE; FEDERAL RESERVE SYSTEM, etc. **B. acceptances**, bills of exchange wh., on acceptance by a bank, are saleable to discounting houses for cash. **B. bills**, (finan.) or *fine bank bills*; bills of exchange (*q.v.*) issued or accepted by 1st-class banks with a term of 30-90 days; effected in money and discount markets; B. bs., being issued or drawn by bank, and therefore safer, gen. have lower rates of discount than trade bills (*q.v.*). **B. Charter Acts**, Acts of Parlt. regulating the organiztn. and activities of Bk. of Eng.: 1) 1833, enacted that Bk. of Eng. notes were legal tender; 2) 1844 (still in force, with certain modifctns. due to Gold Standard Act 1925, Currency Notes Act 1928, and Act of 1931 relating to the suspension of the Gold Standard), regulated issue of notes and enacted that no bank thereafter establd. should issue notes and that existing issuing houses were not to increase their issue. **B. for International Settlements**, establd. in Basle in connec. with Young Plan (*q.v.*), to handle sums pd. on acct. of Ger. reparations. **B. holidays**, week-days, other than Christmas Day and Good Friday, on which banks are legally closed; fixed in Eng., by Bank Holidays Act, 1871, as Easter Mon., Whit. Mon., 1st Mon. in August and 1st week-day after Christmas. In Scotland, Easter Mon. is omitted, New Year's Day is substituted for Boxing Day, and 1st Mon. in May for Whit Mon.; in I.F.S. as in Eng., with addition of St. Patrick's Day (March 17th).

**Bank of England**, Central Bank of the U.K., fndd. 1694. Orig. bldg. erected 1734; interior rebuilt and greatly enlarged 1924-33. Operates under Bank Charter Act, 1844 (*q.v.*), with certain modifications. Govt.'s and bankers' bank, with practically sole right of note issue; subsidiary issue of £260,000,000 (tempor-



Bank of England

ily £274,000,000 since Aug., 1932). A private institution in form of Joint Stock Company. Has 2 depts., *viz.*, *Issue and Banking*. Functions: 1) managmt. of Govt. issues, loans, etc.; 2) issue of bank notes in amts. needed by community; 3) holding of gold reserves and buying and selling of gold freely at rates fixed by law (obligation to sell temporarily suspended during World War till 1925, and from Sept. 1931); 4) control of discount market (*q.v.*), and money market thr. bank rate and *open market operations* (*qq.v.*). Weekly Statements issued from wh. following figures are compiled:

	Millions of £		
<i>Issue Dept.</i>	1925	1931 (Aug.)	1932 (Aug.)
Notes in circulation .....	382.5	357.4	368.1
Gold coin and bullion .....	145.6	133.1	138.7
<i>Banking Dept.</i>			
Deposits .....	126.9	117.6	133.9
Securities .....	116.1	83.9	105.6
Reserve (notes and coin) ....	28.7	52.0	46.4

**Bank of Issue**, **B. notes**, *see* DISCOUNT MARKET. **B. rate**, rediscount (*q.v.*) rate of Bk. of England. **B. returns**: *see* WEEKLY STATEMENT.

**Banka**, Bangka, isl. Dut. E. Indies, S.E. of Sumatra; area 4,560 sq.m.; pop., 169,280 (855 Europeans); tin mines.

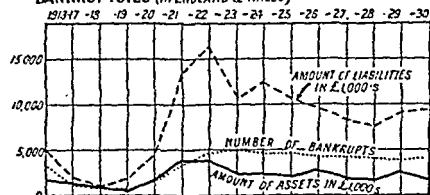
**Banket**, (min.) conglomerate gold-mining reef in the Witwatersrand gold district of the Transvaal; so called because it resembles in appearance almond-rock toffee, for which B. is the Dutch word.

**Banking**, (mech.) act of inclining a vehicle (train, motor-car, aeroplane) moving round a curve, so that its weight continues to act relatively to its support as it would do if travelling in straight line. Land vehicles must be banked by inclining road or track at bends so that outside is higher than inside; at a cert. speed there will be no tendency for vehicle to slip sideways; at lower speeds, vehicle will tend to slide inwards, at higher, to fly outwards by centrifugal force. Bicycles and aeroplanes are banked by steering.

**Bankrupt**, one who is unable to meet his liabilities may be adjudicated B. by *Court of Bankruptcy*; property of a B. is taken by *Official Receiver*, who realizes it and distributes proceeds amongst creditors. **B.**, or **insolvent**, **estate**, sequestrated assets of debtor; minimum subsistence allowance guarntd. to debtor; a new business opened subseq. to B. proceedings remains *unattached*.

**Bankruptcy**, taking over, by Official Receiver or trustee, of property of a person

**BANKRUPTCIES (IN ENGLAND & WALES)**



Depression years are seen not so much from number of bankruptcies, as from lowering of proportion assets bear to liabilities.

unable to pay his debts, in order to realize his assets and distrib. proceeds amongst creditors; (G. B.) *Bankruptcy Act of 1914*. **Receiver in B.**, apptd. by court to manage insolvent estate and dispose of it; authorized to grant payment in adv. **B. prevention**, in order to avoid unnec. losses by B., undertaking is carried on until credtrs. are satisfied wholly or to amt. of agreed propor. (see **BANKRUPT**). **B. proposal**, may be made not only by credtrs. but by debtor himself. **B. petition**: see **RECEIVING ORDER**.

**Banks**, Sir Jos. (1744-1820), Eng. naturalist and traveller; Pres. Roy. Soc. (1778-1820).

**Banks, Big Five**, princ. *Deposit Banks* in Gt. Brit., as follows:

	No. of Branches	Dec. 31, 1932	
		Deposits.	Liabilities
Midland.....	2,128	£401,450,635	£462,357,979
Lloyd's.....	1,963	£382,142,704	£439,054,086
Westminster.....	1,083	£298,182,935	£338,390,706
Barclays.....	2,080	£368,084,287	£414,234,297
National Provincial.....	1,374	£291,566,952	£316,283,268

**Banksia**, (bot.) genus of Australian evergreen shrubs, with clusters of small yellow flowers; named from the botanist, Sir Jos. Banks (q.v.).

**Bankside**, S. bank of Thames, London, betw. Southwark and Blackfriars bridges; site of Shakespeare's Globe Theatre.

**Banlieue** (Fr.), area subject to munic. jurisdiction, but outside the city precincts.

**Banner**, rectangular flag attached to a staff either at the side or from centre of upper edge; carried in Mid. Ages by great feudatories.

**Banneret**, former grade of knights of class next below barons and above knights-bachelor, and entitled to bear their own private banners; last creation, *temp.* Charles I.

**Bannockburn**, 2 m. S.E. Stirling, Scot.; battle (1314) in which Scots under Robert Bruce defeated English.

**Banns**, proclamation in parish church on three successive Sundays of intended mar-

riage, so that anyone aware of an impediment may state it to eccles. authorities.

**Banovina**, Yugoslav dept. or county.

**Banque de France**, Central Bank of France, fndd. 1800; capital, 182,500,000 fr.; current accts. and deposits (Feb. 1933), 18,318,954,000 fr.

**Banshee**, (Ir., "female fairy") supernatural being, believed, in Ire. and W. Highlands of Scot., to be connected with certain families, and to warn them by crying and wailing of the approaching death of a member.

**Bantam**, 1) residency, W. of Java, Dutch East Indies; 3,052 sq.m.; pop., c. 920,000. 2) Small breed of poultry originally a reproduction in miniature of the common jungle fowl, 1st brought to Europe from Java; said to have originated in Japan.

**Banting, Fred. Grant** (1891- ), Canadian physician; disc. insulin; Nobel Prize (med.), 1923, with J. J. R. Macleod (q.v.). **B., William** (1797-1878), Eng. undertaker; gave name to treatment for obesity.

**Bantock**, Sir Granville (1868- ), Eng. composer; choral works: *Omar Khayyám*, etc.; orchestr. music: *Hebridean Symphony*, *Pierrot of the Minute*; many songs and other works.

**Bantry**, seaport, Co. Cork, Munster, I.F.S., on **B. Bay**; pop., 3,100.

**Bantu**, generic term for lang. family prevailing in most of Africa S. of Equator; many Bantu-speaking tribes allied in physique and in cultural features, e.g. cattle keeping, but others vary; hence applied to principal Negro peoples S. of Congo, e.g. Ba-thonga, Zulu-Kafirs, Hereros, etc. See **LANGUAGE SURVEY**, *Ethiop. languages*.

**Banville**, Théodore F. de (1823-91), Fr. poet, playwright and novelist: *Les Cariatides*, 1842; *Odes funébres*, 1867; *Gringoire*, 1866; *Mes Souvenirs*, 1882.

**Banyan**, *Ficus indica*, large fig-tree, native of India, branches of wh. grow downwards and strike roots into ground.

**Banzai** [Jap.: (May you live) 10,000 (years)!], form of



Banyan



greeting used to the Emp. of Japan; common cry of exultation.

**Baobab tree**, *Andansonía digitata*, African tree, with very thick stem (diameter up to 30 ft.); gourd-like edible fruit.

**Bapaume**, tn., dépt. of Pas-de-Calais, Fr.; scene of fighting in war of 1870-71, and in the World War.

**Baptism**, sacrament by which persons become Christns. and are admitted into the Ch.; its essentials are the sprinkling of water on the candidate or his immersion therein, and utterance of words stating that this is done in the Name of all three Persons of the Holy Trinity; may be performed by layman in case of necessity.

**Baptist**, (Gr.) one who baptises, esp. St. John the Baptist.

**Baptistry**, 1) separate building for administration of baptism; 2) in Baptist chapels, tank for baptism by total immersion; 3) (R.C. and C. of E.) part of ch. where font stands.

**Baptists**, protestant sect, successors of *Anabaptists* (q.v.); seceded from C. of E., 1633; theory of Ch. govt. congregational. Essent. characteristic: puritan; hold that baptism of infants or ignorant persons is worthless, and that it must be administered, by total immersion, to believers only.

**Bar**, *Antivari*, seapt.; Dalmatia, Jugoslavia; pop., 2,000.

**Bar**, 1) (geog.), bank of sand or gravel silted up at mouth of harbour, river, etc. 2) (Heraldry) band crossing shield horizontally, popularly and improp. used for *bend* in **bar sinister**. 3) (Law) barrier in Inns of Court separate benchers and readers from students; **to be called to the b.**, to become a barrister (q.v.); railing in House of Commons to wh. persons are brought to be censured or examined; hence any tribunal. 4) Counter in hotel or public-house, or room containing such counter.

**Barabbas**, (N.T.) noted brigand condemned to death abt. same time as Jesus, in preference to whom he was chosen to be released in accordance with custom at Passover.

**Barak**: see DEBORAH.

**Baranya**, co., Hungary; 1,531 sq.m.; pop., 240,100 (mnlly. Ger.); cap., *Pecs* (Fünfkirchen); pop., 47,500; episc. see; univ.; viticulture, tobacco; coal, leather, pottery.

**Barbados**, *Barbadoes*, Brit. island, easternmost of the West Indies; area, 166 sq.m.; pop., 172,200 (mainly Negroes); cap. and port, *Bridgetown*; sugar cane, rum.

**Barbata**, St. (d. c. 235 or 306), dau. of a Grk. who shut her in inaccessible tower; became a Christian; beheaded for refusing to sacrifice to idols; commem. Dec. 4th; repres. with three-cornered tower, holding chalice with the Host above it.



Baobab,  
Fruit

**Barbarossa** (It., *Red-beard*), nickname of Emp. Frederick I (1152-90) and of two Algerian pirates who fought Emp. Charles V.

**Barbary**, former name of N. African coastal region including parts of pres.-day Morocco, Algeria, Tunisia, and Tripoli. **B. ape**: see MACAQUE. **B. sheep**, N. African wild sheep with large horns.

**Barbel**, common fresh-water fish of the carp family; so called from the fleshy filaments which hang below the mouth. Common, or *European B.*, does not exceed 2 ft. in length; the tropical species, or *Mahseer*, may grow to 6 ft.

**Bar-bell**, 2-handed dumb-bell (q.v.).

**Barber**, one who cuts and dresses hair, and trims or shaves beards; formerly also a surgeon who bled his customers. **The B.s' Company**, London City livery company, incorp. 1462, united with Surgeons, 1541; separate company, 1745.

**Barber of Seville**: see FIGARO.

**Barberini**, name of prominent Florentine family of Mid. Ages; **Maffeo B.** became Pope as Urban VIII (1623). Family became extinct in 18th cent. **B. Palace** in Rome, begun by Maffeo and completed 1640, contains many art treasures.

**Barberry**, *Berberis vulgaris*, thorny shrub with yellow flowers and red, acid berries, wh. make a pleasant cooling drink; bark used as a tonic and purgative.



Barberry

**Barberton**, 1) tn. in Transvaal, cap. of district of same name; 176 m. E. Pretoria; white pop. rather over 1,000; grew in consequence of discovery of gold in the Kaap Vall.; asbestos mining. 2) Tn. in Ohio, U.S.A., nr. Akron (q.v.); pop., 23,900; match and motor-tyre factories.

**Barbette**, platform of earth, for mounting guns within a fortress; circular armoured platform with hood protecting heavy guns in warships.

**Barbey d'Aureville**, Jules (1808-89), Fr. romantic novelist: *Les Diaboliques*.

**Barbitone**, also known under trade name of *Veronal*; synthetic hypnotic drug prepd. from urea (q.v.).

**Barbizon school**, group of mid. 19th cent. French landscape painters (Corot, Millet, Daubigny, etc.), so called from Barbizon, vill. in Forest of Fontainebleau, where they worked.

**Barbusse**, Henri (1873- ), Fr. writer; war book, *Le Feu* (1916).

**Barca**, (mod. Cyrenaica [q.v.]) Gk. colony of Cyrene, N. Africa, on Medit. coast, estab. 6th cent. B. C. Later conquered in turn by Persians, Egyptians, and Saracens. Taken by Turks, 1550, and incorpd. in Pashalik of Tripoli; Turkish prov. (vilayet),

1879-1912. Populated mainly in coastal dists.; desert with oases; cap., *Benghazi*. Annexed by Italy, 1912, and incorpd. in Libya.

**Barcarolle**, boat song (of Venetian gondoliers); famous Barcarolle in Offenbach's opera, *The Tales of Hoffmann*.

**Barcelona**, coastal prov. (2,970 sq.m.; pop., 1,465,000) of Catalonia, Spain, and its cap. (pop., 783,000); prov. represents anc. Rom. colony of Faventia; tn., cathed. and univ. city, chf. port, and leading commerc. and indus. centre in the country.

**Barchester**, cathedral city of imag. co. Barsest, scene of several of Trollope's (q.v.) novels, inclgd. *The Warden*, *Framley Parsonage*, *Barchester Towers*, *Last Chronicles of Barsest*, etc.

**Barclay de Tolly**, Michael, Prince (1761-1818), Russ. gen. of Scot. descent; fought against Napoleon, 1812.

**Barclays Bank**: see BANKS, BIG FIVE.

**Bard**, Celtic singer and poet.

**Bardsey Island**, isl. (445 ac.) 2 m. S.W. Llyn Penin., Carnarvon, N. Wales; ruined 6th cent. abbey; once place of pilgrimage (retreat of monks after destruction of monastery of Bangor Iscoed; q.v.).

**Barbone's Parliament**, the "Little Parliament" (July-Dec. 1653), wh. succeeded Cromwell's "Rump" Parl. (q.v.); consisted of 139 representatives summoned by Cromwell and his Council; nicknamed after Praise-God Barbone, one of its members, an anabaptist leather-dealer; abolished Court of Chancery, and tithes; introd. civil marriages. After its dissolution, Cromwell became Lord Protector.

**Barilly**, tn., United Provs., India; pop., 144,000; college; cantonment; manuf. furniture.

**Barents Island**, uninhab. isl. S.E. of Spitsbergen, belonging to Norway; in **Barents Sea**.

**Barfleur**, seapt., dépt. Manche, France, on Eng. Channel, 15 m. E. Cherbourg; pop., 1,100. Off the coast was fought *Battle of La Hogue*, May 19, 1692; victory of Brit. and Dut. over the French.

**Bargain**, (Stk. Exch.) deal in stocks and shares; in pop. use, something purchased cheaply.

**Barge**, wooden or steel vessel, usu. without means of propulsion, often double-ended and having open cargo hold; used for transport of cargo; **dumb B.**, **hopper B.**, **sailing B.**, are variations, latter typical of the Thames. On Continent, also **power-driven B.**, usu. larger and of slightly different construction; on Amer. waterways, B. sometimes known as *scows*. All B.s are essentially of shallow-draught type.

**Barge boards**, (bldg.) ornamented verge boards of a gable, masking ends of roof timbers.

**Bargello**, palace and museum, Florence, Italy; finest example of Florentine architecture; former residence of podestà (q.v.).

**Barham**, Richd. Harris (1788-1845), Eng. clergyman and poet; *Ingoldsby Legends* (1840).

**Barl**, 1) dept., Apulia, S.E. Italy, on Adriatic; 1,990 sq.m.; pop., 946,700. 2) Seapt. on Adriatic, cap. of dept.; pop., 171,600; cathed.; harbour; commercial centre of Apulia; flour-mills, iron-foundry; olive-oil, soap.

**Baring**, family of Eng. financiers; firm, B. Bros., fndd. 1770, by **Sir Francis B.** (1740-1810), M.P., 1784-1806; chairman of East India Co., 1792-93. Suced. by his 2nd son, **Alexander** (1774-1848), 1st Bn. Ashburton; M.P., 1806-35; opposed Reform Bill; concluded *Ashburton Treaty* (see WASHINGTON, TREATY OF), 1842. At his death, his nephew, **Thos. B.** (1799-1873), became head of the house. He was succ. by **Edw. Chas. B.** (1828-97), his cousin, cr. Bn. Revelstoke, 1885; in 1890 the firm was on the point of suspending payment of interest on the Argentine loan, owing to the continued default of the Argentine Govt., but its liabilities were taken over by the Bank of Eng., and the firm reorganized as a limited Co. with capital of £1,000,000. Thos. B.'s elder bro., **Sir Francis Thornhill B.** (1796-1866), became M.P. for Portsmouth, 1826-65; Chancellor of Exchequer, 1839-41; 1st Ld. of Admiralty, 1849-52; created Bn. Northbrook, 1866. His son, **Thos. Geo. B.** (1826-1904), created Earl of Northbrook, 1876; Viceroy of India, 1872-76; 1st Ld. of Admiralty, 1880-85. **Evelyn B.**: see CROMER, EVELYN BARING, 1ST EARL OF.

**Baring-Gould**, Sabine (1834-1924), Eng. author: *Mehalah*, 1880; *Broom Squire*, 1806; *Book of Werc-wolves*, 1865, etc. Ed. *The Sacristy*, 1871-73.

**Barite**, heavy spar (q.v.), *barium sulphate*.

**Baritone**, (mus.) the male voice between tenor and bass.

**Barium**, (chem.) alkaline-earth element; symbol Ba, at. wt. 137.37; occurs naturally as sulphate and carbonate. Pure B. sulphate is used medic. to obt. X-ray pictures of stomach and intestines; also as a white pigment. The sulphide is used as depilatory, and is poisonous.

**Bark**, outermost covering of woody stems and roots. **B.-beetle**, a small beetle, injurious to trees by its habit of mining galleries under the bark.

**Barker, Harley Granville** (1877- ), Brit. dramatist: *Voysey Inheritance*. **B., Sir Herbert** (1869- ), Brit. manipulative



Bark-Beetle  
and Its Home

surgeon; not officially recognized by Brit. medical profession; knighted, 1922.

**Barking**, munic. bor. Essex, Eng., E. sub. London; manuf. jute; sewage works at **Barking Creek**, on Riv. Thames; pop., 51,300.

**Bar Kokba**, led Jewish rebellion agst. Rome, 132 A.D. Also called *Barcochebas* and *Bar-Cochab*.

**Barlach**, Ernst (1870- ), Ger. sculptor and dramatist; *Totenmal*, in Magdeburg Cathedral.

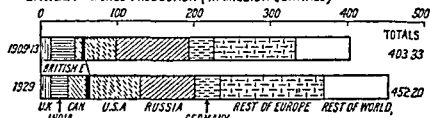
**Bar-le-Duc**, cap. of dépt. of Meuse, Fr., on Riv. Ornain and Rhine-Marne canal; pop., 17,000; preserves and cotton spinning.

**Barley**, important cereal of the grass family, cultivated chiefly for preparation of malt for brewing; classified acc. to disposition of grains in the ear; 2-row B. includes most of the malt barleys; 4- and 6-row B. are used as fodder and for distilling. Aver. yield is



Barley

BARLEY: WORLD PRODUCTION (IN MILLION QUINTALS)



Despite large fall in output since pre-war days, Russia still largest producer; but U.S.A. now not far behind.

up to 40 bushels of grain per acre, and abt. a ton of straw.

**Barleycorn**, old Eng. linear meas.,  $\frac{1}{3}$  in.; based on supposed length of grain of barley.

**Barlow's disease**, infantile scurvy assocd. with rickets; see SCURVY.

**Barm**, (brewers' yeast) foam rising to top of fermented malt liquors; valuable as food for invalids and children.

**Barmecides**, famous Persian family of Bagdad, in 8th cent.; massacred by Haroun-al-Raschid in 802. **Barmecide** (i.e., imaginary) **Feast**, an expression derived from story of "Barber's sixth brother" in *Thousand and One Nights*.

**Barmen**, tn., dist. Düsseldorf, Ger., on Riv. Wupper, united with Elberfeld to form Wuppertal (q.v.); textiles, dye-works.

**Bar Mizvah**, Hebr. term (= Son of the Commandment) applied to a boy on reaching age of 13 and becoming a member of the Synagogue.

**Barmouth**, tn. and seaside resort, on Mawddach estuary, Merionethsh., N. Wales; pop., 2,500.

**Barnabas**, (N.T.) companion of Paul in early missionary journeys. **Epistle and Gospel of B.**, apocryphal books.

**Barnacle**, primitive crustacean which, in the adult stage, is fixed by the head to some object submerged in the sea. The

acorn-barnacles which cover the rocks and groynes on the seashore are familiar examples of the order. The body is always enclosed more or less completely in a calcareous shell, formed of several parts and capable of opening to permit the graceful cirrhatated limbs to be extended for the capture of food. Complex life-history. **Stalked** or **ship barnacle** attaches itself to floating logs and the sides and bottoms of ships in vast numbers. Was thought by the ancients to turn into the **barnacle goose**, a var. of goose wh. breeds in Spitsbergen, Greenland, and parts of Siberia.

**Barnardo**, Thomas John (1845-1908), Brit. philanthr. and doctor; founded "Dr. Barnardo's Homes" in E. end of London, 1867, for upbringing, education, and industrial training of homeless children, many thousands of whom have been assisted to emigrate.

**Barnato**, Barnett Isaacs (1852-97), Eng. speculator; shareholder in Kimberley Diamond Mine, 1876; joined with Cecil Rhodes in scheme for uniting all the companies in Kimberley, 1888; establd. gold-mining company on the Rand 1889; organized great gold-mine boom of 1895; suicide.

**Barnaul**, tn. in Siberia on left bank of Riv. Ob; pop., 74,000; peat bogs, coal mines.

**Barnby**, Sir Joseph (1838-96), Eng. composer and conductor; oratorios and ch. music; part-song: *Sweet and Low*.

**Barn dance**, lively ballroom dance of Amer. orig., introd. late 19th century.

**Barnes**, Ernest Wm. (1874- ), Master of the Temple, 1915-19, Bp. of Birmingham, 1924; auth. of mathematical works and centre of much controversy owing to his stigmatising as superstition much that many members of the C. of E. hold sacred. **B.**, **Harry Elmer** (1889- ), Amer. historian; co-ed., *Journal of Internat. Relations*; *World Politics in Modern Civilization*. **B.**, **Wm.** (1801-86), schoolmaster, rector of Winterborne Came (1862), and dialect poet. *Poems in the Dorset Dialect*, 1844-58-63.

**Barnes**, mun. bor., Surrey, Eng., on Riv. Thames; S.W. sub., London; pop., 42,400.

**Barnet (Chipping Barnet)**, tn., Herts., Eng., residential district, 11 m. N. of London; pop., 14,700; see FRIERN BARNET. **Battle of B.**, Yorkist victory, 1471.

**Barnett**, Dame Henrietta (1851- ), widow of Canon S. A. Barnett; noted social reformer; joint founder of the Hampstead Garden Suburb and of the Henrietta Barnett School; D.B.E., 1924.

**Barn owl**: see OWL.

**Barnsley**, munic. bor. and mkt. tn. in W. Riding of Yorks., Eng.; pop., 71,500; linen manuf., iron, and coal.

**Barnstaple**, seapt. tn., N. Devon, Eng., on Riv. Taw; manuf. pottery, gloves, lace; pop., 14,700.

**Barnum**, Phineas Taylor (1810-91), Amer. showman; establd., in 1871, the travelling circus and menagerie, etc., later known as "Barnum and Bailey's," wh. was sold in 1907. Wrote several books, including *Autobiography*, 1854, etc.

**Baroda**, 1) indep. State, Bombay, India; area 8,164 sq.m.; pop. (1933), 2,500,000 (mainly Hindus); cattle, cereals, tobacco, opium, sugar-cane. 2) Cap. of State, residence of Gaekwar; several Hindu palaces and temples; pop. 94,700.

**Barograph**, barometer (*q.v.*) wh. traces a graph of atmospheric pressures during a given time.

**Barometer**, instrument for measuring pressure of atmosphere. **Mercury**

**b.** (*Toricelli*), a glass tube closed at the top, containing mercury, which is plunged in a vessel containing mercury; weight of mercury column balances pressure of atmosphere on mercury in the vessel; column rises and falls with the pressure and, at sea-lvl., is normally c. 30 in. high. **Siphon b.**, U-shaped tube, long limb closed, short limb open, containing mercury; pressure given by difference in level betw. mercury surfaces in the two limbs. See also ANEROID BAROMETER.

**Baron**, Sir Louis Bernhard (1876-1929), Brit. tobacco manufac. and philanthropist.

**Baron**, lowest order of Brit. peerage. Orig. all feudatories of the Crown were styled Bns., and by Magna Carta a distinctn. was made betw. *Greater* and *Lesser*, the former alone—tenants of the Kg. *in capite*—receiving summons to Parlt. (*Bns. by writ*); *Bn. by patent* first created 1387. Oldest extant Barony, de Ros (1264).

**Baronet**, hereditary rank (title, *Sir*) without privlge. of peerage, created by James I, 1611. Bnts. take precedence of all knights except those of the Garter. In 1625 a special Scottish order, Bnts. of Nova Scotia, was instituted.

**Barons' War**, rising of Eng. barons, under Simon de Montfort, agst. Henry III, 1263-65; kg. destd. at Lewes, 1264, and de Montfort killed at Evesham, 1265. Outcome was estabmt. of a parliament.

**Barony**, former division of Irish co., corresponding to Eng. hundred.

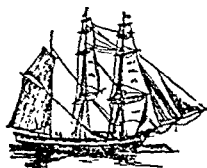
**Baroque**, decadent, fantastic style in art, characterized by florid taste and lack of simplicity in ornamentation, arising in later Renaissance and dominating European subject-painting and architecture till the late 18th cent. So named from Port. *barrocco*, a mis-shapen pearl.

**Barotseland**, Brit. protectorate. N. Rhodesia, S. Africa, on borders Angola; inhab. by Barotse, a Bantu people.

**Barouche**, four-wheeled carriage with a

hood, with accommodation for two couples to sit facing each other.

**Barque**, sailing ship with fore-and-aft rig on mizzen, and square-rigged on fore- and main-masts (see RIGGING); still occas. used for coastal trade, but rapidly disappearing from ocean routes.



Barque

**Barracuda**, large, voracious, edible sea-fish; only recently of commercial value, but for many years dried and salted in Shetlands and Orkneys.

**Barrage**, term, in civil engineering, for damming a river, and so deepening and widening the stream above the dam; also milit. term for continuous artillery fire directed upon a line to protect advance of own troops or check enemy advance.

**Barranquilla**, chf. commerc. tn. Colombia, S. America, at mouth of Riv. Magdalena; pop., 140,000; tobacco, bananas, coffee, cotton.

**Barras**, Paul Jean François, Count de (1755-1829), Fr. revolutionist, member of the Directory until 1799.

**Barratry**, (mar. insur.) any fraudulent act committed by master of vessel or crew to damage of owner and insurers of vessel, e.g., wilfully sinking or deserting ship, embezzling cargo.

**Barrel**, 1) see CASK 1). 2) Dry meas. (U.S.A.), 11 pecks (2.75 bushels or 96.9 litres). 3) Brit. and U.S. liquid meas., 36 imperial gallons or 43½ U.S. gallons (beer meas.; varies with other intoxicants). 4) Butter meas., 224 lb. (4 firkins or 2½ tubs). 5) Brit. herring meas., 26¼ gallons (500 fish).

**Barrel vault**, (archit.) semi-cylindrical ceiling used in Rom. and Romanesque buildings.

**Barrès**, Maurice (1862-1923), Fr. writer and politic., novels: *Le Rouge et le Noir*, *Colette Baudouche*; series of patriotic articles; *L'âme française et la guerre*.

**Barricades**, **Days of the**, in Fr. hist. 1) during the Wars of the League the people of Paris set up barricades on May 12, 1588, and forced the royal troops to retire; 2) during rising of the Fronde (*q.v.*) in 1648, and 3) and 4) during July Rev. of 1830 and in Rev. of 1848 similar barricades were erected in Paris.

**Barrie**, Sir James, O.M., (1860- ), Brit. novelist and dramat.; b. Kirriemuir, Scot.; first famous as master of "Kailyard fiction," then as writer of delicate fantasies: *Auld Licht Idylls* (1888); *A Window in Thrums*



Barrie

(1889); plays: *Quality Street* (1903); *Peter Pan* (1904); *A Kiss for Cinderella* (1916); *Dear Brutus* (1917); *Mary Rose* (1920).

**Barrier Reef:** see GREAT BARRIER REEF.

**Barrier Treaty**, 1) signed by Gt. Brit. and United Netherlands in 1709; Netherlands to guarantee House of Hanover in Eng., and Eng. to secure certain fortified tns., incl. Ghent, as barrier for Netherlands; 2) signed by Gt. Brit., Netherlands and Holy Roman Empire on 15 Nov., 1715; Netherlands ceded to Emperor Ch. VI.

**Barrister**, higher branch of legal profession, peculiar to Eng. and certain dominions. Has exclusive right of audience in superior cts. See SOLICITOR.

**Barrow**, Isaac (1630-77), English theologian and mathematician; 1st Lucasian prof. of Mathematics, Cambridge, 1663, from wh. post he resigned in favour of I. Newton, 1669; chaplain to Chas. II; master of Trinity Coll., Camb., 1672; *Lectiones Opticæ et Geometricæ* (1669-70-74), *Treatise on the Pope's Supremacy*, 1680.

**Barrow**, riv., Munster, I.F.S.; rises in *Slieve Bloom Mtns.*, is joined by Riv. Nore, and flows into Waterford Harbour.

**Barrow**, mound of stone, wood or earth erected over a grave in prehistoric and early times; of various shapes (e.g., long, round, conical) as built by diff. peoples; often contained ornaments and other possessions of the dead. **Chambered Bs.**, erected during Stone and Bronze ages, are to be found in Brit. Is., Eur., and N. Amer.; up to 300 ft. long and containing several chambers. Vikings frequently buried their ships, with their dead masters, in such mounds.

**Barrow-in-Furness**, co. bor., Furness dist., Lancs., Eng.; seapt.; haematite iron, shipb., armaments; pop., 66,400.

**Barrow Point**, most northerly point of Alaska. **B. Strait**, channel in American Arctic archipelago, 310 miles.

**Barry**, Sir Charles (1795-1860), Brit. archit.; dsngnd. and partly blt. Houses of Parliament.

**Barry**, seapt., Glam., S. Wales, 9 m. S.W. Cardiff; docks; exports coal; pop., 39,000.

**Barsac**, Fr. wine produced in Sauternes district; distinctive in type and less sweet than the Sauternes wines.

**Bart.**, abbr. baronet.

**Barter**, prim. method of trade by direct exch. of commodities, as opp. to exchange of commod. for money (q.v.).

**Bartered Bride**, The, opera by Smetana (1866).

**Barth**, Heinrich (1821-65); Ger.; African explorer. *Travels and Discoveries in Central Africa* (1857-58).

**Bartholdi**, Fred. Aug. (1834-1904), Fr. sculptor; colossal statue of *Liberty* (q.v.) in New York Harbour is his work.

**Bartholomew, St.** (N.T.) one of 12 Apostles, identified with Nathanael of St. John's Gospel; commem., Aug. 24th. **St. B.'s Night**, massacre of Huguenots in Paris on night of 24 Aug., 1572. **B. Fair**, fair beginning on St. B.'s Day, held annually at Smithfield, London, Eng., from temp. Henry I till suppressed, 1855; play by Ben Jonson (1614).

**Barthou**, Jean Louis. (1862- ), Fr. statesman; Prime Min., 1913; chairm. Commission on Reparations, 1922.

**Bartók**, Béla (1881- ), Hung. composer: *Blue-Beard*; *The Wonderful Mandarin*.

**Bartolommeo, Fra** (1475-1517), It. painter: *Savonarola*.

**Bartolozzi**, Francesco (1727-1813), It. engraver, settled in London from 1765; orig. mem. Brit. Roy. Academy (1769).

**Barton**, Bernard (1784-1849), Eng. poet; known as the Quaker poet; friend of Chas. Lamb.

**Barton Beds**, (geol.) clays forming part of the Upper Eocene Beds of Hants, Eng., noted for quantity and excellent preservation of their fossils, many of which indicate a period when the climate of the Brit. Isles was much warmer than at present.

**Baruch**, (O.T.) friend and secretary of Jeremiah, c. 590 B.C. **Book of B.**, apocryphal work of several authors, c. 70 A.D.

**Baryta**, barium monoxide.

**Basal metabolism**, measurement of consumption of oxygen by human beings when at rest and fasting. The test informs the physician whether the patient's thyroid gland is deficient, working normally, or to excess. In excessive thyroid activity the basal metabolism is high.

**Basalt**, dark-coloured igneous rock of the Tertiary period, found over large areas, in columnar form and as arches. The columns of the Giant's Causeway in Ireland are of this character.

**Base**, 1) (milit.) the point (usu. a seapt.) from wh. an army in the field draws its supplies and reinforcements. 2) (Arithm.) basic number of indices or logarithms. 3) (Geom.) lowest side of perimeter of a

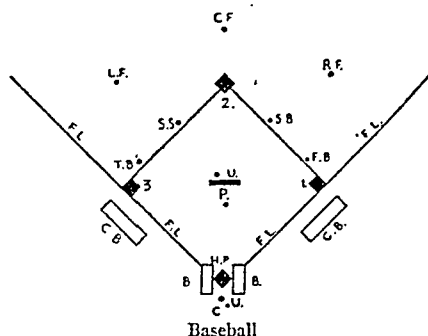


figure. 4) (Chem.) substance forming a compound when united to an acid. **B. exchange:** *see* ZEOLITES. **B.-line,** (surv.) line betw. 2 points, length of wh. is measured by tape of nickel steel (*see* INVAR) with great accuracy, all other lengths being calculated from it by triangulation (*q.v.*).

**Baseball,** national summer game of U.S.A., played by 2 teams of 9, with a club-like bat and leather ball. A run is scored by encircling the bases at each corner of a 30 yd. square ("the diamond").

**Basedow,** Johann Bernhard (1723-90), Ger. educational reformer.

**Basedow's disease,** affection of thyroid gland named after physician Karl Basedow (1799-1854). Also known as Graves' disease; *see* GOITRE.

**Bashi-Bazouks,** irregular Turkish troops, recruited from Asiatic tribes; employed in Crimean War (*q.v.*), and notorious during Bulgarian atrocities (*q.v.*).

**Bashkir,** auton. S.S.R. in S. Urals; Europ. Russia; c. 58,600 sq.m.; pop. 2,665,850 (Bashkirs, Russians, Chuvash); mtns. in E., with low plains and steppes in W.; copper mines, cottage industries, agric.; cap., Ufa.

**Bashkirs,** a Turko-Tartar people, mostly nomads, in Urals (abt. 1,300,000), Sunni Mohammedans.

**Bashkirtseff,** Maria Constantinova (1860-84), Russ. painter and writer: *Journal*, 1890.

**Bashlyk,** hood with long ends worn in Russia.

**Basic wage,** agreed rate of wages to wh. may be added percent. bonuses, premiums, or increases from time to time for quality or quantity of work done; differs from *minimum w.* (*q.v.*).

**Basil: B. II,** Byzantine Emp. (c. 958-1025), destroyed Bulgarian Empire, 990-1018, creating historic enmity betw. Greeks and Bulgarians. **B. the Great,** St. (c. 330-379), Patriarch, Bp. of Caesarea (Cappadocia); a Father of Gr. Church; fndd. *Basilian Order of Monks* (*q.v.*).

**Basil,** 1) (bot.) aromatic culinary herb, allied to thyme; used as flavouring. 2) (tech.) sheep-skin, tanned with oak or other bark, used as cheap book-binding.

**Basile,** Giovanni Battista (1575-1634), It. poet. Tales: *Pentameron*.

**Basilians,** monastic order of Eastern Ch., founded by St. Basil (*q.v.*).

**Basilica,** (arch.) in anc. Rome, public building where justice was administd. and business carried on; sub-divided by rows of columns; basis of early Christian Church archit., the nave represtg. the hall of columns and the altar the judge's seat.

**Basilicata,** terrt. divn., Italy, N.W. Gulf of Taranto; 3,855 sq.m.; pop., 504,397; barren mts. in N., fertile plains in S.; sheep,

pigs, goats, cattle; grain, wine, oil, wool; chf. tn., Potenza.

**Basilisk,** 1) (zoöl.) tree-dwelling Amer. lizard, generally found on a bough overhanging a pool or river, into which it plunges when disturbed, and swims with ease and rapidity, the long crested tail serving as a rudder. 2) Fabulous creature of Africa whose glance and breath were supposed to be fatal.

**Basin,** (geog.) tract of country drained by a river.

**Basingstoke,** munic. bor., and mkt. tn., Hants., Eng.; pop., 13,900; agric. implements; rly. junction.

**Baskerville,** Jn. (1706-75), Eng. printer and type-founder; printer to Camb. University.

**Basket-ball,** game played between 2 teams of 5 or more, with an inflated leather ball, which is propelled with the hand into a network basket 10 ft. above the ground.

**Basket-worm,** larva of a moth, one of several species, wh. houses itself in a movable case formed of small pieces of twig and leaf; female moth is wingless.

**Baskunchak,** salt lake in Caspian plateau; large masses of salt, annual prod., 345,000 tons.

**Basle, Basel, Bâle,** canton, Switz.; divided into 2 half-cantons with independ. constit. since 1833. a) **Basle Stadt (Bâle Ville)**, 14 sq.m.; pop., 155,000; cap., Basle, Bâle (pop., 110,000), univ., cathed., Bank for Internat. Settlements. b) **Basel Land (Bâle Campagne)**, 166 sq.m.; pop., 82,400; cap., Liestal; (pop., 6,500) silk ribbon, textiles, tiles. **Council of B.**, great Ecumenical council for church reform, 1431-49. **Treaty of B.**, betw. France and Prussia, 1795, ended oppositn. of Frederick William of Prussia to Fr. Revol. and gave Fr. left bank of Rhine. **B., Confession of** (1534), one of the statements of relig. faith put forth at the Reformation (*q.v.*).

**Basques,** survivors of orig. Iberian inhab. of Spain, on both sides of Pyrenees at W. end, abt. 72,500; **Basque Provinces,** Vizcaya, Guipuzcoa, Alava. **B. Language:** *see* LANGUAGE SURVEY.

**Basra (Busra, Bassora, or Bussora),** 1) vilayet, Irak; area, 27,080 sq.m.; pop., c. 785,700; dates, rice, wheat, barley, licorice, horses, roses, gum. 2) cap. of B. on W. bank of Shatt-el-Arab, c. 54 miles from Pers. Gulf; terminus of Bagdad Rly.; pop., 30,000; flourished during Abbasid dynasty.

**Bas-relief,** carving or sculpture in wh. the figures project only slightly from the background.

**Bass,** (mus.) the deepest pitch of the male voice; clef indicating F on the second line; lowest part of mus. composition and instrument. **B.-viol,** smaller violoncello; also

old colloq. name for 'cello; see VIOLA DA GAMBA.

**Bass** (zool.): see PERCH.

**Bass Rock**, small isl. of volcanic formation at entrance to Firth of Forth, Scotland; 350 ft. high; purchased for use as state prison, 1671; last stronghold of Jacobites in struggle with William III (1691-94); has lighthouse on S. side. **B. Strait**, separates Victoria, Australia, from Tasmania; breadth 80-150 miles.



River-Bass

**Bassenthwaite Lake**, lake, Cumberland, in Eng. Lake Dist.; 4 m. by  $\frac{3}{4}$  mile.

**Basset**, 1) obsolete card-game, resembling faro; said to have originated in Venice in 15th cent.; introd. into Fr. in 17th cent. 2) Hound with long body and short legs, formerly used in badger hunting. 3) **B.-horn**, tenor clarinet, musical, wood-wind instrument.

**Basso**, bass singer. **Basso profundo**, (It.) deep bass voice.

**Bassoon**, deep wooden reed-instr.; bass of orchestral woodwind.



Bassoon

**Bassorin**, an insoluble vegetable mucilage, of great value as a mechanical laxative (cf. SALEP).

**Bast**, inner fibrous bark of certain trees, especially the lime: the long strands are used by gardeners to tie up plants.

**Basta!** (It.), enough!, stop!

**Bastard**, person born out of lawful wedlock; may now (in certain circumstances) become legit. by marriage of parents after his birth. See ILLEGITIMACY.

**Bastia**, port, N. Corsica; pop., 33,500; fishing, oil-distilling, tanning.

**Bastiat**, Frédéric (1801-50), Fr. economist; antagonist of protection and socialism.

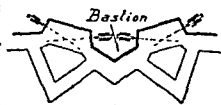
**Bastien-Lepage**, Jules (1848-84), Fr. impressionist painter.

**Bastille** (Fr.), fortified tower. The **B. of Paris**, orig. (14th cent.) built as a fortification, became in 17th cent. a State prison, and as a symbol of tyranny was destroyed by populace on 14 July, 1789 (Fr. nat. fête day).

**Bastinado**, orient. punishmt. by beatg. soles of the feet.

**Bastion**, in fortification, a projecting part of the fort wall, to give cross-fire.

**Basuto**, a branch of the Bechuanas (Bantu) in eastern part of S. Africa, cattle breeders and farmers. **B. Land**, cap. Masera; area, 11,720 sq.m.; pop. 2,300, mostly natives.



Bastion

**Bat**, only true flying mammal, having the

digits extended to support a wing-membrane which stretches from the fore-limb to the tail, by means of which it flies. Many species found in both Old and New World. Nocturnal; majority insectivorous or frugivorous; a few blood-suckers. See VAMPIRE.

**Batavia**, 1) residency, Java, Dut. E. Indies; area, incl. Thousand Isls. group, 30,000 sq.m.; pop., 1,224,000; flat and marshy in N., mountainous in S.; rice, tea, coffee, tobacco, spices, coconuts, rubber. 2) Cap., Dut. E. Indies, and of above, on N.E. coast, Java; pop., 311,500; important harbour; commercial centre.

**Bath**, (Rom. *Aquae Solis* or *Sulis*), on Lower Avon, co. bor. and largest tn. in Somerset (pop., 68,800) and most famous of Eng. spas; hot springs (104°-120° F.), known to Romans. Fashionable resort in 18th cent. (Beau Nash, q.v.); Rom. baths, abbey church.



Information Bureau, Bath.  
Bath Abbey

**Bath**, (med.) medicated baths are part of treatment for certain skin diseases, rheumatism, etc. Among the more common are coal-tar (solution of coal-tar, 8 ounces to 30 gallons of water at 90°F.), sulphur (liver of sulphur, 8 ounces to 30 gallons), salt (4 to 7 lbs. common salt to each bath), alkaline sulphur (sodium sulphide 2 oz., sodium chloride 2 oz., sodium bicarbonate 1 oz. to 50 gallons of hot water), mustard (mustard 10 oz. to 30 gallons). A handful of washing soda (carbonate of soda) in a hot bath is valuable after hard exercise, while a little mustard in a hot bath has tonic properties, and will assist in aborting a common cold. For certain forms of rheumatism the body is exposed to the action of radiant heat. See SPA. **Electric light B., electro-therapy:** see IRRADIATION.

**Bath, Order of the**, Brit. order of knighthood, inst. 1399, re-fndd. 1725, remodelled 1815, extended to civilians 1847. Three classes, knights grand cross, knights commanders, companions; ribbon crimson.

**Bath-brick**, a compound of certain sands and clays used for cleaning metal and stones; manufactured only at Bridgwater (q.v.), Somerset, Eng., from tidal deposits of the Riv. Parret. **B. chap**, half cheek of a pig, cured or pickled.

**Batholith**, volcanic rock which has been forced up into surrounding rock.

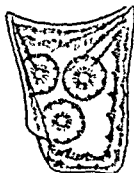
**Bathos**, ludicrous descent from elevated to commonplace in writing or speech; in this sense 1st used by Pope in essay parodying Longinus *On the Sublime*, of wh. word it is antith. in Greek.

**Bathsheba**, (O.T.) wife of Uriah the Hittite, afterwards of David; mother of Solomon (II Sam. xi).

**Bathurst**, 1) cap. Gambia, Brit. W. Africa, at mouth of Gambia Riv.; pop., 8,900. 2) Tn., N. S. Wales, Australia, in gold-mining dist.; pop., 9,700.

**Bathylus**, jelly-like substance found on ocean bottom; once thought to be a primitive form of life.

**Batik**, Javanese method of ornamenting textiles; the surface of the fabric, except those portions to be dyed, is covered with wax, and when dipped in dye-stuff the dye affects only parts free from wax, the desired pattern thus being reproduced.



Specimen of  
Batik

**Batiste**, delicate linen or cotton fabric.

**Batley**, munic. bor., W. Riding, Yorks., Eng.; heavy woollens, shoddy, colleries; pop., 34,600.

**Baton Rouge**, cap., Louisiana, U.S.A., on Mississippi; pop., 30,750; univ.; cotton, sugar, chemicals, oil; airport.

**Batrachia**, (zool.) general term for amphibian animals; esp. applied to frogs and toads.

**Battak**, descendants of aborig. Malay inhab. of Sumatra, settled, agric. people, with polit. organisation and written laws.

**Batten**, a strip, usu. of wood, used to stiffen or carry anything. 1) (Nautical) Strips of wood inserted in sail edge to stiffen it; strips of wood or metal to hold down hatch covers. 2) (Theatre) Strip of wood, or metal pipe, carrying electric lamps.

**Battenberg**, family of Ger. princes, children of Pr. Alexander of Hesse (1823-88): **Louis Alexander** (1854-1921), see MILFORD HAVEN, MARQUESS OF. **Alexander Joseph** (1857-93), Prince of Bulgaria, abdicated 1886. **Henry Maurice** (1858-96), m. Princess Beatrice, dau. of Qn. Victoria; his dau., Ena (Victoria Eugénie), m. Alfonso XIII, Kg. of Spain. Eng. branch adopted family name of *Mountbatten*, 1917.

**Battens**, (bldg.) small sawn timbers.

**Batter**, (bldg.) inclination of walls constructed out of the vertical.

**Battering-ram**, anc. engine of war for battering in gates or breaching walls; suspended log with a heavy metal cap.

**Battersea**, met. bor. London, S. of Thames; pop., 159,542; industrial and residential. **B. Park**, 200 acres.

**Battery**, 1) artillery unit of 2 to 6 guns. 2) (Elec.) **Galvanic b.**, connec. of sev. galvanic elements to increase the load. See GALVANO. 3) (Law) An assault (q.v.) whereby force is actually applied to the person or clothing.

**Batthyány**, Ct. Louis (1806-49), Hung. statesman, Prime Min. 1848; shot by Austrians for his part in Hung. insurrection of 1849.

**Battistini**, Mario (1857-1930), It. baritone.

**Battle Abbey**, in village of Battle (formerly Senlac), Sussex; fndd. by Wm. the Conqueror in 1067 as thank-offering for victory at Hastings. **B. A. Roll**, list of 629 followers of William among whom the lands of Harold's followers were distributed; date and authenticity doubtful.

**Battle cruiser**, large warship, combining, by virtue of its speed and heavy armour, the functions of cruiser and battleship; first recommended for the R.N. in 1904; notable examples: *Invincible*, *Queen Mary*, *Renown*, *Hood*, and the German *Goeben*.

**Battle of the Books**, satirical work by Swift, 1697; written to refute Wotton's *Reflections upon Anc. and Mod. Learning*, and in support of Temple's *Essay upon Anc. and Mod. Learning*.

**Battleship**, large fast warship, now up to 50,000 t., with heavy calibre and medium guns; strongly armoured.

**Batum**, cap. and port of Auton. Adzhar, S.S.R., on Black Sea; pop., 48,500; exp. of oil (brought by pipe and train from Baku) and manganese ore.

**Bauchi**, hilly district, Nigeria, Brit. W. Africa; cotton, indigo; cap., *Jakoba*.

**Baucis** (Gr. myth.) wife of Philemon (q.v.); proverbially, a good wife.

**Baudelaire**, Charles (1821-67), Fr. lyric poet: *Fleurs du Mal*.

**Bauer**, Gustav (1871-), Ger. politic.; Chancellor, 1919-20.

**Baumgarten**, Alex. Gottlieb (1714-62), Ger. philos.; inaugurated study of Aesthetics in Germany.

**Bauxite**, hydrated clay containing iron, silicic acid, and aluminium, first found near Les Baux, in France. Raw material for the production of aluminium.

**Bavaria (Bayern)**, repub. S. Ger. (second largest); main terr. bounded by Switzerland and Austria on S. and by Austria and Czechoslovakia (Böhmerwald) on E.; comprises three provs. of *Franconia* (incl. *Coburg* since 1920) in N., *Upper and Lower B.* in S. and S.E., *Swabia* in S.W., *Upper Palatinate* in E., and detached terr. of *Rhine Palatinate* in W. Total area 29,400 sq.m.; pop., 7,400,000. Surface rises from general level of 1,000 ft. in N. to 3,000 ft. in S., with high peaks on borders of the Alps (*Zugspitze*, 9,722 ft.; highest mtn. in Germany). In N. are *Rhöngebirge* and *Frankenwald*, in N.E.



Baudelaire



**Fichtelgebirge.** Drained in S. by Danube and its tribs., Inn, Isar, Lech, and Iller (right) and Altmühl and Naab (left); in N. by Main and trib. Regnitz; in Rhine Palatinate by Rhine. Lake dist. in S. (Upper Bavaria). Agric.: rye, oats, wheat, tobacco; cattle-breeding; dairying; forestry; mining (coal, iron, graphite, lead, salt); brewing; paper mills; wooden toys. Chf. tns.: *Munich* (cap.), Nuremberg, Augsburg, and Ludwigs-hafen (Rhine Palatinate). Earliest inhab. Celtic Boyers; invaded by Bawarii, 5th-6th cents.; part Carolingian Empire, 788; ruled by Wittelsbachs, 1180-1918. Obtained Rhine Palatinate, 1214. Disintegrated in 13th cent., reunited 1504. Obtained Upper Palatinate and electoral dignity during Thirty Years' War. Kgd., 1806; on side Austria during war with Prussia, 1866; incorporated in Ger. Empire, 1870; revolution under Kurt Eisner, 8 Nov., 1918; socialist repub., 7 Apr., 1919; new repub. 12 Aug., 1919; new constitution 14 Aug., 1919.

**Bavarian Alps**, betw. rivs. Lech and Inn; *Zugspitze*, 9,722 ft. **B. language:** see LANGUAGE SURVEY, *H. German*.

**Bawbee**, orig. Scots coin valued at 6d., equiv. to Eng. 4d.; now, Scots colloq. for halfpenny.

**Bax, Arnold Edward Trevor** (1883- ), Eng. composer; symphonic poems (*The Garden of Fand*, etc.), chamber music, piano works, and songs. **B., Ernest Belfort** (1854-1926), Brit. econ. and philos.; co-finder. with Wm. Morris of Socialist League, 1883.

**Baxter, Geo.** (1805-67), Brit. engraver and inventor of colour-printing from wood with oil colours; 1st Baxter prints by this process, 1834. **B., Richard** (1615-91), Eng. Puritan divine; *The Saints' Everlasting Rest*, etc.

**Bayadere**, (Portug., *bailadeira*) Ind. dancer.

**Bayard**, Pierre du Terrail (c. 1473-1524). Fr. nat. hero; the *Knight without fear and without reproach*; prominent in battles of Guinegate (1513) and Marignano (1515) and defence of Mézières (1521).

**Bayard**, horse of the four sons of Aymon (q.v.); passed from Amadis de Gaul to Charlemagne, who gave it to Rinaldo.

**Bayern:** see BAVARIA.

**Bayeux tapestry**, needlework depicting events in Eng. hist. from mission of Harold to William, Duke of Normandy, c. 1063, to his death at Hastings, 1066; c. 214 ft. long and 19 ins. wide; said to have been worked by Matilda, Qn. of Wm. I, but prob. made by Norman craftsmen by order of Bp. Odo for his cath.; now preserved in library of Bayeux.

**Bayle**, Pierre (1647-1706), Fr. philos. and sceptic; *Dictionnaire historique et critique*.

**Baylis**, Lilian Mary, C.H. Brit. theatrical manager; assoc. with her aunt, Emma Cons,

in conversion of Old Vic (q.v.) from music-hall to theatre; became manager, 1898; assoc. with re-opening of Sadler's Wells Theatre (q.v.) 1930.

**Bayonet**, a short sword-like weapon for fixing to the muzzle of a rifle.

**Bayonne**, 1) fortif. tn. S.W. Fr. in dep. of Basses-Pyrénées, on confl. of rivs. Adour and Nive; pop., 28,300; timber, turpentine, zinc; episc. see. 2) Tn., New Jersey, U.S.A.; adjoins Jersey City on S.; separated from Staten Is. by Kill Van Kull; pop., 89,000; centre petroleum refining industry; chemicals; munitions.

**Bayou** (U.S.A.), loop of a riv. in low country by-passed after the riv. has cut for itself a new, straight channel; seen in lower Mississippi valley; hence Mississippi State known as "B. State."

**Bayreuth, Baireuth**, tn., Bavaria, Ger. distr. of Upper Franconia; pop., 33,000; import. rly.-junction; grain, horses, textiles, pottery, tobacco; Wagner Opera House.

**Bay rum**, aromatic liquid distilled from W. Indian bayberry, used for hair-wash, etc.

**Bay State:** see MASSACHUSETTS.

**Bayswater**, district of W. London, in bor. of Paddington; shopping and residential centre, with squares, most of wh. were built 1839-49.

**Bay tree**, *Laurus nobilis*, evergreen tree; an aromatic volatile oil is obtained from the berries; used in perfumery and in preparation of toilet lotions; leaves used as flavouring in cookery. **B. willow**, 1) willow herb, rose bay (q.v.); 2) *Salix pentandra*, variety of willow with leathery leaves.



Bay Tree

**Bazaar** (Arabic origin), 1) covered market, esp. in E.; 2) hall, arcade, room, etc., for sale of miscellaneous objects; 3) a sale of various ornamental or useful articles for financing charitable or religious undertakings.

**Bazalgette**, Sir Jos. Wm. (1819-91), Brit. engineer; chf. engineer of Metropl. Board of Works from its fndtn., 1855; constructed main drainage system, London, and Thames Embankment; designed new bridges at Putney and Battersea.

**Bazaine**, Achille François (1811-88), Marshal of France, sentenced to death, 1873, for surr. of Metz, 1870; sentence commuted to 20 yrs. imprisonment; escaped, 1874, lived subsg. in Madrid.

**Bazin**, René François (1853-1932), Fr. novelist; prof. of law, Catholic univ. Angers; won Academy prize with novel, *Une Tache d'encre*, 1888; admitted to Académie Française, 1904; *Autumn Glory*, 1901; *By Faith Alone*, 1908.

**B.B.C.**, abbr. Brit. Broadcasting Corporation.

**B.C.**, abbr., 1) Before Christ. 2) British Columbia.

**B.Ch.**, abbr. *Baccalaureus Chirurgiae* (Lat.), Bachelor of Surgery.

**B.C.L.**, abbr. Bachelor of Civil Law.

**B.Com.**, abbr. Bachelor of Commerce.

**B.D.**, abbr. Bachelor of Divinity.

**Bdellium**, a substance twice mentioned in the Bible (Gen. ii, 12; Num. xi, 7); probably a resin or precious stone; a gum resin obtained from various species of balsam trees and used as substitute for, or adulterant of, true myrrh (q.v.).

**Be**, (chem.) symbol for beryllium (q.v.).

**B.E.**, abbr. Bachelor of Engineering.

**Beach**, Mrs. H. H. A. (1867- ), Amer. composer; Mass. cantatas, *Gaelic Symphony*, etc.

**Beachy Head**, chalk promontory (575 ft.), Sussex, Eng., 3 m. S.W. Eastbourne; light-house.

**Beacon**, (naut.) signal or mark nr. shore, or in shoal water, to guide mariners.

**Beaconsfield**, Benjamin Disraeli, 1st Earl of (1804-81), Brit. Conservative statesman, party leader, orator, and novelist; M.P. 1837-76, when raised to the peerage; leader of Young England Party (1841) and of Protectionist Tories; Ch. of Ex., 1852, 1858-59, 1866; carried Reform Bill, 1867; Prime Min. 1868, 1874-80; proclaimed Qn. Victoria Emp. of India; plenipotentiary at Congress of Berlin, 1878; author of political pamphlets, etc., and of many novels, incldg. *Vivian Grey*, 1826; *Contarini Fleming*, 1832; *Coningsby*, 1844; *Sybil*, 1845; *Lothair*, 1870; and *Endymion*, 1880.

**Beaconsfield**, 1) Urban dist., Bucks., Eng., on London-Oxford road; pop., 5,000; Edmund Waller and Edmund Burke buried in churchyd. 2) Tn., S. Africa, suburb of Kimberley; pop., 20,400 (3,550 whites). 3) Tn., Tasmania, on Riv. Tamar; pop. 3,000; goldfields.

**Beadle**, orig. a minor officer in Teutonic judicial or deliberative assemblies; dwindled in importance in Eng. after Norman Conquest, and became a subordinate parish

officer, who kept order in church and acted as official for the vestry in relief of the poor; now obsolete. There are 4 **bedels** at Oxford Univ., with mainly ceremonial duties, and similarly, at Cambridge, 2 **esquire-bedels**.

**Beagle**, small var. of foxhound (q.v.) with long body and short legs; used for coursing hares.



Beagle

**Beak**, 1) (zool.) horny projection from mouth of bird; bill or nib; 2) projecting portion of various objects, e.g., in classic. archit., drip on edge of cornice; rostrum of anc. galley; ram of warship.

**Beaker Culture**, phase of Bronze Age (q.v.) activity, characterized by the **Beaker** (earthenware drinking cup); the **B. Folk** invaded Britain from the Continent.

**Beam engine**, steam engine in which power of piston is transmitted to flywheel, pump, etc., by overhead beam pivoted in middle; earliest engines were of this type; no longer used.

**B. System**: see WIRELESS TELEGRAPHY. **B. tree**, *Sorbus aria*, related to Mountain Ash; has white flowers and red berries.

**Bean**, generic name for various kinds of papilionaceous legumes. 1) **Horse b.**, used for fodder. 2) **Garden b.**, of which numerous varieties are cultivated, growing as bushes or climbing up poles.

**Bear**, 1) (zool.) large plantigrade mammal belonging to the genus *Ursus*, and having a wide geographical range; **polar b.** inhabits whole of Arctic Ocean, on edge of Polar icecap; **brown b.**, **Syrian** and **Isabelline bs.** inhabit N. hemisphere, brown b. being common form of Old World extending over Europe, N. and Cent. Asia. Several kinds of brown b. inhabit N. Amer., including the **Kadiak b.** (Kadiak Islands, Alaska), largest of living bears; **grizzly** and **black bs.** occur in various parts of N. Amer. Japanese and Himalayan black bs. are Old World forms. **Spectacled b.** only bear found in S. Amer. **Malayan sun-b.** found in Borneo, Sumatra, and Malay Peninsula.



Bean



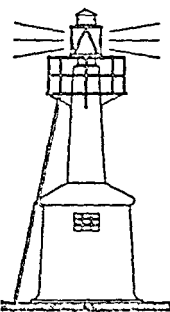
Himalayan Black Bear

**Bear**, 2) (Stk. Exch.) one who sells securities without possessing them; delivery is made on a subseq. apptd. day; in U.S.A. called "selling short," hence "shorts" or "bears"; motive is anticipd. profit arising from fall in price betw. date of sale and date of delivery. **B. account**, one in wh. there are more sellers than buyers of a security as Bears



By courtesy of Eastbourne Corporation.

Beachy Head



Light-Beacon



Beaconsfield

(*q.v.*) have sold more securities for future delivery than they are able to obtain, and are forced to buy back from parties to whom they have sold.

**Bear-baiting**, sport popular in Eng. as early as *temp.* Henry II; in the "bear-gardens" the bear was chained to a stake by a leg or the neck and was worried by dogs. This, together with the similar sport of bull-baiting, was forbidden by Act of Parlt. in 1835. **B., Great and Little:** see *URSA MAJOR AND MINOR*.

**Bearberry**, *Arctostaphylos Uva-Ursi*; small evergreen shrub; leaves, used in med., are diuretic and astringent.

**Beard moss**, *Usnea barbata*, lichen growing on trees.

**Beardsley**, Aubrey (1872-98), Eng. artist; book illustr.; in the *Yellow Book*, 1894, esp.



Beard Moss

**Bearer bonds:** see *BOND*.

**Bearing**, (mechan.) part of a machine in which anything, *e.g.*, shaft, axle of wheel, pivot, rotates; **roller** or **ball-bs.** decrease friction; **plain b.**, usu. bushed with lining of gun-metal.

**Bear Island**, in Arctic Ocean, nr. Spitsbergen; area 72 sq.m.; meteorol. station.

**Bear's breech**, *Acanthus spinosus*, herbaceous plant with toothed leaves.

**Bearwort**, Bald-money, *Meum athamanticum*, umbelliferous aromatic herb; grows on mountain pastures, eaten by cattle.

**Beat**, (mus.) unit of tempo; **down-b.**, first beat in bar, carrying the metrical accent; **up-b.**, unaccented, or preceding first down-b. of composition; last (unaccented) b. of bar.

**Beatae memoriae** (Lat.), of blessed memory.

**Beatification**, papal declaration that one of the dead has been admitted among company of the "Blessed," *cf.* CANONIZATION.

**Beatific Vision**, sight of God in His divine glory.

**Beati pacifici** (Lat.), blessed are the peacemakers.

**Beatitudes**, (N.T.) the 8 special excellences, the essence of Christian perfection, described in Sermon on the Mt. (Matt. v.)

**Beaton (Bethune)**, David (c. 1494-1546), Scot. cardinal (1538) and statesman; Ld. Privy Seal, 1528; Bp. of Mirepoix, 1537; Archbp. of St. Andrews and Scot. primate, 1539; Chancellor, 1543; arranged marr. of



Bear's Breech

James V. of Scot. with Magdalen, dau. of Francis I; also 2nd marriage with Marye Guise; opposed Mary's English marriage, caused Wishart's arrest and burning at the stake; assassinated.

**Beatrice**, "blessed," Dante's (*q.v.*) ideal loved one, who serves as his guide in Paradise (*cf.* *Divina Commedia*, *q.v.*).

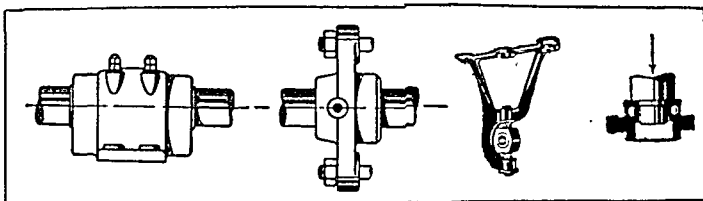
**Beats**, (phys.) oscillations produced by meeting of 2 trains of waves (sound, electromagnetic) of nearly equal wave-length. Used in tuning 2 notes together; beats disappear when tuning is perf. See *WIRELESS TELEGRAPHY*.

**Beattie**, Jas. (1735-1803), Scot. poet, essayist, and philosopher.

**Beatty**, David, 1st Earl, Visc. Borodale, Bn. Beatty of North Sea (1871- ), Brit. Adml. of the Fleet; cmmdd. Battle Cruiser Squad., B. of



Beatty



Plain Block Bearing

Flange Bearing

Hanger Bearing

Ball Step Bearing

Jutland, 1916; c.-in.-c. Grand Fleet, 1916; 1st Sea Lord, 1919-27.

**Beau** (Fr.), a handsome, fashionably dressed man. **B. monde**, distinguished society. **B. sabreur**, handsome swordsman; a dashing officer. **Beaux yeux**, beautiful eyes; beauty.

**Beauckerk:** see *ST. ALBANS, EARLS AND DUKES OF*.

**Beaufort:** see *SOMERSET, EARLS AND DUKES OF*. **B., Hy.** (c. 1377-1447), Eng. cardinal (1427) and statesman; natural son of John of Gaunt and Catherine Swynford; Bp. of Winchester, 1405; Chancellor, 1403-05, 1413-17, 1424-26; pres. of court wh. condemned Joan of Arc to the stake.

**Beaufort scale**, enumeration and designation of progressive degrees of strength of wind at sea, with velocity in m.p.h. assigned to each; thus:

No.	Wind	Velocity in m.p.h.
0	Calm	0
1	Light air	1-3
2	Slight breeze	4-7
3	Gentle breeze	8-12
4	Moderate breeze	13-18
5	Fresh breeze	19-24

No.	Wind	Velocity in m.p.h.
6	..... Strong breeze	25-31
7	..... High wind	32-38
8	..... Gale	39-46
9	..... Strong gale	47-54
10	..... Whole gale	55-63
11	..... Storm	64-75
12	..... Hurricane	Above 75

**Beauharnais, Eugène de** (1781-1824), son of Josephine (q.v.) by her first husband; fought at St. Jean d'Acre, Marengo, etc., and in Austr. campaign, 1809; Viceroy of Italy, 1805; conducted the retreat from Moscow, 1812; retired from Italy to Bavaria, 1814, and created Pr. of Eichstadt and Duke of Leuchtenberg. **Josephine de B.,** see JOSEPHINE.

**Beaujolais,** old Fr. prov., dépt. of Rhône; also, a red or white wine of Burgundy type produced there.

**Beaumarchais,** Caron de (1732-99), Fr. dramatist: *Le Mariage de Figaro*, *Le Barbier de Séville*, *Mémoires*.

**Beaumaris,** co. tn., and watering place, Anglesey, N. Wales, N.E. end Menai Strait; castle; pop., 1,700.

**Beaumet hydrometer:** see HYDROMETER.

**Beaumont, Francis** (1584-1616), Eng. dramatist, collaborated with John Fletcher (q.v.) in *Philaster*, *The Maid's Tragedy*, *The Knight of the Burning Pestle*, etc.

**Beaumont College,** public school, at Old Windsor, Berks., for R.C. boys, under Society of Jesus (Jesuits); fndd., 1861.

**Beaumont-Hamel,** vill., dépt. Somme, Fr., stormed by Brit. 13 Nov., 1916 (battle of the Somme). Newfoundland memorial to 326 missing (World War).

**Beaune, tn.,** in dépt. Côte-d'Or, Fr.; pop., 23,500; Burgundy wine, red or white.

**Beauvais,** cap. of dépt. Oise, N. Fr.; pop., 20,000; episc. see; Gothic cathed.; textiles, tapestry factory.

**Beaver,** amphibious rodent with soft fur and broad, flat, naked tail; gregarious; frequenting small streams, where it fells trees, and from the branches constructs its lodges and dams; found in Europe, Asia, N. Amer.; owing to extensive



Beaver

trapping now nearly extinct in Europe and greatly diminished in N. Amer.; fur greatly prized, and *castoreum* from the rectal glands formerly used in medicine.

**Beaverbrook,** Wm. Maxwell Aitken, 1st Bn. (1879- ), Brit. newspaper propr.; during World War rep. Canad. Govt. with C.E.F.; owner of *Daily Express*, etc.; auth.

of *Politicians and the Press*, (1925); *Politics and the War*, (1928).

**Beaver State:** see OREGON.

**Bebel,** August (1840-1913), Ger. politic. and labour leader, a fnder. of Social Dem. Party; several times imprisoned: *Woman and Socialism*, *Pages from My Life*.

**Bec,** ruined Benedictine monastery, at Bec-Hellouin, dépt. Eure, N.W. Fr.; famous as chf. Eur. seat of learning under Lanfranc (c. 1045-66) and Anselm (1063-78).

**Becles,** mkt. tn., E. Suffolk, Eng., on Riv. Waveney; 15th-cent. ch.; pop., 6,500.

**Béchemel Sauce,** white thick sauce, milk of wh. has been boiled with herbs, spices, and condiments; invented by Marquis de B., Master of the Household to Louis XIV.

**Bechterew's disease,** described by Russ. nerve specialist, Vlad. B. (1857-1927); progressive ankylosis or fixation of the spine.

**Bechuana,** Bantu people betw. Zambezi and Orange rivs. in S. Africa. **Bechuana-land,** part of Brit. S. Africa; **Brit. B.,** part of Cape Province. **B. Protectorate,** plateau (4,000 ft.), incl. Kalahari Desert, betw. Molopo Riv. and Zambezi; 275,000 sq.m.; pop., 153,000 (1,800 whites); cattle breeding; gold mines; cap., *Mafeking*.

**Beckenham,** urb. dist., Kent, Eng., residential suburb of S.E. London; pop., 43,800.

**Becker,** Karl Heinrich (1876- ), Ger. Orientalist: *Islam-Studien*.

**Becket,** St. Thomas à (1118-70), Abp. of Canterbury; after long series of disputes with Henry II concerning relations of Ch. and State was murdered by 4 knights in Canterbury Cathedral; commem. Dec. 29th.

**Beckford,** Wm. (1759-1844), Eng. man of letters and connoisseur; owner of Fonthill Abbey; *Vathek*.

**Beckton,** dist. in Barking, Essex, Eng.; works of Gas Light and Coke Company.

**Becontree,** dist. in Essex, on E. border of London, in bors. of Barking and Ilford and urb. dist. of Dagenham; large L.C.C. working class housing estate.

**Bequerel, Henri** (1852-1908), Fr. physicist, discvd. radio-activity (q.v.). Nobel Prize (Phys.) 1903, with Curie (q.v.).

**Bed-bug,** *Cimex lectularius*, brown wingless insect of the order Hemiptera; sucks blood of human beings at night; by day, it lies hidden in bedding, crevices, and behind wall-paper, where it also breeds.



Bed-bug

**Bedchamber question,** 1839-41; arose from fact that Peel, who was called to form a ministry on resig. of Lord Melbourne, insisted on his right to change the members of Royal Household. It resulted in Melbourne being recalled.

**Beddgelert**, vil., Carnarvonsh., N. Wales, at S. foot of Snowdon and at N. end Pass of Aberglaslyn; pop., 1,200; tourist centre; assoc. with legend of faithful hound of Prince Llewelyn.

**Bede**, **The Venerable** (c. 674-735), Eng. monk, histor., and saint: *Ecclesiastical History of the English Nation*; commem. May 27th.

**Bedel**: see BEADLE.

**Bedford, Earls and Dukes of**, Eng. titles borne by Russell family since 1550; title *Earl of B.* 1st bestowed on **John Russell** (c. 1486-1555), present at Field of the Cloth of Gold (q.v.); secret mission to Duke of Bourbon, 1523-25; ambassador to Pope Clement, 1527; helped to suppress Pilgrimage of Grace (q.v.) and Western Rebellion, 1549; joint ambass. to Philip of Spain, 1554. His son, **Francis** (c. 1527-85), 2nd earl; gov. of Berwick; warden of Eastern Marches of Scotl.; negot. betw. Elizabeth and Mary. His grandson, **Edward** (1572-1627), 3rd earl, d. without issue; title passed to his cousin, **Francis** (1593-1641), 4th earl; opposed Chas. I, 1640; tried to mediate betw. Chas. and Parliament; blt. Covent Garden Piazza. His son, **William** (1613-1700), 5th earl; fight. on parliamentary side but later supported royal cause; created Marquess of Tavistock and 1st Duke of B., 1694; title passed to his grandson, **Wriothesley** (1680-1711), 2nd duke; his son **Wriothesley** (1708-32), the 3rd duke, d. without children and the title passed to his bro. **John** (1710-71), 4th duke; Secretary of State, 1748-51; Ld. Lieut. of Ireland, 1756-61; negotd. treaty with France, 1762; Pres. of Council, 1763-65; succ. by his grandson, **Francis** (1765-1802), 5th duke; attached himself to Fox's party; member of original Board of Agriculture; d. unmarried; title passed to his bro. **John** (1766-1839), 6th duke; Ld. Lieut. of Ireland, 1806-07; rebuilt Covent Garden Market. His son, **Francis** (1788-1861), 7th duke; his son **William** (1809-72), 8th duke; d. without issue; title passed to his cousin, **Francis Chas. Hastings** (1819-91), 9th duke, whose sons **Geo. Wm. Francis Sackville** (1852-93) and **Herbrand Arthur** (1858- ) succd. as the 10th and 11th dukes.

**Bedford**: see BEDFORDSHIRE. **B. College**: see LONDON UNIVERSITY. **B. Level**, tract of fen country, extending from Riv. Welland (Lines.) through Isle of Ely to S.E. of old Bedford Riv. (Cambs.) and from Peterborough to Brandon (Suffolk); drained in 17th cent. by a company under the 4th E. of Bedford, assisted by Dutch engineer, Cornelius Vermuyden.

**Bedfordshire**, S. Midland co., Eng.; area 480 sq.m.; pop., 220,500; low-lying fertile plain; agric., cattle-raising, straw-plaiting. **Bedford**, co. tn., on Riv. Ouse, pop., 40,600; agric. implements, engineering, etc.; well

known schools; relics of John Bunyan, b. Elstow, 1 m. South.

**Bedlam**, popular name for Bethlem Royal Hospital (q.v.).

**Bedlington**, *Bedlingtonshire*, urb. E. Northumberland, 5 m. S.E. Morpeth; pop. 27,300; gives name to **B. terrier**, a breed of rough-haired sporting terrier, with curly blue-grey coat.

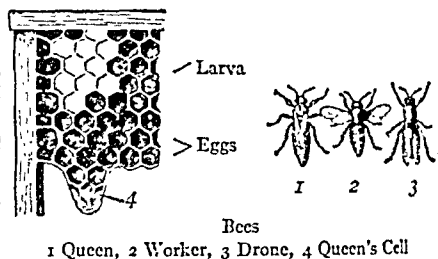
**Bedouins**, free Arab nomads in N. Africa, Syria, and Arabia.

**Beds.**, abbr. Bedfordshire.

**Bedstraw**, (bot.) popular name for several plants of genus *Galium* (q.v.), esp. *lady's*, with yellow, and *hedge-b.*, with white flowers; other species include crosswort (*Galium cruciata*) and goose-grass (*Galium aparine*). The dried stalks were formerly used for bedding.

**Bedwellty**, urb. dist., Mon., Eng.; pop. 30,000; coal and iron.

**Bee**, hymenopterous insect living solitary or in colonies. The honey-bee, of which



there are several varieties, has long been cultivated for the sake of the honey produced. A colony consists of a queen (fertile female), whose sole duty is to lay eggs, several thousand workers (unfertile females), and some males (drones). The larvae are reared on honey and pollen in hexagonal cells of wax. Queens result from larvae fed exclusively upon a special substance provided by the workers. Sterile eggs produce drones, and fertilized eggs queens and workers. All the work of the colony is done by the workers. Swarming takes place when the colony becomes too crowded, the queen leaving with a number of workers, her place being taken by a newly emerged queen. A queen lives for several seasons; drones and workers are short-lived. The workers visit flowers for food and so aid in pollenization.

**Beech**, *Fagus sylvestris*, majestic European forest tree. The fruit or nut, known as *mast*, is valuable as pig food; the timber, very hard and tough, is used for a variety of purposes. **Copper b.** with reddish leaves, a cultivated variety.



**Beech**, Sir Thomas, Bt. (1879- ). Eng. conductor; fndd. New Symphony and

1. Symphony orchestras, the  
2. Opera Company, and  
1932) the London Philhar-  
monic Orchestra.

**Beecher**, Hy. Ward (1813-  
77), Amer. Congregational  
preacher and anti-slavery  
orator; pastor of Plymouth  
Congregational Ch., Brook-  
lyn, 1847-87; fndd. *Chris-  
tian Union*, 1870; co-fnder.  
of *The Independent*; publ.  
*Lectures to Young Men*, 1840;  
*Freedom and War*, 1863; etc.



Sir Thomas  
Beecham

**Beef**, term now restricted to carcase and  
flesh of an ox or cow, considered as food;  
for the various joints, see MEAT. **B. olives**,  
small slices of cold lean beef rolled in beaten  
egg and breadcrumbs and fried.

**Beefeaters**: see YEOMEN OF THE GUARD.  
**Bee-hawk moth**, strong-flying species  
with wings partly transparent; somewhat  
bee-like in appearance; diurnal.

**Beehive**, structure in wh. domesticated  
bees live and store their honey; primitive  
and simple variety, known also as "skep,"  
a hollow dome made of straw; elaborate  
wooden hives are divided into upper and  
lower compartments; only worker-bees can  
enter upper compt., from wh. filled frames  
of honey can be removed and replaced by  
empty ones. **B. oven**, simple oven formerly  
used in production of metallurgical coke  
(q.v.). **B. tomb**, tomb of Bronze Age  
(Helladic or Mycenaean civilization), built  
of overlapping stones in form of a beehive.  
Most important is "Treasury of Atreus" at  
Mycenae.

**Beelzebub**, **Baal-Zebub**, (O.T.) orig.  
ch. god of the Philistines, the "god of flies";  
later the prince of the devils; consulted by  
Ahaziah, Kg. of Israel (II  
Kgs. i).

**Beer**, alcoholic beverage  
made from malted  
barley, hops, sugar, and  
water, by action of yeast.  
**B. brewing**, malting;  
grain is caused to germinate by action of moisture  
and is then dried in a  
kiln; weighed in the *bal-  
ance*, crushed in *mashing  
machine* or mill (A) and  
stirred in the *mash-tun*  
(B) with hot water, where,  
as also in the heated cop-  
per *mash pan*, starch is  
converted into sugar by  
action of diastase. In  
*mash-filter* the draft is sep-  
arated off to be used as  
cattle-food; *malt-liquor* or  
*wort* is boiled with *hops*

and *sugar* added for 1-4 hours in the *copper*  
(C), suspended matter being then removed  
in *hop-back* (D) and *sorting vat* as tops and  
dregs. The wort is then cooled to about  
60°F. in the *refrigerator* (E); in the *fermenting  
vessel*, yeast (q.v.) is added and beer begins to  
ferment in 10-12 days; further fermentation  
takes place in the *storage cask* (4-6 weeks).  
Contains 3-5% alcohol, and 5-9% solids.

**Beerbohm**, Max (1872- ), Brit. auth.  
and caricaturist.

**Beerenberg**, volcanic mt., Jan Mayen Is.  
(q.v.), Arctic Circle; 7,530 ft.; many glaciers,  
some reaching sea; first climbed 1921.

**Beernaert**, Auguste (1829-1912), Belg.  
statesman and Prime Min. Nobel Peace  
Prize, 1909.

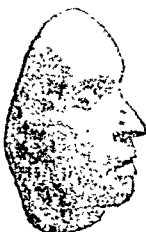
**Beersheba**, vill. betw. Gaza and Hebron,  
Palestine; formerly at extreme S. of Kgd.  
of Judah, hence phr., "from Dan to Beer-  
sheba."

**Beeswax**: see WAX.

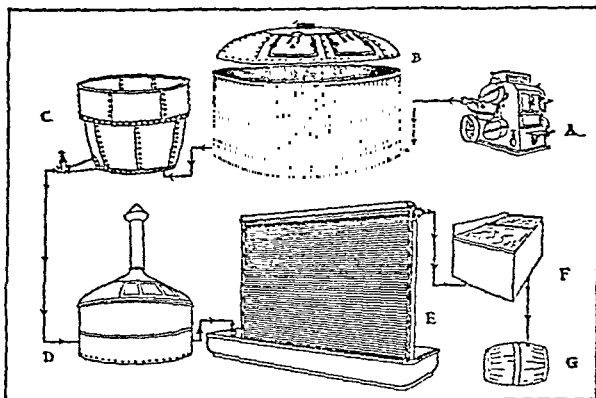
**Beeswing**, thin crust of tartar and other  
matter formed on wine, esp. port, after being  
long in bottle; so called from  
its resemblance to a bee's  
wing.

**Beet**, plants of genus *Beta*  
(of *Chenopodium* family).  
The fleshy root of red beet is  
edible and is used in salads,  
etc.; white beet is extensively  
cultivated to produce sugar.  
*Mangold wurzel*, used as cat-  
tle fodder, is of same family.

**Beethoven**, Ludwig van  
(1770-1827), Ger. composer.  
9 Symphonies: Eroica (III);  
(V) in C minor; (IX) with choir "To Joy."  
32 pianof. sonatas, chamber music, *Missa  
solemnis*; opera *Fidelio*.



Beethoven  
Death-Mask



A Mill  
B Mash Tun  
C Copper  
D Hop Back

E Refrigerator  
F Fermenting Vessels  
G Cask

**Beetle**, 1) (entom.) a member of a large order of insects known as *Coloptera*, with mandibles for biting purposes, and anterior wings that have evolved into horny sheaths. The metamorphosis is complete, the stages being: egg, larva, pupa, and B. Some are predatory, others carrion-feeders, while many are herbivorous. 2) (Tech.) a) heavy wooden club for beating bleached fabrics of linen and cotton to give lustre; b) heavy wooden two-handled mallet for ramming earth, pavement, etc.

**Beg** (title): see BEY.

**Begbie**, Edward Harold (1871-1929), Brit. journalist and author; pub. *Broken Earthenware*, 1910; *The Angels at Mons*, 1916; *Life of William Booth*, 1920; etc.

**Beggars' Opera**, *The*, lyrical drama by J. Gay (q.v.), tunes arranged and scored by Pepusch; satire on contemporary society.

**Beghards**, relig. associations of laymen modelled on those of *Beguines* (q.v.).

**Begonia**, tropical plant; cultivated in greenhouses; many varieties, having ornamental flowers and decorative coloured leaves.

**Beguine**, member of Cath. community of women, bound only by vow of obedience and chastity, founded at Liège in 1170 by Lambert le Bègue.

**Begum**, title given in India to Moslem princesses and ladies of high rank.

**Behaim**, Martin (c. 1436-1507), Ger. cosmographer; made Nuremberg globe, representing the earth; one of inventors of astrolabe (q.v.).

**Behaviourism**, philos. theory, orig. in U.S.A., that the probable behaviour of man or beast in given situations can be scientifically formulated and classified.

**Behemoth** (bibl.), animal described in Job xl, 15-24, generally identified with hippopotamus.

**Behistun**, mtn. vil., Persia, on anc. road from Babylon to Ecbatana; high up on precipitous rock (1,700 ft.) is trilingual inscription of Darius recording the exploits of his reign; deciphered by Sir Henry Rawlinson, 1835; basis of mod. Assyriology.

**Behn**, Aphra (1640-89), Eng. dramatist and novelist; 1st profess. woman writer: *Oroonoko*.

**Behring**, Emil von (1854-1917), Ger. physic.; disc. diphtheria serum; Nobel Prize (med.), 1901.

**Behring**, Vitus (1680-1741), Dan. navigator; explored **Behring Sea** (part of N. Pacific Ocean N. of Aleutian Isls.) and **Behring Strait** (45-55 m.) betw. Siberia and Alaska (leads to Arctic Ocean); died at **Behring Isl.**, largest and westernmost of Commander Isls., off Kamchatka.



Begonia

**Beige**, light, yellowish-grey colour.

**Beira**, 1) prov., Portugal, betw. rrs. Douro (N.) and Tagus (S.); 9,210 sq.m.; pop., 1,664,000; cap., *Coimbra*. 2) Seapt., Port. E. Africa, cap. prov. of B.; pop., 17,000; rrs. to Salisbury (S. Rhodesia) and to Zambezi.

**Beirut**, **Beyrout**, port, Syria, cap. of Lebanon; pop., 150,000; chf. trading centre S.E. Mediterranean; exports oil, silks, wool.

**Beit**, Sir Otto John, 1st Bt. (1865-1930), Brit. financier and art collector; director of Brit. S. Africa Co. and Rhodesia Rlys. Ltd.; a trustee of Rhodes Trust; fndd. Beit Memorial Fellowship for Medical Research; donation of £50,000 to Univ. of Cape Town (1916).

**Beith**, John Hay (1876- ), Brit. author under pseudon., Ian Hay: *The First Hundred Thousand*.

**Bejan**, (academ.) name for freshman in Univs. of St. Andrews and Aberdeen.

**Békés**, 1) county (1,418 sq.m.), Hungary in the fertile plain of lower Tisa (Theiss) pop., 311,100; cap., *Békés-Gyula* (pop., 25,000). 2) Tn., co. B., pop., 28,200.

**Békésaba**, tn., Hungary, nr. White Koros; pop. (largely Slovak), 49,300; grain, cattle.

**Bel**, a form of *Baal* (q.v.). **B. and the Dragon**, one of the apocryphal addns. to the Bk. of Daniel.

**Bela**, name of 4 Hungarian kings, 1061-1270.

**Belasco**, David (1859-1931), Amer. playwright and producer; owner and manager of B. Theatre, New York; *The Heart of Maryland*, 1895; *The Girl of the Golden West*, 1905; *Fanny*, 1926.

**Bel canto**, (mus.) traditional Ital. method of *Cantabile* singing, as distinct from recitative.

**Belemnitelia quadrata**, petrified animals and plants (or parts thereof) which occur in, and characterize, certain definite geological formations (q.v.), and enable geologists to determine the age of such rocks.

**Belemnites**, fossils of certain species of extinct decapods, in shape resembling the end of a dart; see also THUNDERBOLT.

**Belfast**, cap., N. Ire., co. Antrim, on Belfast Lough; pop., 415,000; largest industrial town and port in Ire.; linen trade; ship-building.

**Belfort**, strong Fr. fortress betw. the Vosges and the Jura (Burgundian Gap); capitulated in 1871; in the World War, chf. base for the Alsace front.

**Belfry**, a bell-tower, or the place in such tower where bells are hung; originally a watch-tower, which often contained a bell to be rung as a warning; famous example of B. at Bruges (q.v.). Cf. CAMPANILE.

**Belga**, Belgian coin and monetary unit created in 1926; equal to 5 francs; par value, 5 to the pound sterling.

**Belgian Congo**, Belg. colony, Africa, bounded W. and N. by Fr. Equat. Africa, E. by Anglo-Egypt. Sudan, S. by Uganda, Tanganyika Terr. and N. Rhodesia, S. by Rhodesia and Angola; includes Riv. Congo from source to mouth; virgin forest and savanna; unhealthy climate. Inhab.: Bantu Negroes (8,800,000), Europeans (23,300); our provs.: *Congo-Kassai, Equator, East Province, Katanga*, aggregating 927,000 sq.m.; cap., *Leopoldville*; rlys. 2,500 m.; chf. exports: copper, palm kernels, cotton, precious stones. Since 1925 has included dists. of Ruanda and Urundi (former Ger. E. Africa); 10,550 sq.m.; 450 whites, 5 million natives.

**Belgium** kgdm., N.W. Eur.; bounded N. by Holland, E. by Holland, Ger., and Luxemburg, S. by Fr., W. by N. Sea; 11,753 sq.m.; pop., 8,060,000 (Flemings and French-speaking Walloons). Short, flat, sandy coast-line (pollers); surface flat in N. and N.W., with low hills nr. Ypres (*Mt. Kemmel*, 495 ft.), rising to a low plateau (300-600 ft.) in centre; this succeeded by hilly wooded country in S. (*Ardennes*, q.v.) beyond line of the Sambre and Meuse (chf. riv.). Other rivs. include Scheldt, Lys, Senne, and Durthe (all extensively canalised). Climate temperate; rainfall abundant; extensive agric. and forestry; but mainly a manuf. country. Coal and iron-ore deposits in Sambre and Meuse valleys; Charleroi centre of ind. area. Manuf.: iron and steel, machinery, firearms, motor-cars, glass, tiles, textiles. Divided into provs. of N. and E. Flanders, Antwerp, Limbourg, Brabant, Hainaut, Namur, Liège, Eupen, and Malmédy, and Belg. Luxemburg. Chf. tns.: *Brussels* (cap.), Antwerp (chf. port), Liège, Ghent, Malines, Ostend (2nd port), Bruges (with port, Zeebrugge); Louvain, Namur, and Mons figured also in World War. Conquered by Caesar, 57 B.C. (*Gallia Belgica*). For history of B. until Peace of Westphalia (1648), see HOLLAND. After Treaty of Utrecht (War of Span. Successn.), came under Austrian rule (1714); annexed by France, 1795; united with Holland (Kgdm. of the Netherlands), 1815; indept. and neutral kgdm., 1830; invaded by Germany in World War (Aug., 1914); greater part held till 1918; Treaty of Versailles cancelled B.'s neutrality and allotted to her Moresnet, Eupen, and Malmédy (q.v.).



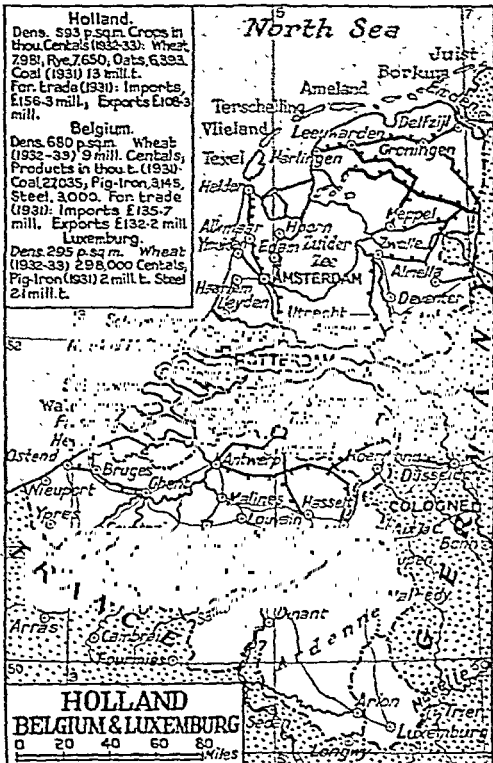
**Belgrade, Beograd**, cap. of Jugoslavia, at junct. of Danube and Sava (Save); pop., 225,000; rly. centre; riv. transport; woollens, tobacco, chocolate, preserved meats, soaps, boots; royal palace; univ., cathed., national museum, library. Bulg. 9th-10th cents.; taken and retaken in wars betw. Hungary, Serbia, Austria, and Turkey; P. Eugene of Savoy defeated Turks, 1717; cap. of Serbia, 1827; fortified, 1867; taken by Central Powers in World War, Dec., 1914, and Oct., 1915.

**Belgravia**, dist. in city of Westminster, S.W. London, betw. Buckingham Palace and Sloane St., containing large houses and some fine squares. Fashionable centre in 19th and early 20th centuries. See *PIMLICO*.

**Belisarius** (c. 505-565), the greatest Byzantine general; defeated Vandals in Africa, 533-34; conq. S. Italy and Rome 536-37.

**Belize**, cap. and port of Brit. Honduras, Centr. America, on riv. same name; pop., 13,000.

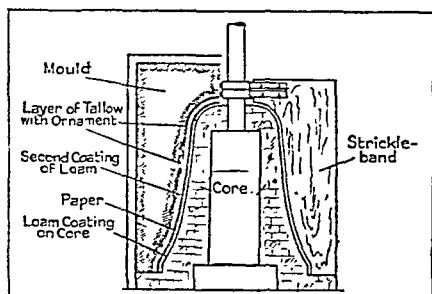
**Bell, Alexander Graham** (1847-1922), Amer. physicist, constr. first practical telephone, 1876. **B., Currer**, see *BRONTË*. **B., Gertrude Margaret Lowthian** (1868-





1926), Brit. traveller and administrator; explored Arabian interior; joined milit. intelligence dept., Cairo, 1915; assist. polit. officer, Bagdad, 1917-23; d. in Mesopotamia. Pubd. *Safar-Nama; The Desert and the Sown; The Thousand and One Churches; Letters of G.B.* (2 vols. ed. by Lady Bell), 1927. **B., Robert Anning** (1863- ), Brit. artist; R.A. 1922; designed mosaics in H. of Commons and Westminster Cathedral.

**Bell**, 1) (tech.), hollow, usu. cup-shaped, vessel of metal open at wider end, wh. gives out a musical note when struck; clapper or striker is suspended inside. Used in relig. worship since remote period, by Buddhists, Brahmans, and in *Shinto* temples; objected to by *Mohammedans*; introduction of large bells in Christian churches of uncertain date, but earlier than 7th cent. in France; ringing of ch. bells was believed to terrify and drive away evil spirits. 2) (Naut.) signal given every half-hour on board ship with a bell (1 bell, half-past 8, to 8 bells, 12 o'clock). 3) (Zool.) cry of the stag in rutting time. **B., book, and Candle**, reference to the R.C. custom (since 8th cent.) of ringing the Bell, closing the Book, and extinguishing the Candle on the pronounciation of sentence of greater excommunication. **B.-casting**, mak-



Bell-casting

ing of bells, by casting into a hollow mould. Inner core of the bell is brick and carries a templet by means of wh. a clay layer is formed; over this paper is placed wh. in turn is covered with a layer of tallow; into this the decorations are melted. Outside cover is formed over the tallow. **B. metal**, used in casting bells; alloy of copper and tin. See CAMPANOLOGY; CARILLON. **Electric B.**, constructed by means of small electro-magnet wh. attracts hammer causing it to strike bell; movement breaks current; spring returns hammer and remakes current.

**Bell**, or **Inchcape, Rock**, dangerous promontory in N. Sea, off Firth of Tay, Scotland, entirely submerged at high tide; lighthouse erected 1807 by Rob. Stevenson. Subject of a poem by Southey. Has two bells for use in foggy weather.

**Bell-flower**: see CAMPANULA.

**Belladonna**: see DEADLY NIGHTSHADE. **B. lily**, lily-like plant from S. Africa; magnificent umbellate flowers; a favourite garden flower.

**Bellagio**, vil., Lombardy, Italy, on L. Como; pop., 4,000; summer resort.

**Bellamy**, Edward (1850-98), Amer. auth.: *Looking Backward, 2000-1887*.

**Bellarmino**, Roberto, St. (1542-1621), It. card. and Jesuit theologian.

**Bellay**, Joachim du (c. 1524-1560), Fr. poet; member of the *Pléiade*; wrote sequence of sonnets *L'Olive* to his mistress, Mlle. de Viole; 47 sonnets on antiquities of Rome wh. were translated by Spenser, as *The Ruins of Rome*.

**Belle Alliance**, inn nr. Waterloo, Belgium, after which the Prussians named the battle of Waterloo.

**Belle Isle**, 1) largest island (30 ac.) in Lake Windermere, Westmorland. 2) Strait, Canada, betw. Labrador and Newfoundland, 10-15 m. wide. 3) Isl., Canada, at head of Str. of Belle Isle.

**Bellerophon**, hero of Greek myth; slew the Chimaera with help of Pegasus (q.v.).

**Belles lettres** (Fr.), polite literature, pure lit., i.e., writings (essays, poems, etc.) that are purely literary and have no technical or didactic intent.

**Bellingshausen**, Fab. Gottlieb von (1778-1852), Russ. adm. and explorer; S. Polar Expedition, 1819.

**Bellini**, 1) It. painters: **Jacopo** (1400-71) and his sons **Gentile** (1429-1507) and **Giovanni** (1430-1516). 2) **B., Vincenzo** (1802-35), It. operatic composer: *Norma*. **Bellman**, Karl Michael (1740-95), Swed. poet.

**Belloc**, Hilaire Joseph (1870- ), Brit. novelist and historian, of Fr. birth (naturalized 1902); satirical novels: *Mr. Chatterbox's Election*; historical works: *History of England; Europe and the Faith*.

**Bello Horizonte**, inland city (3,000 ft.) Brazil, cap. state of Minas Geraes; pop., 108,850.

**Bellona**, (Rom. myth.) goddess of war, sister or wife of Mars; (astron.) a planetoid (q.v.), No. 28, disc., 1854.

**Belmont, Battle of**, S. Africa; victory of Brit., under Lord Methuen, in march for relief of Kimberley, 23 Nov., 1899; in Cape Colony, abt. 30 m. N. of Orange River.

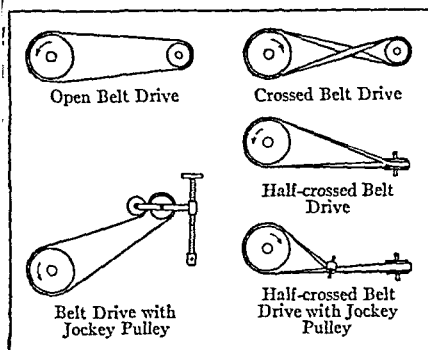
**Belper**, mkt. tn., Derbysh., Eng., 8 m. N. Derby; pop., 13,000; cotton mills, engineering works.

**Belshazzar**, (O.T.) last Kg. of Babylon, son and successor of Nebuchadnezzar (c. 550-540 B.C.); menaced by writing on wall (Dan. v.).



Belladonna Lily

**Belt**, (tech.) endless flexible strip of various materials (leather, cotton, steel) used in machinery to transmit motion from one pulley to another, often to alter speed of revolution. B. may be flat, edge of pulley being slightly convex; round or V-section belts may be used, with V. grooves in pulleys. **B. conveyor**, endless belt, usu. smooth, chfily. used for moving mat. and articles in course of manufacture. **B. drive**, see *illus. B.*



Belt Drives

**lines**, (rly.) in U.S.A., connect terminal rly. yards with local industrial sidings to facilitate handling of freight.

**Belt, Great and Little**, straits betw. 1) Zealand and Fünen (40 m.) and 2) Jutland and Fünen (30 m.), Denmark.

**Beluga**, or **white whale**, allied to the narwhal, and sole representative of its genus (*Delphinapterus*). A northern Cetacean congregating in large "schools," and hunted for its hide, blubber, and flesh, the latter being eaten by Greenlanders and Eskimos.

**Belvedere**, (archit.) 1) covered terrace; 2) small turret on roof of a bldg. affording wide view of the country.

**Belvoir**, Eng. hunt. fndd. 1750; named after Belvoir Castle (kennels); hunts Leics. and Lincs. **B. Castle**, seat (Duke of Rutland), Leics., Eng., 7 m. S.W. Grantham; important picture gallery.

**Bembo**, Pietro (1470-1547), It. man of letters and cardinal.

**Bembridge beds**, (geol.) designation of Middle Oligocene (*q.v.*) deposits of Hampshire and Isle of Wight, Eng.; consist of an upper and lower series of marls and clays, separated by a calcareous stratum.

**Bemersyde**, estate, S. Berwicksh., Scotland, 2½ m. N.E. St. Boswells; bought by public subscription and presented to F.-M. Earl Haig in 1921.

**Benares**, city, on Riv. Ganges, United Provs., India; most sacred city of the Hindus, place of pilgrimage (pilgrims bathe in holy river); Riv. Ganges lined with ghats (flights of stairs) leading to the 1,450 temples; chief

buildings: Golden Temple of Siva, Mosque of Aurungzebe (one of 570), Nepalese Temple, Monkey Temple; at the Burning Ghat bodies of Hindus are cremated; Hindu univ., Brahmin schools; manuf.: brassware, gold cloth, lacquered toys; pop., 205,300.

**Benavente y Martínez**, Jacinto (1876- ), Span. playwright; Nobel Prize (Lit.), 1922. *Vested Interests; Brute Force.*

**Benbow, John** (1653-1702), Brit. admiral; commanded squadrons in W. Indies, 1699, 1701; running fight with Fr. fleet of Du Casse 19-24 Aug., 1702; forced to abandon chase through disobedience of his captains; d. of wounds, 4 Nov., 1702.

**Bench mark**, mark made by the Ordnance Survey (*q.v.*) (in England in the form of a broad arrow with line across point), to indicate a point of reference. Usually on a building, or on stone pillar embedded in earth.

**Benda, Georg** (1721-95), Ger. composer; operas: *Ariadne on Naxos; Medea*. **B., Vladislav Theodor** (1873- ), Pol. painter and illustr.; designed *B. masks*, used on Europ. and Amer. stage.

**Bender, Tighina**, frontier tn., Bessarabia, Rumania, on Riv. Dniester; pop., 35,400.

**Bendigo**, tn., Victoria, Australia; gold mines; pop., 33,690.

**Benedetti**, Vincent, Ct. (1817-1900), Fr. diplomat; interview with Wilhelm I at Ems, July, 1870, precipitated Franco-Pruss. War.

**Benedict**, St., of Nursia (c. 480-543); founder of 1st Benedictine monast., Monte Cassino; commem. Mar. 21st.

**Benedict**: popes of this name are numbered from I to XV, of whom the most import. historically are: **B. V** (964-5), carried off to Hamburg by Otto I, who did not approve of his election. **B. VI** (972-4), installed by Otto the Grt., strangled by Crescentius, son of Theodora, on emp.'s death. **B. VIII** (1012-24), ousted antipope. Gregory VI with help of Hy. II defeated Saracens in Tuscany, 1016. **B. X** (1058-9), *antip.*, compelled to give way to Nicholas II. **B. XII** (1334-42), 3rd Avignon pontiff; friend of Petrarch (*q.v.*); severe eccl. reformer. **B. XIII** (1394-1422 or 23), *antip.* **B. XIII** (1724-30), attempted, ineffectually, to reconcile Rom., Grk., Lutheran and Calvinist churches; allowed Dominicans to preach Augustinian doctrine of grace. **B. XIV** (1740-58), rebuked Jesuit missionary method of adapting their message to heathen usage. **B. XV** (1914-22), preserved strict neutrality during World War, made several efforts to effect peace; during his pontificate Brit. repres. accredited to Papal Court for 1st time since 17th century.

**Benedict**, Sir Julius (1804-85), Eng. composer and conductor; operas incl. *The Lily of Killarney*.

**Benedict Biscop**, Eng. ecclesiastic, fl. 7th cent.; fndd. monasts. of Wearmouth, 674; Jarrow, 682; Abbot of St. Peter's, Canterbury, 669; brought up Bede (*q.v.*).

**Benedictine**, 1) order of monks founded by St. Benedict, c. 520. 2) Liqueur orig. made by B. monks; each bottle bears the initials D.O.M. (*Deo Optimo Maximo*), to God the best and greatest.

**Benediction**, blessing; esp. that uttered by priest at end of service. **B. of Blessed Sacrament**, rite of Cath. Ch. in which priest blesses people with Blessed Sacrament.

**Benedictus**, thanksgiving song of Zacharias, father of John Baptist (Luke i, 68-79); said or sung as a canticle (*q.v.*) at Lauds (*q.v.*) and, in C. of E., after 2nd lesson in Morning Prayer.

**Benefice**, any eccles. promotion or spiritual living. **Beneficiary**, person on whose behalf property is held on trust.

**Benefit of clergy**, privilege, orig. allowed to clergy and, later, to certain other literate persons, charged with felony, of being tried only in eccles. courts; abolished in 1827.

**Benefit performance**, sporting or theatrical event in wh. profits go to one or more of those taking part, or to a charity.

**Benes**, Edward, Dr. (1884- ), Czechoslovak statesman, For. Min., 1918, nat. represen. Paris Peace Conference, 1919.

**Benevento**, dept., Campania, Italy (1,000 sq.m.; pop., 299,700), and its cap. (pop., 27,500); Roman triumphal arch; archiepisc. see; 13th-cent. cathedral; Rom. victory over Pyrrhus, 275 B.C.

**Benevolences**, money raised by Kg. without consent of Parl. First used by Edward IV; abol. by Richard III; revived by Henry VII; finally fell into disuse under James I.

**Benfey**, Theodore (1809-81), Ger. philologist and Sanskrit scholar.

**Bengal**, prov., Brit. India; area 76,800 sq.m. (Bihar and Orissa detached 1912); pop., 50,123,000; includes fertile delta of Ganges and Brahmaputra; hot, damp climate in plains; jungles harbour tiger and rhinoceros; chief products: rice, wheat, jute, oilseeds, tea, sugar, tobacco, cotton, indigo, opium, cinchona, spices; manuf.: silks, cottons, gunny bags; coal, iron, copper. Cap., Calcutta; hill-station Darjiling. **Bay of B.**, betw. India and Malay Peninsula. **B. fire**: see FLARE, FIREWORK. **B. monkey**: see MACAQUE.

**Bengali**: see LANGUAGE SURVEY, *Ind. Langs.*; spoken in Bengal, on the Ganges and Brahmaputra; lit. from 15th cent.; mod. poet, Rabindranath Tagore.

**Benghazi** (anc. *Hesperides Berenice*), cap. and port, Cyrenaica, N. Africa; pop., 35,000; barley, sponge-fisheries, ostrich feathers, ivory.

**Benguella**, cap. of dist. same name in Angola, Port. W. Africa; pop., c. 6,000; seapt.; rubber, ivory, wax. **B. Rly.**, from Lobito Bay on Angola coast to Belgian Congo (850 m.). **B. current**, cold sea-current moving N. along W. African coast.

**Benin**, 1) prov. (formerly native kgdm.), S.W. Nigeria, inhab. by Negro Beni. 2) Cap. of prov.; pop., c. 35,000. 3) Riv. in prov., flows into **Bight of B.**, wide inlet of Gulf of Guinea.

**Benjamin**, (O.T.), youngest son of Jacob and Rachel, full bro. of Joseph. **Tribe of B.**, smallest of 12 tribes, with Judah formed S. Kingdom.

**Ben Lomond**, mtn. (3,192 ft.), Stirlingsh., Scotland, on E. bank, Loch Lomond. **B. Macdhuil**, mtn. (4,296 ft.), S.W. Aberdeensh., Scotland, highest peak of the Cairngorms (*q.v.*). **B. Nevis**, Grampians, S.W. Inverness-shire, 4,406 ft.; highest mt. in Brit. Isles.

**Benn, Sir John Williams**, 1st Bt. (1850-1922); member of L.C.C. from its creation (1889), chairman 1904. **B., Sir Ernest**, 2nd Bt. (1875- ), son of above; publisher; author of *The Confessions of a Capitalist*, 1925; *Account Rendered*, 1930, etc.

**Bennett, (Enoch) Arnold** (1867-1931), Eng. author: *The Old Wives' Tale*; novels of *The Five Towns*; *Riceyman Steps*; plays: *The Great Adventure*; *Milestones* (collab. with Ed. Knoblock). **B., Floyd**: see BYRD, R. E. **B., James' Gordon** (1795-1872), Scot.-Amer. journ.; fndd. *New York Herald*, 1835; his s. **Jas. Gordon B.** (1841-1918) sponsored Stanley's exped. to find Livingstone, 1871-72. **B., Richd. Bedford** (1870- ), Canadian Cons. statesman; minister of justice, 1921; of finance, 1926; premier and min. of external affairs, 1930. **B., Sir William Sterndale** (1816-75), Eng. composer; cantatas: *The Woman of Samaria*, *The May Queen*, overtures, a symphony, some chamber music, and numerous piano works.



Arnold Bennett

**Benson, Arthur Christopher**, s. of E. White B. (1862-1925), scholar and author; master of Magd. Coll., Cambridge, 1915; wrote *Life* of his father, *From a College Window*, etc.; **B., Edw. Frederick**, 2nd s. of E. White B. (1867- ), author of *Dodo*, 1893, *David of King's*, 1924, etc.; **B., Edw. White** (1829-96), Abp. of Canterbury, 1883; delivered the Lincoln Judgment (*q.v.*); wrote *Cyprian* and *The Apocalypse*, an *Introductory Study*. **B., Sir Francis Robert** (1838- ), Brit. Shakespearean actor; one of fnders. of O.U.D.S.; organized annual Shakespeare festival at Stratford-on-

Avon from 1888; fidd. school of acting, 1901.  
**B., Robert Hugh**, 3rd s. of E. White B. (1871-1914), R.C. priest, 1904; author of *The Light Invisible*, and several historical novels incorporating R.C. propaganda.

**Bent grass**, stiff, coarse, reedy grass.

**Bentham**, Jeremy (1748-1832), Eng. utilitarian philos. and jurist; see UTILITARIANISM.

**Bentley**, Richard (1662-1742), Eng. scholar, Master of Trin. Coll., Camb.; won Europ. reputation with *Dissertation upon the Epistles of Phalaris*, 1699.

**Ben trovato** (It.), well found; happy invention.

**Benue**, main trib. of Riv. Niger, W. Africa; flows through Nigeria; length 800 miles.

**Benz**, Karl (1844-1929), Ger. engin.; pioneer of automobile industry, first car 1885.

**Benzaldehyde**,  $C_6H_5CHO$ , colourless liquid, used as flavouring agent; made by distilling bitter almond cake, or synthetically. See ALMOND OIL; AMYGDALIN.

**Benzene** or **benzol**, (chem.)  $C_6H_6$ , obtd. by distillation of coal tar (b. p.  $80.4^\circ$ ); colourless, highly inflammable liquid; dissolves fats and resins; used as solvent for cleaning purposes. Large number of important derivatives, e.g., phenol, aniline (q.v.).

**Benzine**, also called light petroleum, petroleum ether, naphtha, and ligroin, lightest fraction from distillation of natural petroleum. Boils between  $40^\circ$  and  $150^\circ$ , and contains chiefly paraffins  $C_6H_{14}$ ,  $C_7H_{16}$ , and  $C_8H_{18}$ . Important solvent for oils, fats, and resins, and as agent for "dry cleaning"; also as fuel in aeroplanes.

**Benzoic acid**, (chem.)  $C_6H_5COOH$ , obtd. from benzoin or synthetically; used medic. for coughs; compounds, e.g., sodium benzoate, used in cystitis (q.v.).

**Benzoin**, resin obtd. from a tree (*Styrax B.*) by wounding the trunk; used in med., cosmetics, and perfumery.

**Benzol**: see BENZENE.

**Benzyl alcohol**,  $C_6H_5CH_2OH$ , also called phenyl carbinol, made from benzyl chloride; occurs in balsams and essential oils (q.v.).

**Beowulf**, O. Eng. 8th-cent. epic, in alliterative verse.

**Bequest**, declaration of a person's will concerning succession to his property after death. See also DEVISE.

**Béranger**, Pierre Jean de (1780-1857), Fr. lyric poet; pop. songs, many occasioned by political events.

**Berar**, dist., Centr. India, leased from Hyderabad to Gt. Brit., forms part Central Provinces (q.v.); area, 17,700 sq.m.; pop., 3,075,300; cap., Amraoti.

**Berber**, tn., Anglo-Egypt. Sudan, on Riv. Nile, cap. prov. of B.; cotton, barley, wheat; pop., c. 10,000. **B. languages**: see LANGUAGE SURVEY, *Hamitic Languages*.

**Berbera**, cap. and port of Brit. Somaliland, on the Gulf of Aden; pop., 30,000; annual fair.

**Berbers**, fair-skinned aborig. of N. Africa; (Rif) Kabyles and Tuareg, democratic and warlike, with many industries.

**Berceuse** (Fr.), lullaby.

**Berchtold**, Leopold, Ct. von (1863- ); Austrian For. Min. 1912-15.

**Berenice**, consort of Ptolemy Euergetes (q.v.) c. 250 B.C.; dedicated her hair for safe return of her husband from an expedition; hence *Coma Berenices* (Berenice's Hair), constellation in N. hemisphere; see PL. ASTRONOMY, N.C.H., E.

**Beresford**, Chas. Wm. De La Poer B., 1st. Bn. (1846-1919), Eng. admiral; M.P. 1874-80, 1910-16; took part in bombardment of Alexandria, 1882; full adm. 1906, in commd. of Channel Fleet; retired, 1909, expressing disagreement with naval policy of Bd. of Admiralty under Sir John Fisher; elevated to peerage, 1916; author of *The Betrayal*, 1912; *Memories*, 1914.

**Béret**, flat cloth cap worn by Basque peasants. Now taken into gen. use for motoring, sports, etc.

**Berezina**, riv. (250 m.), trib. of Riv. Dnieper, in White Russian S.S.R., connected by canals with Black and Baltic seas. Crossed near Borizov by Napoleon during retreat from Moscow, Nov., 1812.

**Bergama**, small tn., Asia Minor, on site of Pergamon (q.v.).

**Bergamo**, 1) part of Lombardy, Italy; pop., 555,700; 2) cap. of B.; pop., 83,000; situated at foot of **Bergamasque Alps** (E. of L. Como, rising to 10,000 ft.); textiles.

**Bergamot**, 1) a small tree of southern Calabria, *Citrus bergamia*, resembling the bitter orange and bearing a round, yellow fruit from which is derived **oil of b.**, which is largely used in perfumery; 2) name of highly flavoured pear. **B. camphor**, or **bergapene**, is a greenish-yellow fluid left as a deposit by oil of B. after standing.

**Bergen**, 1) port, S. Norway, on Byfjord; pop., 97,525; princ. shipping centre; timber, fish, butter; Lutheran diocese; important member of the Hansa (q.v.). 2) **B.-op-Zoom**, tn., N. Brabant, Holland; pop., 21,620; oysters, beet indus., potteries.

**Bergerac**, Fr. tn. in dépt. of Dordogne; also high quality white or red wine produced in district and sent to Bordeaux for export. See CYRANO DE BERGERAC.

**Bergschrund**, (geol.) crevasse (q.v.) in ice or snow, reaching to rock, where glacier or snow-field starts to move down a steeper slope.

**Bergson, Henri** (1859- ), Fr. philos.; *Matter and Memory*, 1896, *Creative Evolution*, 1907; Nobel Prize 1927.

**Beri-beri**, (med.) nervous disease caused in Far East by excessive consumption of polished rice; prob. due to lack of vitamin B. Extract of rice polishings or yeast given in treatment.

**Bering Sea**, etc.: see BEHRING.

**Berkeley, George** (1684-1753), Bp. of Cloyne; Irish philosopher. *Treatise on the Principles of Human Knowledge*, 1710.

**Berkeley**, 1) small mkt. tn. (anc. bor.), Glos., 25 m. N. Bristol; pop., 800; birthplace Edw. Jenner; in **B. Castle** (12th cent. feudal stronghold) Edward II was murdered in 1327. 2) Tn., California, U.S.A., on San Francisco Bay; univ. of California; pop., 82,100. **B. Square**, Mayfair, London; long a residence of aristocracy; contained *Lansdowne House* (by Robt. Adam, 1765; demolished, 1932).

**Berkhamsted**, urb. dist., Herts, 28 m. N.W. London; pop., 8,200; anc. Saxon tn.; ruined 11th cent. castle; birthplace Wm. Cowper; Foundling Hospital (*q.v.*).

**Berks.**, abbr. Berkshire.

**Berkshire**, or **Berks**, S. Midland co., Eng.; area 725 sq.m.; pop., 311,300; agric., pig-breeding; chief riv., Thames; contains Windsor; co. tn., *Reading*. **B. Hills**, Massachusetts, U.S.A.; highest point, *Mt. Greylock*, 3,505 ft.; holiday resort.

**Berlichingen**, Götz von (1480-1562), Ger. knight; leader in Peasants' War, 1525; hero of Goethe's drama of this title.

**Berlin**, 1) (cap. of Prussia and of German Reich, on rivs. Spree and Havel; area of municipality, 340 sq.m. (30 m. across); pop., 4,300,000; third largest city in the world; first rly. and airway junction in Europe; largest indust. and commercial city in Germany and third inland port. Chf. street, and social and official centre, Unter den Linden, with Reichstag (parliament) building, cathedral, univ. (1810), museums, opera, former royal palace, and govt. buildings. Chf. industries: machinery, elec. engineering, clothing. **HISTORY:** City an amalgamation (1307) of fishing villages of *Berlin* (name Wendish; first recorded 1244) and *Kölln*; joined Hanseatic



Bergson

League in 15th cent.; residence of Hohenzollerns and cap. Electorate of Brandenburg, 1484; enlarged by Great Elector (1640-88) and by Frederick the Great; occupied by the French, 1806-08; association of city and suburbs (Greater Berlin), 1912; municipality, 1920. 2) Name of 4-wheeled carriage, invented in Berlin in 17th cent.; popular during 18th century. **B. blue**, oldest synth. dye-stuff; prepd. by mixing solutions of potassium ferro-cyanide and ferrous sulphate (copperas, iron vitriol, green vitriol). **B. Congress**, conf. of Eur. States under pres. of Bismarck, 1878, for polit. reorgan. of Balkans. Led to reduction of Russ. and strengthening of Aus. influence.

**Berlioz, Hector** (1803-69), Fr. composer; Symphonies: *Romeo and Juliet*; Cantatas: *The Damnation of Faust*; Operas: *Benvenuto Cellini*.

**Bermondsey**, met. bor., London, Eng.; S. bank Riv. Thames; pop., 111,500; docks; textile, chemical, and engineering works; centre of leather industry.

**Bermudas**, Brit. group of 360 isl. in the W. Atlantic, 600 m. S.E. Cape Hatteras; crown colony; Brit. naval station and health resort; area, 18 sq.m.; pop., 31,500; cap., *Hamilton*, on Main Is.; early vegetables.

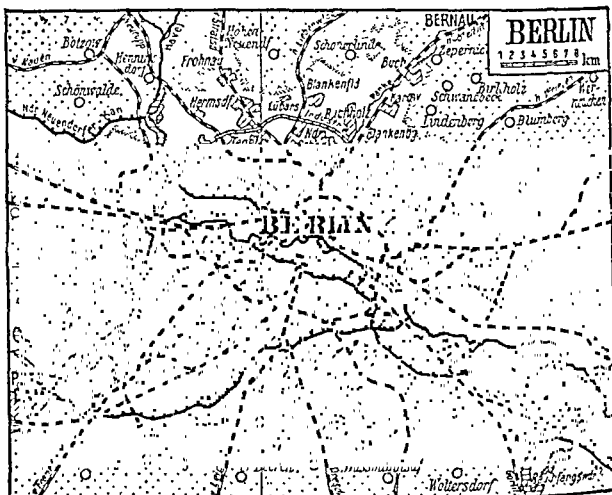
**Bern:** see BERNE.

**Bernadotte** (1764-1844), Marshal of France, elected Cr. Prince of Sweden, 1810, Kg. of Norway and Sweden (as Charles XIV), 1818-44; commndd. Army of the North (Allies) agst. Napoleon, 1813.

**Bernard, St.** (1090-1153), Abbot of Clairvaux; Cistercian monk; mystic; inspired 2nd Crusade, 1146; commem. Aug. 20.



Berlioz



**Bernardines:** see CISTERCIANS.

**Berne, Bern,** 1) Canton, Switzerland; area, 2,659 sq.m.; pop., 698,000; cattle-breeding in Emmenthal Vall.; watch-making, textiles. 2) Cap. of Swiss Confederation, and of prov., on Riv. Aare; fdd. 1191; pop., 113,000; offices of Internat. Postal Union; univ.; free city of Empire, 1218; joined Swiss Confed., 1358; Zwingli's Reformation, 1528. **B. Convention,** copyright agreement (1886), by which literary works enjoy the same protection in all signatory countries as in their own.

**Berner Klause,** narrow pass in Adige Vall., N.W. of Verona, strongly fortified.

**Berners,** Gerald Hugh Tyrwhitt-Wilson, 9th Bn. Berners (1883- ), Eng. composer; 1st works app. under name Gerald Tyrwhitt; opera *Le Carrosse du Saint-Sacrement*, ballet *The Triumph of Neptune* (1924), orchest. music and songs.

**Bernese Oberland,** mtn. dist., Switzerland, betw. Rivs. Reuss and Rhone; highest pks., *Finsteraarhorn* (14,000 ft.), *Jungfrau* (13,680 ft.).

**Bernhardi,** Friedrich von (1849-1930), Ger. soldier and writer: *Germany and the Next War*, 1912.

**Bernhardt,** Sarah (1845-1923), Fr. actress (Rosine Bernard), recognized as the greatest of her time.

**Bernicia,** the northern of the two kgdms. united in 605 and again in 634 into the old Eng. kgd. of Northumbria; extended from Tyne to Forth, and W. into Wales; cap., *Bamburgh*. The bpric. of B., formed 678, was united with that of Lindisfarne c. 821.

**Bernina,** Piz, highest pt. (13,290 ft.) of Bernese Alps on Swiss-Ital. frontier betw. the Inn and Adda; see RHAETIAN ALPS. **B. Pass,** 7,650 ft., with mtn. rly. from St. Moritz (Engadine) to Tirano (Valtellina).

**Bernini,** Lorenzo (1598-1680), It. archit. and sculptor; completed colonnade of St. Peter's, Rome.

**Bernstorff,** Joh. Heinrich, Ct. von (1862- ), Ger. diplomat; ambassador to U.S.A. 1908-17; Turkey, 1917-18; chairman Ger. League of Nations Union.

**Berry,** Charles Ferdinand, Duc de (1778-1820), younger s. of Charles X of France; m. Caroline Louise of Naples (1798-1870), who led a rising in the Vendée in favour of her s., Ct. de Chambord, 1832; Duc de Berry assassinated by Louvet.

**Berry, Berri,** dist. of centr. Fr. watered by Riv. Loire; chf. tn., Bourges.

**Berry,** pulpy fruit with immersed seeds, such as gooseberry; *aggregate* berries consist of collec. of drupes united in one fruit e.g. blackberry.

**Bersaglieri,** formerly Ital. riflemen, now cyclist division of the Ital. army.

**Berserker** (bear-like), in Norse sagas, man

who had the strength of twelve when fury seized him.

**Berthelot,** Marcellin (1827-1907), Fr. politician and chemist; member of Acad. of Medicine, 1863, and Acad. of Science, 1873; Minister of Education, 1886-87, Foreign Affairs, 1895-96. *Chimie organique fondée sur la synthèse*, etc.

**Berthier,** Alex. (1753-1815), served in U.S. under LaFayette, 1778-82; chf. of staff to Bonaparte, 1796; Marshal of Fr., 1804; Pr. of Wagram, 1809; seceded to Louis XVIII on Restoration, 1814.

**Berthollet,** Claude, Ct. de (1748-1822), Fr. chemist.

**Bertillon,** Alphonse (1853-1914), Fr. anthropologist; devised system of identification of criminals by means of anthropometry, i.e., minute scientific measurement of various parts of the human body.

**Berwick,** Jas. FitzJames, D. of (1670-1734), natural son of James II of Eng., by Arabella Churchill. Flew from Eng. in the revolution, 1688; fought in battle of the Boyne (q.v.); served in Fr. Army in Flanders and Spain; became Fr. marshal, 1706, and peer of France. Killed at Philippsburg.

**Berwickshire,** maritime border co., S.E. Scot.; area, 460 sq.m., pop., 26,600; chief riv., Tweed (S. boundary); agric. and pasture, fisheries, woollens; co. tn., *Duns*.

**Berwick-upon-Tweed,** border tn., Northumb., Eng., at mouth Riv. Tweed (N. bank); pop., 12,300; famous in border warfare; tn. walls, bridges.

**Beryl,** a group of precious stones. crystallized silicates of beryllium and aluminium; includes emerald, aquamarine, and chrysoberyl.

**Beryllium,** (chem.) white metallic element; symbol Be; at. wt. 9.02; sp. gr. 1.85; beryl and emerald are B. silicates.

**Berzelius,** John Jacob. Bn. von (1779-1848), Swed. chem.; disc. many elements and at. wts.; fddd. modern chem. analysis (q.v.).

**Besançon,** cap. dépt. Doubs, E. France; on Riv. Doubs; pop., 59,000; manuf. watches, artif. silks, hosiery, leather; Ger. from 1032; free city of Empire from 1307; Fr. since 1079.

**Besant,** Annie (1847-1933), Eng. theosophist, joined Mme. Blavatsky, 1889, and became a leader of Indian Nationalism; pres. Ind. Home Rule League, 1916, and of Ind. Nat. Congress, 1917; auth. of agnostic and theosophical works; *Autobiog.*, 1893. **B., Sir Walter** (1836-1901), Eng. novelist: *The Golden Butterfly* (collab. with Jas. Rice); *All Sorts and Conditions of Men*, 1882, led to



Mrs. Annie Besant

establishment of People's Palace (*q.v.*) in E. End of London.

**Besier**, Rudolf (1878- ), Brit. playwright: *The Virgin Goddess*, 1906; *Lady Patricia*, 1911; *The Barretts of Wimpole Street*, 1930.

**Beskid**, outer ring of the Carpathians (*q.v.*) in E. Czechoslovakia; highest peak, *Babiagora* (5,680 ft.); **B. Pass**, in the Carpathians, 4,380 ft.

**B. ès L.**, abbr. *Bachelier ès Lettres* (Fr.), Bachelor of Letters.

**Besnard**, Paul Albert (1849- ), Fr. painter; *Prix de Rome*, 1874; *Woman Warming Herself*, at Luxembourg, Paris.

**Bessarabia**, prov., Rumania, betw. rivs. Pruth, Dniester, and Lower Danube; 17,160 sq.m.; pop., 2,957,000; surface mainly flat; spurs of Carpathians in N.; very fertile; agric. and market gardening; cap., Chisinau. Inhab. by Scythians in antiquity; successively Roman, Gothic, Turkish, and (1812) Russian. After Russo-Turk. War of 1878 partly, since 1920 entirely, Rumanian.

**Bessel**, Friedr. Wilhelm (1784-1846), Ger. astronomer; determined extent of Earth's ecliptic (*q.v.*); first to measure accurately distance of a star.

**Bessemer**, Sir Henry (1813-98), Eng. enginr.; invented **B. converter** (1855), a

vessel 12 to 15 ft. high, made of sheet iron and lined with quartz-sand mixed with clay; filled with molten pig-iron cntg. as little phosphorus as poss. By forcing air thr. the molten mass (*see ill. a*), impurities in iron (sulphur, manganese, carbon and silicon) are oxidised and separated in the slag, nearly pure iron remaining. Suitable quantities of high carbon iron, ferro-silicon, etc., are added to give steel of desired composition; metal is poured out into moulds.

**Bestiary**, popular, medieval account of real or fabled creatures, with suitable *morals* from their characteristics.

**Beta**, β, 2nd letter of Gr. alph. **B. naphthol**, (chem.)  $C_{10}H_7OH$ , important substance derived from naphthalene (*q.v.*) and forming many derivatives, wh. are used as dyes. **B. rays**, negative electrons (*q.v.*) thrown off at very great velocity by radio-active substances (*q.v.*).

**Betelgeuse**, 1st. magn., bright, red, slightly variable star, α in constell. Orion (*q.v.*).

**Betel nut**, term applied to the Areca nut, fruit of the *Areca palm*; when wrapped up in leaves of E. Indian shrub, the B. is chewed

by the natives with addition of lime-juice; used as an astringent and, in veterinary med., as a vermifuge. *See* ARECA.

**Bete noire** (Fr.), black beast; person or thing to which a person takes a rooted and unvarying objection.

**Betham-Edwards**, Matilda Barbara (1836-1919), Engl. novelist and authr.: *White House by the Sea*; *France of To-Day*.

**Bethany**, (N.T.) vill., c. 2 m. E. of Jerusalem; scene of Raising of Lazarus (John xii).

**Beth-Din**, (Hebr., house of judgement) Jew. eccles. court-house for ritual and legal matters; acts also as a Jew. court of arbitration.

**Bethel**, (O.T.) tn., c. 11 m. N. of Jerusalem; named by Jacob (Gen. xxviii). Name sometimes applied to Nonconformist chapels.

**Bethesda**, (N.T.) pool in Jerusalem, scene of one of Christ's miracles.

**Beth Hamidrash**, (Hebr., house of study) place for study of Talmudic and Heb. literature.

**Bethlehem**, 1) (N.T.) birthplace of Jesus, 5 m. S.S.W. of Jerusalem; Ch. of the Nativity built over grotto of Nativity; prob. 1st Christian church. 2) Tn., Pennsylvania, U.S.A., on Lehigh R.; pop., 57,900; steel works. **B. Royal Hospital**, formerly in Lambeth, London, for lunatics, popularly known as "Bedlam"; fndd. 1247 in Bishopsgate; Lambeth building from 1815; since 1931 at Monk's Orchard, nr. Croydon.

**Bethlehemites**, 1) order of monks said to have had monastery at Cambridge in 1257. 2) Military order founded by Pius II (1459) in opposition to Turks. 3) Order founded c. 1600 in Guatemala, including school, hospital, convent; placed under rule of St. Augustine by Innocent XI, 1687. 4) *The Hussites* (*q.v.*).

**Bethlen**, Stephen, Count (1874- ), Hung. statesman; one of the leaders of a counter-revolutionary movement (1918); member of Hungarian peace delegation to Paris (1919); prime minister, 1921-31.

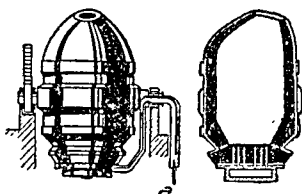
**Bethmann-Hollweg**, Theobald von (1856-1921), Ger. statesman; Imperial Chancellor, 1909-17: *Reflections on the World War*, 1919.

**Bethnal Green**, E. End met. bor., London, Eng.; pop., 108,200; museum; Victoria Park.

**Bethphage**, (N.T.) place on Mt. of Olives, betw. Jericho and Jerusalem, near Bethany.

**Bethsaida**, fishing vill. on L. Galilee (*q.v.*); residence of Apostles Peter, Andrew, and Philip.

**Béthune**, tn., dépt. Pas de Calais, France; pop., 19,300; advanced base in World War, until its partial destruction, after temporary Ger. advance, in April, 1918.



Bessemer Converter

**Betony**, (bot.) *Stachys betonica*, perennial herb growing to height of abt. 30 in., having purple flowers; occurs in Europe and N. Africa; formerly used as remedy for coughs.

**Betterton**, Thos. (c. 1635-1710), Eng. actor and dramatist; friend of Dryden.

**Betting**, staking money on the result of a horse-race, etc., "Place-betting" backing horse, etc., to be "placed" among the first 3. See also BOOKMAKER; TOTALIZATOR.

**Bettws-y-Coed**, urb. dist., cent. Carnarvonsh., N. Wales; tourist centre; pop., 1,000.

**Betty**, Wm. Hy. West (1791-1874), Eng. actor, known during boyhood as the "Young Roscius"; first appearance in London, 1804; not so successful after reaching manhood.

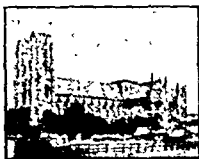
**Beuthen**, tn. Upper Silesia, Prussia; pop., 97,300; centre of mining and foundry industry.

**Bevel**, 1) in cabinet-making, angle at which two edges meet; a tool for measuring angles. 2) Appliance used in stereotyping.

**Beveland**, two Dut. isls. (N. and S. *Beveland*, c. 120 sq.m.), forming part of prov. of Zeeland (q.v.), almost surrounded by W. and E. Scheldt.

**Beverley**, munic. bor. and mkt. tn., E. Riding, Yorks, Eng.; Beverley Minster (E.E., Decorated, and Perp.); St. Mary's Ch. (Decorated and Perp.); pop., 14,000.

**Beverley Hills**, tn., Cal., U.S.A.; pop., 17,450; residential town-planned city adjoining Los Angeles.



Beverley Minster

**Bewick**, Thomas (1753-1828), Eng. wood engraver; wrote and illustr. *The History of British Birds*, 1797.

**Bexhill**, mun. bor. and seaside resort, E. Sussex, Eng., 5 m. W. of Hastings; pop., 21,200.

**Bexley**, urb. dist., Kent, Eng., 5 m. S.E. of Woolwich; residential; pop., 33,000.

**Bey** (also **Beg**), 1) Turk. title of Governor of prov. or district, but used more gen. to denote gentle birth. 2) Head of reigning fam. of Tunis.

**Beza**, Théodore de (1519-1605), leading French Prot. reformer; head of Reformed Church in Geneva after Calvin's death, 1564.

**Bezant**, 1) gold coin current in E. Rom. Empire from 4th-15th cent., and in Eng. from 13th-14th cent. 2) (Heraldry) Representn. of coin by gold roundel or circle.

**Bezique**, card-game for 2 players with 2 "piquet" packs (q.v.).

**Bhagavadgita**, (Sansk., "Song of the Sublime") Indian religio-philos. poem, 2nd cent. B.C.; part of the Mahabharata epic.

**Bhang**, **Bang**, dried leaves and small stalks of Indian hemp, wh. have an intoxi-

cating effect when smoked or eaten. See HASHISH; HEMP.

**Bharal**, species of wild sheep (q.v.) of Tibet; smooth, brownish-grey coat, long tail.

**Bhil**, aboriginal tribe, Rajputana and Centr. India; dark, small stature.

**Bhopal**, 1) Mohammedan native State, Centr. India, ruled by hereditary Begum (princess) until 1926; area, 6,900 sq.m.; pop., 690,000. 2) Cap. of State; pop., 45,100.

**B. HP.**, abbr., brake horse-power.

**Bhutan**, independent state, E. Himalayas, betw. Assam and Tibet, under Brit. protection; surface mountainous (peaks over 24,000 ft.); extensive forests in cent. dist. (c. 800 ft.); elephants, leopards, rhinoceros, bears; produces wheat, barley, maize, rice; exports ponies; inhabts., Buddhists; cap., Punakha.

**Bi**, (chem.) symbol for bismuth (q.v.).

**Bi-**, Lat. prefix, indicating two, twice, or double, as *biped*, *bi-monthly*, etc.

**Biafra**, **Bight of**, large bay on W. coast of Africa, extending from Cape Lopez to mouth of Riv. Niger.

**Bialystok**, prov. and tn., Poland; area of prov., 12,520 sq.m.; pop., 1,301,860; tn.: pop., 76,795; cloth and leather industry.

**Bianchi**, political faction which arose in Florence, c. 1300, through splitting of Guelph party (q.v.) into Bianchi (Whites) and Neri (Blacks). The poet Dante was a member of the Bianchi.

**Biarritz**, seaside resort on Bay of Biscay, Basses Pyrénées, Fr.; pop., 20,800; mild climate; fishing.

**Bibelot** (Fr.), small work of art; trinket.

**Biberon** (Fr.), medieval drinking-vessel.

**Bible** (Gr.: book), Holy Scriptures, regarded by Christian (and, as regards Old Test., by Jewish) Ch. as revelation of will of God to men. Consists of *Old Testament*, divd. by Jews into: 1) Law; 2) Prophets; 3) Writings; by Christians into: 1) Pentateuch (q.v.); 2) Historical Bks., from Joshua to Esther; 3) Poetical or Devotional Bks., from Job to Song of Solomon; 4) Prophetic Bks., from Isaiah to Malachi. (Last sect. sub-div. into a) major prophets, Isaiah, Jeremiah, Ezekiel, Daniel; b) 12 minor prophets and *New Testament* (New Covenant): 1) Historical Bks., 4 Gospels, Acts of Apostles; 2) Pauline Epistles, doctrinal, pastoral, special; General Epistles; 3) apocalyptic, Rev. of St. John. **B. societies**, associations for dissemination of the Scriptures, such as the Soc. for Promotion of Christian Knowledge (London, 1709); Canstein Bible Inst. (Halle, Ger., 1710); British and Foreign Bible Soc. (1804), etc. **B., translations**, *Septuagint* (q.v.), Greek version of Hebrew O.T. The *Vulgate* (q.v.) or Hieronymian version, by Jerome, A.D. 374. The *Peshito*, Syriac version, 5th cent., based on Greek text. Luther's Ger. trans., 1522,



consulted by Tyndale in Eng. trans. of N.T. from orig. Greek in 1525; complete Eng. B. printed by Miles Coverdale, 1535. *Authorized Version*, 1611. *Reims and Douai Version* (R.C.), 1582-1610. *Revised Version*, N.T. 1881, O.T. 1884; Apoc. 1895. **B. Christians:** see BRYANITES; METHODISTS.

**Biblia Pauperum** (Lat.: poor man's Bible), picture book of scriptural subjects popular before the Reformation. See BLOCK BOOK.

**Bibliography** (Greek), knowledge of books, recordg. of printed works and their authors. **Bibliomaniac**, bookworm (fig.).

**Bibliophile**, collector of rare and beautifully produced books. **Bibliophily**, love of books for their own sake.

**Bibliothèque Nationale**, one of the largest libraries in the world, situated in Paris on site of Cardinal Mazarin's palace; collection of books begun as early as temp. Louis XII, placed in Mazarin's palace, 1724; contains over 3,000,000 printed books and great number of MSS. Collections of engravings, coins, etc., added later.

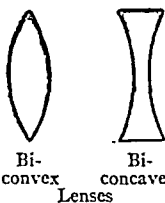
**Bicarbonate of soda:** see SODIUM BICARBONATE.

**Bicester**, mkt. tn., Oxon., Eng., 10 m. N.E. Oxford; pop., 3,000; hunting centre.

**Bichat**, Marie François Xavier (1771-1802), Fr. physiologist and anatomist; pioneer in historical study of disease; *Oeuvres chirurgicales de Desault* (1798-99); *Traité sur les Membranes* (1800); *Anatomie descriptive* (1801-3), completed by pupils.

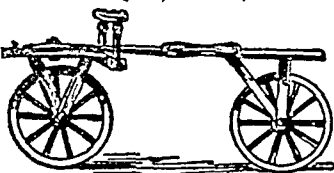
**Bichromates**, salts of chromic acid. **Bichromated gelatine**, gel. combined with potassium B.; becomes insoluble on exposure to light; used in photography. **Bichromate battery**, elec. battery, cells of which consist of zinc and carbon plates dipping into chromic acid or mixture of potassium bichromate and sulphuric acid. Very constant.

**Biconcave, Biconvex**, app. to lenses 1) concave and 2) convex on both sides.



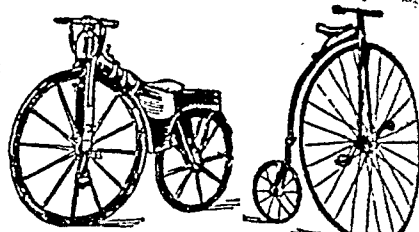
**Bicuspid:** see TEETH.

**Bicycle**, two-wheeled vehicle propelled by means of pedals worked by rider; early types had front much larger than back wheel; modern B. has wheels equal, usu. 24" to 28" diam., with wire spokes, usu. 32 to front and 40 to rear wheel; power transmitted from pedals to rear hub by chain; pneumatic tyres; back

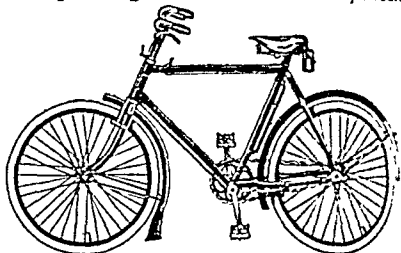


Velocipede: wooden forerunner of bicycle, 1817

wheel can usu. move independently of chain by ball-bearing free wheel; back-pedal.

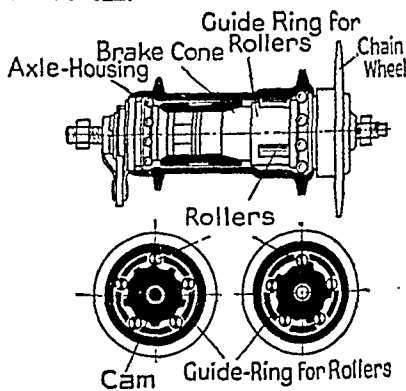


brake works by pressing backwards on pedals and expanding brake drum in hub; saddle.



Modern Bicycle

shaped seat of leather or rubber, mounted on springs. For mechanically propelled B., see MOTOR CYCLE.



**Bidasoa**, small riv., W. Pyrenees, N. Spain; flows into Bay of Biscay on Franco-Span. frontier.

**Bidding prayer**, form of Christian prayer in which people are "bidden" to pray for certain persons, esp. before sermon.

**Bideford**, seapt. tn., N. Devon., Eng., on Riv. Torridge; manuf. ropes, leather; shipb.; pop., 8,800.

**Bidpai**, or *Pilpay*, supposed auth. (Brahman of 3rd cent. A.D.) of the *Fables of B.* derived from a Sanskrit original (of wh. only the PANCHATANTRA survives) tr. into Pahlavi and into Syriac (as *Kalilah and Dimnah*) in 6th century.

**Biel:** see BIENNE.

**Bielefeld**, tn., Westphalia, Prussia; pop., 86,100; hardware, silk, linen, machinery.

**Bienne**, **Biel**, tn., Berne, Switzerland, at N.E. end **L. Bienne** or **Bielsee** (16 sq.m.), N.E. of L. Neuchâtel; museum (objects from lake dwellings); watch-making; pop., 37,700.

**Bierce**, Ambrose (1842-1914), Amer. author; fought in Civil War; *Tales of Soldiers and Civilians*, 1891, publishd. in Eng. as *In the Midst of Life*, 1892; collected works published, 1909-12.

**Bifilar**, having 2 threads. **B. suspension**, having 2 parallel wires or fibres. **B.** winding of coil, in elec. eng., non-inductive winding.

**Bigamy**, offence of one who, being already married, goes through marriage ceremony with another.

**Big Black River**, left trib. of White Riv., Arkansas, U.S.A., 400 miles. **B.-game**, large animals (e.g., lion, buffalo, etc.) shot or hunted for sport. **B. Hole Battle Field**, nat. monument (1910) in Montana, U.S.A.; scene of battles with Indians. **B. Horn Mountains**, Wyoming, U.S.A.; branch of *Rocky Mts.*; Cloud Peak, 13,160 feet. **B. H. River**, trib. of Yellowstone Riv., Wyoming, U.S.A.; 500 miles. **B. Tree National Park:** see SEQUOIA.

**Biggs**, Hermann M. (1859-1923), Amer. physician; fndd. 1st municipal bacteriol. labs. in world, N. York, 1892.

**Bighorn**, wild sheep of Rocky Mtns., closely related to Argali (*q.v.*) of Centr. Asia.

**Bight**, geogr. term for a bend or curve in a coast-line; wide bay, e.g., Great Australian Bight.

**Bignonia**, (bot.) family of trees, found in very hot countries, and able to resist long drought, incldg. *Desert willow* of Texas.

**Bigod** (family): see NORFOLK, EARLS OF.

**Bihar**, Hungar. co. betw. riv. Tisa and Ruman. frontier; pop., 161,060; **B. Mtns.**, chain, W. Transylvania (to 6,060 ft.); rich in ores.

**Bihar and Orissa**, governorship, Brit. India, bounded on E. by Bengal (from which it was separated in 1912), on N. by Nepal, on W. by United and Centr. Provinces, and on S. and S.W. by Madras and Bay of Bengal; comprises Bihar, Orissa, Chota Nagpur; drained by rivs. Ganges and Mahanadi; area, 83,200 sq.m. (excluding native States, with 28,000 sq.m.); pop., 38 million; chief product rice, with centre at *Patna*, the cap.; grows also wheat, barley, indigo, sugar-cane, tea, oil-seeds, tobacco; coal, iron, mica, saltpetre; manuf. silk, cottons, carpets, brasswork, filigree work.

**Bijsk**, tn., in Altai, at junction of rivs. Ob and Bija; pop., 45,560; centre of Russo-Mongolian trade: butter, meat, undressed leather.

**Bikanir**, **Bikaner**, (r) Ind. state, Rajputana, Centr. India; 23,300 sq.m.; pop., 660,000; surface mainly waterless desert (partly irrigated); camels, horses, sheep. 2) Cap. of state, pop., 70,000; carpets, blankets, leather goods. **B. Camel Corps** served in China (1900), Somaliland (1903-04), and Egypt and Palestine in World War.

**Bilbao**, **Bilboa**, cap. and seapt. prov. of Vizcaya, Spain; pop., 153,600; centre of mining dist.; iron, copper.

**Bilberry**, whortleberry, huckleberry, *Vaccinium myrtillus*, allied to cranberry; pink flowers, black edible berries.

**Bildad**, the Shuhite (O.T.), one of Job's comforters.

**Bile**, secretion of liver, secreted by gall-bladder, and assisting process of digestion.

**Bilge** (naut.), broadest part of ship's bottom; lowest interior part, acting as a sump; also the foul water drained therefrom.

**Bilharziosis**, disease, princ. symptom of wh. is haematuria (*q.v.*); caused by entrance into the body of a parasitic worm after drinking or bathing in infected water. Common in Egypt and trop. Africa. So-called from T. Bilharz, who first described the disease, 1852.

**Billiouness**, condition caused by derangement of function of bile duct. See JAUNDICE.

**Bill**, draft of an Act of Parl. reqd. to be passed by both Houses, after being (nominally) "read" thrice in each. 1st reading is formal; 2nd reading is a debate on the principles of the bill, foll. by Committee Stage, when bill is examd. line by line and amended in detail. It is then "reported" by the Ctee. to whole House and "read" 3rd time.

**B.-broker**, (finan.) dealer who buys Bills of Exchange from traders and sells them to banks, his profit arising from fact that banks buy at discount one-eighth or one-sixteenth below market disc. rate; he takes B. of exch. from traders who req. cash and supplies banks with Bs. falling due on dates convenient to them. Funds of B.B. consist of: a) capital; b) money borrowed from banks at call or short notice (*day-to-day* loans or *overnight money* [*q.v.*]); c) deposits recd. from public; some B.B.s. are large jt. stk. cos., often called *Discount Houses*; see DISCOUNT MARKET. **B. in a set**, (finan.) B. of exch., when made out in duplicate and/or triplicate; origl. is *First of Exchange*; duplicate, *Second of Exchange*, and is sent by separate mail in case of loss of 1st; triplicate, if any, is usu. retained by drawer; whichever copy is *accepted* by drawee becomes binding. **B. of exchange**, written order, signed by *drawer* and addressed to *drawee*, to pay named sum of money to specified pers. (or bearer) at a cert. time (Act of 1882). Widely used in trade; seller of goods draws a B. of E. on purchaser; time

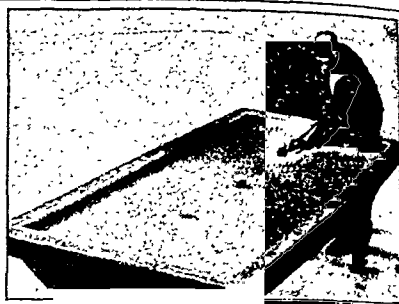
specif. for pymt. (*maturity* of B.) may be *on demand*; *at sight*, i.e., when seen and accepted by drawee; a given period (usu. 30, 60, or 90 dys.) *after sight*; a given per. *after date*, i.e., after date on wh. B. is drawn (usu. 90 days); docmnt. states amt. of B., date drawn, names of drawer and drawee, period of maturity, to whom pymt. is to be made, and sig. of drawer; B. must be *accepted* by drawee on its receipt, i.e., drawee must ackn. obligation to pay by writing and signing word "accepted" across B.; after acceptance, if names of drawer and drawee are good, B. may be *discounted*, i.e., drawer can obt. cash for it immed. by selling at a disct. (virtually, int. on amt. until maturity of B.); *see* DISCOUNT MARKET; B. of E. econom. import. medium of credit and pymts. in internat. trade, facilitating balance of inward and outward pymts. betw. all trading nations. *See also* ACCOMMODATION B.; BANK B.; HOUSE B.; TRADE B. **B. of lading**, (commerc.) document comprising a receipt for goods sgnd. by shipowner or authorised representative specifying goods shipped on order and freight rate, and undertaking to deliver goods in same condition as shipped. **B. of sale**, docmnt. held by creditor as security for loan, authorizing sale of specifd. goods if debt is not repaid; prevents frauds by secret bills of sale, etc.; in Eng., B. of S. must be *filed* within 21 days at Ct. of King's Bench.

**Billbergia**, tropical Amer. plant, with spikes of handsome flowers.

**Billet-doux** (Fr.), love-letter.

**Billeting**, housing of soldiers with inhabs. during manoeuvres or war.

**Billiards**, game of skill played on a cloth-covered table with 6 pockets and resilient



French Billiards

**Billings**, Josh, pseud. of Hy. Wheeler Shaw (1818-85), Amer. humorist: *Essa on the Much bi Josh Billings*, 1860; *Trump Kards*, 1877; *Old Farmers' Allminax*, 1902.

**Billingsgate**, London's fish-mkt. and oldest mkt. (17th cent.); (fig.) foul or vulgar abuse, from legend that such language prevails there.

**Billion**, a million millions; in France and U.S.A. a thousand millions; *see* MILLIARD.

**Billiton**, isl. of Dut. E. Indies, betw. Banka and Borneo; area, 1,872 sq.m.; pop., 71,275; cap. *Tanjungpandan*; pop., 12,090; tin mines, copra, trepang, coconuts, edible birds'-nests.

**Billon**, (metallurgy) alloy of gold, or silver, with copper, latter in larger proportion; generally: coins struck from such an alloy.

**Billroth**, Theodor (1829-94), Viennese surgeon, establ. mod. technique in abdominal operations. **B.'s cambric**, waterproof cover for surgical dressings.

**Biloxi**, tn., Miss., U.S.A.; pop., 14,850; seaside resort; home of Jefferson Davis.

**Bilston**, urb. dist., Staffs., Eng.; 2 m. E. Wolverhampton; ironworks; pop., 31,200.

**Bimbashi**, officer of the Egy. Army; = major.

**Binmetallism**, currency in wh. 2 metals (gold and silver) are standard; involves a fixed relation betw. the two, their natural relation tending to vary as result of their supply and demand.

**Binary**, composed of 2 parts.

**Bindweed**, (bot.) a creeping plant of the *Convolvulus* family, common in Europe, N. Africa, and Asia; heart-shaped leaves; white flower. **Sea-b.**, found on seashores, forms sand-binder.

**Binet**, Alfred (1857-1911), Fr. psychologist; conducted experiments in measurement of intelligence, 1905-08, leading to *B.-Simon Tests*.

**Bingen**, tn., Rhein-Hessen, Ger.; chf. tn. of dist. on rivs. Rhine and Nahe; pop., 9,200; wines; anc. Rom. castellum; famous tourist centre; "Mouse Tower," ("Bp. Hat-to's Tower"), old toll-tower on island in the Rhine.



Billiards

padded sides (cushions); 3 ivory or compo. balls (red, white, and "spot"), all except red being struck with a cue, the object being to pocket them or cannon (*q.v.*) one agst. the other. Fr. and Amer. B. tables have no pockets, the game in this case being one of cannons only.

**Billingham**, urb. dist., co. Durham, N.E. Stockton-on-Tees; pop., 18,000.

**Binnacle**, box or case containing ship's compass and a light to illuminate it.

**Binoculars**, pair of telescopes for hand use, magnifying up to 12 times. *See also* PRISMATIC BINOCULAR.

**Binomial**, math. expression for a term of two parts, connected by + or - sign, and raised to any power. **B. theorem**, formula for transforming algebraic expressions, e.g.,  $(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$ .

**Binturong**, small arboreal carnivore allied to the civet, with long, bushy, prehensile tail; nocturnal; native of Asia.

**Binyon**, Laurence (1869- ), Eng. poet; authority on oriental prints and drawings; blank verse drama *Boadicea*, 1925; Chas. Eliot Norton Prof. of Poetry, Harvard, 1933.

**Biochemistry**, branch of physiol. dealing with chemical constitution of bodies of living animals and plants.

**Biogenetic law**, theory formulated by E. Haeckel (q.v.) that the organic development of the individual is a recapitulation of past history of his race.

**Bion**, Gr. bucolic poet, fl. 2nd cent. B.C., possibly lived in Sicily; *Lament for Adonis*.

**Bioscope**, apparatus for showing moving pictures seen thr. an eye-piece; invented by Edison; forerunner of cinematograph.

**Biotite**, mineral, one of the forms of mica (q.v.); a magnesium-aluminium silicate.

**Biplane**, aircraft with two super-imposed sets of planes.

**Biquadratic**, the 4th power of a number.

**Birch**, (1) any tree of the genus *Betulus*; common varieties are **silver b.**, **sweet b.**, and **white b.** Valuable timber trees. White B. yields an oil (birch tar oil) used as an ointment in skin affections and also to perfume leather (Russian leather).

**Bird**, feathered, oviparous biped, member of the class *Aves*.

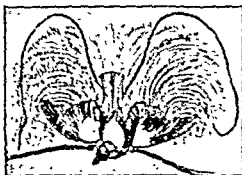
**B. cherry**, *Prunus padus*, variety of cherry tree with small black fruit.

**Amer. b. cherry**, *P. pennsylvanica*. **B. of Paradise**, bird of family *Paradisidae*, closely allied to crows; fnd. in Australia and Papua; forest-

dwellers with gaudy plumage and fantastic mating displays. **B. of passage**, popular expression for any migrating bird, e.g., swallow, wild-duck, barnacle-geese. **B. of prey**, carnivorous or flesh-feeding bird with hooked beak and powerful claws; preys upon mammals, birds, and fish; ejects hair, bones, etc. (*castings*), from crop.



Birch



Bird of Paradise

Incl. eagles; vultures, hawks, and owls.

**B. sanctuary**, land reserved for preservation of birds, where they may breed and live free from molestation; many State-aided sanctuaries exist in Brit. Emp., U.S.A., and some European countries; the Isl. of Capri was declared a B.S. by Mussolini, and slaughter of birds prohibited there, 1932. **B. spider**, a large, hairy spider of tropical countries; lives in holes in the ground or in hollow trees; preys upon insects, small birds, lizards, etc.



Bird Spider

**Birdlime**, sticky substance, obtnd. from holly trees, used for bird-catching.

**Bird's-eye**, term used in textile and tobacco trades to denote characteristic pattern with small dots in centre of rings or ovals.

**B.'s-foot**, (bot.) *Ornithopus perpusillus*, member of pea and bean tribe, yellow flowers veined with red; pods, as they ripen, curve inwards and are supposed to resemble a bird's foot. **B.'s-nest**, *Neottia nidus-avis*, rare woodland orchid, grows about 1 ft. high; leafless, with brown scales.

**Birdwood**, Sir Wm. R. (1865- ), Brit. F.-M.; G.O.C. Austral. and N. Zealand Army Corps (Anzacs), 1914; carried out withdrawal from Gallipoli, 1915-16; commd. Austral. forces in France, 1918; created baronet; C.-in-C. in India, 1925.

**Biretta**, flat cap worn in Mid. Ages; now cap of peculiar shape worn by R.C. and some C. of E. clergy: cardinals, red; bps., purple; priests, black.

**Birkbeck**, Geo. (1776-1841), Brit. physician and philanthropist; co-founder of Mechanics' Institute, 1823, later called

**B. College**, a constituent college of London Univ., with premises in Bream's Buildings, Chancery Lane, London. The **B. Building Society** was fndd. 1851, received deposits from the public, and formed, as an off-shoot, the **B. Bank**, which suspended payment in 1911.

**Birkeland**, Christian (1867-1917), Norw. physicist; disc., with Eyde, method of extracting nitric acid from atmosphere.

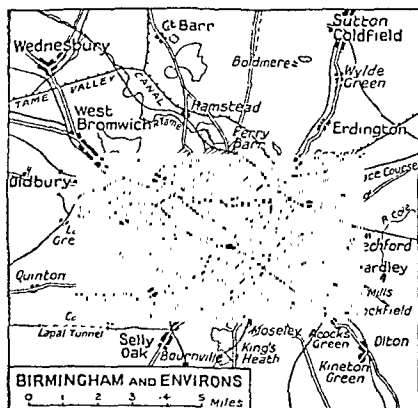
**Birkenhead**, Fredk. Edwin Smith, 1st E. of (1872-1930), Brit. lawyer and politic.; Ld. Chanc. 1918, drafted Law of Property Act, 1922, introducing revolutionary reforms; Sec. of State for India, 1924-28.

**Birkenhead**, co. bor. and seapt., Cheshire, Eng., on W. bank of Riv. Mersey, opp. Liverpool; ferry; tunnels; pop., 147,900; shipb., docks, ironworks, cattle trade.



Lord Birkenhead

**Birmingham**, 1) city, Warwicks., Eng. (suburbs extend to Staffs. and Worcs.); pop.,



1,002,400; univ.; largest manuf. tn. in Eng.; metal-working, engineering of all kinds, nails, screws, jewellery, etc., and centre important indus. dist. 2) Tn., Alabama, U.S.A.; pop., 259,700; coal, iron, and many other minerals; chemicals, cotton, lumber. **B. Art Gallery**, (Eng.), conts. paintings (inclgd. David Cox, Pre-Raphaelites, Burne-Jones, etc.), sculpture, and a museum.

**Birrell**, Augustine (1850- ), Brit. essayist and critic; Pres. Bd. of Educ., 1905-07; Chf. Sec. for Ireland, 1907-16. *Obiter Dicta*, 1884.

**Birth-control**, prevention of conception, either by mechanically preventing access of spermatozoa to uterus, or by chemical destruction of spermatozoa before impregnation. **B.-c. clinic**, estabmt. where instruction in methods of B.-C. is imparted.

**Birthmark**, congenital mark on skin, usu. due to enlargement of blood-vessels; naevus.

**Birthwort**, *Aristolochia clematis*, wild plant; large heart-shaped leaves, yellow flowers; used in folk med. for rheumatism. Virginian snake-root or American birthwort (*A. serpentaria*) is held to be an antidote for snake-bite.

**Bis** (Lat.), twice; also Fr. exclamation of applause, equiv. to Eng. use of *encore*. *Bis dat qui cito dat* (Lat.), he gives twice who gives quickly.

**Biscay** 1), see VIZCAYA. 2) **Bay of B.**, inlet of Atlantic betw. Fr. (Ushant) and Spain (Cape Ortegal) crossed by steamers betw. N. Europe and Mediterranean;

notorious for storms, due to its position and varying currents.

**Bisceglie**, seapt., S. Italy, on Adriatic pop., 34,500; episc. see; cathedral.

**Biscuit**, 1) light, crisp cake. 2) Twice baked, unglazed porcelain.

**Bise**, cold N.E. wind from snow-covered mtns. in Switzerland.

**Biserta**, princ. commerc. port and Fr. naval depot in Tunisia, N. Africa; pop., 21,000.

**Bisexual**, having both male and female sexual organs; as in hermaphrodite plants and lower animals.

**Bishop**, Sir Henry Rowley (1786-1853), Eng. composer and conductor; operas and other stage works; cond. at Covent Garden 1810-30. Air of *Home, Sweet Home* introd. in *Clari*, 1823. 1st musician to be knighted, 1842.

**Bishop**, (Gr., overseer) 1) officer of Christian Ch. having certain spiritual functions (e.g., confirmation, conferring of Holy Orders) which only he may perform, and having general responsibility for all eccles. activities in his own *diocese*. 2) Chessman moving and taking diagonally in any direction.

**Bishop Auckland**, mkt. tn. co. Durham, 10 m. S.W. Durham; pop., 13,000; palace of bps. of Durham; collieries.

**Bishopric**, office of a bp.; area over wh. his jurisdiction extends.

**Bishopsgate**, 1) ward of City of London. 2) London thoroughfare running N. from Cornhill to Shoreditch; orig. known as **B. St. Within** and **B. St. Without** (the city walls).

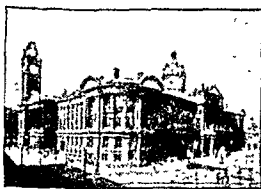
**Bishop's Stortford**, mkt. tn. in Herts., 30 m. N.N.E. of London; pop., 9,000; brewing and malting industries; Cecil Rhodes b. and educated here.

**Biskra**, tn. and oasis, S. Algeria, Africa; pop., 8,000; Fr. military post.

**Bisley**, vil. Surrey, 3½ m. N.W. Woking; pop., 1,000; rifle ranges; annual meeting of Nat. Rifle Association.

**Bismarck**, Otto, Prince von (1815-98), Pruss. statesman; chf. Min., 1862; took leading part in crushing of Austria (1866) and France (1870), and in formation of Ger. Empire, of wh. he was first Chancellor; presided at Congress of Berlin, 1878; displaced from office by Wm. II, 1890. The "Man of Blood and Iron."

**Bismarck**, cap., N. Dakota, U.S.A., on Riv. Missouri; pop., 11,100; grain centre; dairy produce, fruit, coal. **B. Archipelago**, group E. of New Guinea; New Britain (formerly *Neu Pommern*), New Ireland



By courtesy of the Town Clerk  
The Council House,  
Birmingham



Bismarck

(formerly *N. Mecklenburg*), Lavongai (formerly *N. Hannover*); area, 19,000 sq.m.; Germ. possession until World War, now adm. by Australia under mandate.

**Bismillah** (Arab.), In the name of God! Pious ejaculation uttered by Mohammedans before entering upon an enterprise.

**Bismuth**, (chem.) white metallic element with slight reddish tinge; symb. Bi; at. wt. 209; m. p. 271°C.; occurs pure or combined with oxygen (**B. ochre**) or sulphur (**B. glance**). Forms easily melted alloys (e.g., Wood's metal); the metal, as oxide, sulphate, chloride, or salicylate, is used in med. for gastric inflammation and (or by injection) in syphilis.

**B.I.S.N.C.**, abbr. Brit. India Steam Navigation Co.

**Bison**, bovine ruminant allied to the ox, in Europe the largest land-animal extant; a few only left, in Lithuania and the Caucasus, perhaps also in Mongolia; essentially forest-haunting. The Amer. bison, which it somewhat resembles, also nearly extinct; not to be confused with the buffalo or with the extinct aurochs (*q.v.*).



Bison

**Bisque**, 1) thick sauce or soup made from shellfish. 2) (Ceram.) White, unglazed porcelain, used for statuettes. 3) (Sport) Point given to another in cert. games, (croquet, golf, etc.) wh. may be taken at any stage.

**Bissextile**: see LEAP YEAR.

**Bissing**, Moritz von (1844-1917), Ger. gen., Gov.-Gen. of Belgium, 1914-17.

**Bit**, (tech.) 1) removable cutting part of a drill, carpenter's brace, plane, rock-drill, etc.; 2) copper tip of a soldering iron.

**Bithynia**, anc. dist., N.W. Asia Minor; chf. tns.: Nicaea, Nicomedia.

**Bitlis**, 1) vilayet, E. Turkey; pop., 99,830. 2) Cap. of vil., pop., 40,000; sulphur springs, cloth, vines, tragacanth, tobacco.

**Bitolj**, *Monastir*, tn., Macedonia, Jugoslavia; pop., 28,420 (Greeks, Serbs, Bulgars); 50% Mohammedan; hides, cereals, carpets, ribbons; regarded by Macedonians as destined to be cap. of an indep. Macedonia.

**Bitter carp**: see BITTERLING.

**Bitter Lakes**, Great and Little, two lakes of Suez Canal (*q.v.*).

**Bitterling**, small fresh-water fish of carp family, with a bitter flavour; provides remarkable example of symbiosis (*q.v.*) with pond mussels.

**Bittern**, medium-sized, brownish-tinted bird allied to herons; inhabiting fen-country where it builds its nest in the midst of dense reed-beds. Its plumage and its attitude when alarmed harmonise so well with its surroundings that it is almost impossible to detect.

**Bitter Root Range**, Montana, U.S.A.; part of Rocky Mtn. system.

**Bitters**, liquors made from various herbs, alcohol, sugar, etc., used mixed with other drinks, such as gin, sherry, etc., as appetisers; commonest are angostura, orange, and peach bitters.

**Bitter-sweet**, woody nightshade, *Solanum dulcamara*, purple flowers, bright red berries, used in folk med. as a narcotic, etc. Sometimes confused with Deadly Nightshade (*q.v.*).

**Bitumen**, a natural mixture of oxygenated hydrocarbons, e.g., naphtha, asphalt, petroleum; raw material from which paraffin is obtained.

**Bivouac**, temporary camp for troops in open country.

**Bizerta**, seapt., Tunisia, N. Africa, at mouth canalized outlet of Lake of B.; pop., 23,200; Fr. naval station.

**Bizet**, Georges (1838-75), Fr. composer; opera, *Carmen*; suite, *L'Arlesienne*.

**Björkö**, 1) isl. in L. Malar, Sweden, where St. Ansgar preached Christianity, 829. 2) Isl. on Gulf of Finland, where Ger. and Russ. emperors met, 1905 and 1909.

**Björnson**, Björnstjerne (1832-1910), Norw. writer and politic.; orig. member Nobel Committee; Nobel Prize (Lit.), 1903. Among his better-known plays are: *Maria Stuart*, 1864; *The Newly Married*, 1865.

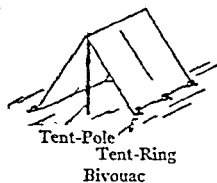
**B./L.**, abbr., bill of lading.

**Black**, colour wh. absorbs all the rays of light that fall upon it, thus sending no light to the eye. **B. and Yellow Trail**, highway linking Chicago, Illinois, with Yellowstone Park, U.S.A.; c. 1,560 miles.

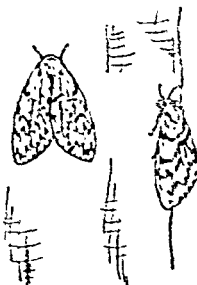
**B. Arches**, moth with grey, black-marked wings; larvae feed on oak and other trees, including pine; sometimes a serious forest pest. **B. Bear Trail**, highway linking Quebec, Canada, with Jacksonville, Miami, and St. Petersburg, Fla. U.S.A.; 1,950 miles.

**B.-beetle**: see COCK-ROACH. **B. Canons**:

see AUGUSTINIANS. **B. Country**, mining and indust. dist., S. Staffs., Warwicks., and Worcs.;



Björnson



Black Arches Moth

collieries, furnaces, and foundries. Includes Birmingham, Walsall, Dudley, Wolverhampton. **B. Death**, name given in Mid. Ages to plague, introduced into Eur. from Asia, with devastating results. **B. Eagle, Order of the**, formerly highest Pruss. order of knighthood, fndd. 1701. **B. Earth Area**, Centr. Russn. administ. unit; incl. provs. Voronezh, Kursk, Tambov, Orel, and Tula; c. 75,300 sq.m.; pop., 11,614,750; intensively cultivated; adminis. centre, Voronezh (q.v.). **B. Forest**, mountainous dist., S.W. Germany, in Baden and Württemberg; 100m. long, 30-38m. broad; precipitous descent to Upper Rhine, and gentle slopes towards the E.; separated by the Kinzig Vall. into: 1) **N. Black F.**,



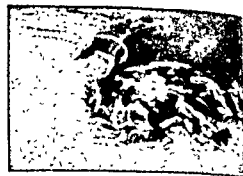
Black Forest  
View at the Feldbergsee

sandstone table-land with mtns. (*Hornsgriunde*, 3,280 ft.) and lakes (Mummelsee, Feldbergsee, Wildersee, Titisee); wood-cutting; 2) the **S. Black F.**, granite, with *Feldberg* (4,900 ft.) and *Belchen* (4,620 ft.); numerous mineral springs (Baden-Baden, Badenweiler, Wildbad); wood-carving and clock industries (Triberg, Schramberg). **B. Friars**: see DOMINICANS. **B. Hills**, Wyoming and S. Dakota, U.S.A.; part of *Rocky Mts.*, c. 6,000 sq.m.; highest point, Harney Peak, 7,242 ft.; forested; mining: gold, silver, copper, coal, iron, granite. **B. Hole of Calcutta**: see CALCUTTA, SIEGE OF. **B. lead**: see PLUMBAGO. **B.-letter**, printing type modelled on German MS. of 15th cent.; used in early Eng. (and other) printed books; similar to mod. Germ. Gothic type; replaced in Eng. by Roman type during 16th century. **B. list**, secret list of proscribed pers., e.g., of customers undeserving of credit, compiled by societies for protect. of creditors; B.L. of firms trading with the enemy were used during World War to make blockade effective. **B. Mass**, 1) Mass for Dead, or *Requiem Mass*, at which vestments, etc., are black; 2) obscene travesty of Mass celebrated by Satanists. **B. Monks**: see BENEDICTINES. **B. Nile**: see NILE. **B. Pope**, title pop. given to General of the Jesuits (q.v.) on acct. of his habit and of his influence at the Papal court. **B. Prince**: see EDWARD. **B. Rod**, chief usher of House of Lords, invar. disting. retired officer of Army or Navy, with spec. duty of summoning Hse. Com. to attend Hse. Lds. on ceremonial occasions. **B. Sea**



Black Rod

(*Euxine*), inland sea betw. Asia and Europe, 163,500 sq.m.; aver. depth c. 3,800 ft.; con-



Black Sea Coast  
Aerial View

nected with Mediterranean by Bosphorus, Sea of Marmora; Dardanelles (Hellespont); 1.9% saline; little tide; freq. storms; shallow sea of Azov in N.E.; fed by rivs. Danube, Dnieper, Don, Kizil-Irmak; chf. ports: Varna, Odessa, Batum; declared neutral, 1856. **B. Shirts**, the Fascisti (q.v.). **B. Watch** (*Royal Highlanders*), Highland infantry regt., Brit. Army; union of old 42nd and 73rd Foot; raised 1749; depot and record office, Perth; 25 battalions in World War. Distinctive badge, red hackle.

**Blackberry, bramble**, the common Eng. blackberry is *Rubus fruticosus*, but there are numerous cultivated varieties. The flower is white or pink, and the fruit black or deep purple.



Blackberry  
Flower, Fruit

**Blackbird**, common wild bird, *Turdus merula*, allied to the thrushes, with dark plumage, and very sweet note. Name also given in Australia and Pacific Islands to natives, Kanakas, who used to be kidnapped and shipped to work under forced indentures; the practice being called *blackbirding*.

**Blackburn**, co. bor., Lancs.; pop., 122,700; centre of cotton industry. **B. Rovers**, Eng. Association Football club, started as amateurs 1874, soon adopted professionalism; won Assoc. Cup 1884, '85, '86, '90, '91, 1928, and League Championship 1912 and '14.

**Blackcap**, species of warbler (q.v.), *Sylvia atricapilla*, the cock having a black-capped head.

**Blackfeet**, N. Amer. Indian tribe, belonging to the Algonquins (q.v.); native name *Siksika*.

**Blackheath**, common, in boroughs of Greenwich and Lewisham, London, formerly infested by highwaymen; defeat of Danes, 1011; gathering place of rebels in insurrection of Wat Tyler (q.v.), 1381, Jack Cade (q.v.), 1450, and of Cornish insurgents, 1497.

**Blackie**, John Stuart (1809-95), Scot. philol. and man of letters; prof. of Grk., Edinburgh, 1852-82; fndd. and endowed Celtic chair at Edinburgh, 1882; verse transl. of Aeschylus, 1850; *Lays of the Highlands*, 1872; *Horae Hellenicae*, 1874.

**Blackmail**, originally payment of rent in "black" or base coin; then, in N. England, payment exacted from farmers by freebooters as a condition of immunity from robbery; in

modern usage, extortion of money from someone as price of silence concerning some alleged discreditable secret. The maximum penalty in Eng. law for the worst form of B. is penal servitude for life.

**Blackmore**, Richd. Doddridge (1825-1900), Eng. novelist and barrister; *Lorna Doone*, 1869; *Cripps the Carrier*, 1876; *Spring-tawn*, 1887.

**Blackmore, Vale of**, fertile valley, Dorset, England.

**Blackpool**, co. bor. and popular seaside resort, Lancs., Eng.; pop., 101,500; fine promenade.



Photo. Saidman-Bros.  
Blackpool

**Blackstone**, Sir Wm. (1723-80), Eng. judge; Vinerian prof. of Common Law, Oxford, 1758-56; justice of Court of Common Pleas, 1770; *Commentaries on the Laws of England*, 1765-68.

**Blackthorn**, species of thorn tree, *Prunus spinosa*, which bears the wild plum or sloe; also, esp. in Ireland, stout cudgel cut from this tree.

**Blackwall**, London dist. in bor. of Poplar, on N. bank of Riv. Thames; site of first London docks (1661). **B. Tunnel**, underground thoroughfare below Thames for pedestrians, running betw. E. India Dock Road and Blackwall Lane (E. Greenwich); built 1897; 1 m. 400 yds. long; 407 yds. under riv.

**Blackwater**, riv., Munster, I.F.S.; rises S.E. Co. Kerry; flows across Co. Cork into Youghal Harbour, Co. Waterford; salmon fisheries; length 100 miles.

**Blackwater fever**, intermittent fever, probably a complication of malaria with jaundice and nephritis; urine darkened by blood pigment, esp. after the use of quinine.

**Blackwell**, Elizabeth (1821-1910), Amer. physician; 1st woman to gain med. diploma in U.S.A. (1849); was aftwds. a student at St. Bartholomew's Hosp., London, and practised mainly in England.

**Blackwood**, Wm. (1776-1834), Scot. publisher and bookseller; fndd. *Edinburgh Encyclopedia*, 1810; combined with Murray in publication of Scott's *Tales of My Landlord*, 1817; fnder. and editor of *Blackwood's Edinburgh Magazine*, 1817.

**Bladder**, (anat.) hollow organ for reception of liquid, especially urine and gall (gall bladder).

**Bladder-nut**, *Staphylea*, Alpine bush with bladder-like seed pods used as decoration.

**B. senna** (Bastard Senna), *Colutea arborescens*, ornamental S. Eur. plant with yellow flowers and fruit-pods. **B.-worm**, intermediate stage of certain tapeworms, parasites of man and carnivores. **B. wort**, *Utricularia vulgaris*, water plants; stem and

hair-like leaves supported by tiny bladders which fill with water after the yellow flowers have appeared, thus causing the plant to sink.

**B. wrack**, *Fucus vericulosus*, common seaweed, used as a manure, to prepare kelp (q.v.); contains a small amt. of iodine.

**Blagodät**, indus. distr. 130 m. E.N.E. Perm, Ural Area, R.S.F.S.R.; rich ores of magnetic iron.

**Blagovyeschensk**, tn., Far Eastern Area, R.S.F.S.R., on Riv. Amur; pop., 61,200; timber, coal, metals.

**Blair Atholl**, vill. and par., Perthsh., Scotland; pop., 1,800; *Blair Castle* (Duke of Atholl), built 13th cent., restored 1872.

**Blake**, Robert (1599-1657), Eng. adm.; fought for Parliamentarians in Civil War; deftd. Dutch under Van Tromp, 1652-3;

deftd. Spaniards off Santa Cruz, Tenerife, 1657. **B.**, **William** (1757-1827), Eng. poet, engraver, mystic; *Songs of Innocence*; *Marriage of Heaven and Hell*; engravings for *Bk. of Job* and *Blair's Grave*.



**Blanching**, in cooking, method of removing strong flavour from onions, etc., by putting into cold water and bringing to boil; also of whitening and cleansing calf's head, etc., and of removing skins from nuts.

**Blandford**, **Blandford Forum**, mkt. tn., Dorset, Eng.; pop., 3,400; gives title of marquess to Duke of Marlborough (borne as courtesy title by eldest son).

**Bland-Sutton**, Sir John (1853- ), Brit. surgeon; pres. of Medical Society of London, 1914, of Roy. Soc. of Medicine, 1921-22, of Roy. Coll. of Surgeons, 1923; made valuable researches in hysterectomy.

**Blanesburgh**, Robt. Younger, 1st Bn. (1861- ), Brit. lawyer; chf. Brit. delegate on Reparations Committee, 1925.

**Blankenberghe**, seaside resort, near Bruges, Belgium; pop., 6,750.

**Blank verse**, unrhymed heroic verse with iambic or trochaic rhythm.

**Blantyre**, 1) mining vill., Lanarksh., Scot., birthplace of David Livingstone; pop., 2,000 (par., 18,200). 2) Tn., Nyasaland, Africa; alt., 3,500 ft.; pop., 6,000 (250 whites); commercial centre and railroad.

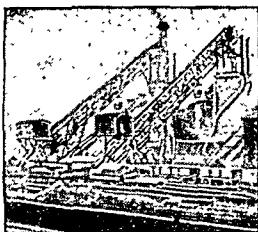
**Blarney**, vil., 5 m. N.W. of Cork, I.F.S.; pop., 800; 15th-cent. castle with **Blarney Stone**, alleged to confer persuasive eloquence on any who kiss it.

**Blasco-Ibáñez**: see IBÁÑEZ.

**Blasphemy**, the use of profane, impious, or scurrilous language with reference to God, sacred things, or the Christian religion. B. was punishable by death under the Mosaic Law (Lev. xxiv); in Gt. Brit. it is an offence under an act of 1819.



**Blast furnace**, used for converting iron ore into pig-iron by reductn., also for smelting of copper. Aver. height 60 to 100 ft. Mod. B. furnaces prod. from 300-600 tons in 24 hours. See FURNACE. **B.-f. gas**, inflammable waste gas, by-product of iron-smelting; heat value, 100 B.T.U. per cub. ft. Often allowed to burn to waste in Eng. (hence flames from blast-furnaces), but utilised as fuel and in gas engines in other countries. Each ton of fuel used in furnace gives 10 h.p. continuously from waste gas.



Blast Furnace

**Blasting**, the use of explosive to disintegrate heavy materials, particularly rocks, preparatory to their removal. First used in Germany (c. 1627). Hole is drilled into rock and explosive introduced; usu. fired by elec. current from magneto (*q.v.*) or battery, several charges being fired together. Explosive usually dynamite or some similar agent; liquid air mixed with cotton wool, carbon, or sawdust has also been used. **B. gelatine**, explosive consisting of gun-cotton dissolved in abt. 94% of nitroglycerine.

**Blastoderm**, membrane surrounding the fertilised ovum at its earliest stage of development.

**Blatchford**, Robert (1851- ), Brit. journalist and writer on free thought and sociological subjects; fndd. the *Clarion*, 1891.

**Blavatsky**, Helena Petrovna (1831-91), Russ. author, fndd. Theosophical Soc., 1875, in U.S.A. (hdqtrs. removed to Madras, India, 1879); author of *Iris Unveiled*, 1877; etc.

**Blaydon**, urb. dist., Durham, Eng., on Riv. Tyne, 4½ m. W. Newcastle-on-Tyne; ironworks, collieries, saw-mills; pop., 32,300.

**Blazonry**, display of, or heraldic art of inscribing, arranging on a shield, and describing armorial bearings.

**Bleaching**, removing colour from materials such as fibres, fabrics, oils, etc. Chlorine gas used for cotton and paper, sulphurous acid for silk and woollen materials, hydrogen peroxide for feathers and hair, ultra-violet light and ozone for oils.

**Bleak**, small fresh-water fish of the carp family, inhabiting streams and lakes of Europe and W. Asia; remarkable for the silvery lustre of the scales. Formerly the scales were largely utilized in the manufacture of artificial pearls, the pearly matter being washed off and then deposited in glass beads.

**Bledisloe**, Chas. Bathurst, 1st Bn. (1867- ), Brit. barrister and politician;

M.P. for S. Wilts., 1910-18; sec. to Ministry of Agriculture, 1924-28; Gov.-Gen. of New Zealand, 1929.

**Blende**, sulphide of zinc, and one of its chief ores; also known as black jack, sphalerite, false galena, mock lead.

**Blenheim**, vill. Bavaria, left bank Riv. Danube, below Höchstädt; scene of Marlborough's victory over Fr. and Bavarians, 1704. **B. Palace**, seat, Oxon, Eng., built by Vanbrugh for first Duke of Marlborough, 1705-22, after battle of Blenheim.

**Blennorrhoea**: see GONORRHOEA.

**Blenny**, small viviparous fish of the genus *Zoarces*, common in deep pools at low tide on rocky coasts. Has a large head and tapering body. About 40 species, found both in temperate and tropical regions.

**Blériot**, Henri (1872- ), Fr. engineer, pioneer aviator; first to perform cross-Channel flight, 1909.

**Blessed Sacrament, Confraternity of the**, C. of E. society founded 1862 to promote reunion of Christendom and restoration in C. of E. of Reserved Sacrament. See RESERVATION.

**Blessington**, Marguerite Power, Ctss. of (1789-1849), Brit. writer and leader of fashion; *Conversations with Lord Byron*, 1834.

**Bletchley**, urban dist. Bucks, Eng.; pop., 6,000: rly. jn. on main L.M.S. Railway.

**Blewits** (*Agaricus personatus*), a purplish, edible mushroom of common occurrence.

**Blickling**, vill., Norfolk, Eng., on Riv. Bure; **B. Hall**, Jacobean mansion, said to be birthplace of Anne Boleyn.

**Blida**, tn., Algeria, dept. Algiers; pop., 24,750 (8,700 Europeans); orange groves, corn mills.

**Blimp**, (slang) a kite-balloon (*q.v.*).

**Blind**, **National Institute for the**, Brit. organisation developed from *Brit. and Foreign Blind Assoc.* fndd. by Dr. Armitage (1868). Establd. schools and training centres throughout U.K.; since 1918 *Sunshine Homes* for blind babies. **B. mole-rat**, large rodent, native of S.E. Europe, S.W. Asia, and N.E. Africa; subterranean; drives tunnels in the earth in search of roots and bulbs on which it feeds; eyes completely covered with skin, rudimentary external ears and tail. **B. spot**, the point at which the optic nerve enters retina, there being here no sensibility to light. **B.-worm** (or Slow-worm), small, limbless lizard, resembling a snake in appearance, found on dry heaths in various parts of Eng. and Europe.

**Blindness**, absence of power of sight; if congenital, usu. due either to pre-natal malformation or inherited syphilitic ophthalmia; if not congenital, the result of one of the eye-diseases, injury to the eye, or to sight centre in brain. See AMAUROSIS.

**Bliss**, Arthur (1891- ), Eng. composer; *Rout; Colour Symphony; Morning Heroes*, etc.

**Blister**, collection of fluid covered by semi-transparent layer of dead skin; may occur accidentally, e.g., as the result of a burn, or, therapeutically, blisters may be produced in order to relieve pain. **B. beetle**, one of several beetles which emit an irritant fluid, sometimes made use of in medicine.

**B.Litt.**, abbr. Bachelor of Letters.

**Bloc**, in politics combination of sev. groups acting in concert. See COALITION.

**Block**, Ernest (1880- ), composer; music shows strong Jew. influence; rhapsody *Schelomo*; lyric rhapsody, *America* (1925), chamber music, etc.

**Block** (printing), formerly *wood-cut*, box-wood engraved by hand. Now mainly *zinc-type*, for line drawings; picture reprod. photographically on surface of zinc plate coated with sensitive film, wh. remains only where blacks are to be, whites being etched away by acid. For fine light and shade, *process block* is used in wh. original is photographed through fine screen on to copper plate covered with photographic film. Copper etched with ferric chloride. All blocks reprod. by electrotpe (q.v.). **B. and**

**tackle**, device for raising heavy wts. with a small pull, by making use of pulleys enclosed in a block; diminution in the pull is gained at expense of exerting smaller pull over a longer distance. **B. book**, earliest form of printed book; composed of single prints from wooden blocks cut in relief, words and pictures being transferred to paper by rubbing, after the raised portions had been inked. Popular books of this kind were the *Biblia Pauperum* (q.v.) and *Ars Moriendi* (q.v.). **B. system**, (rly.) division of rly. line into sections by means of signals governing movement of trains; **automatic b. s.**, each signal is worked by passing train and remains at "stop" until the sector it guards is clear.

**Blockade**, steps taken to prevent import. of foodstuffs and other necessities into enemy countries in wartime. Notable instances are Continental blockade decreed agst. Eng. by Napoleon in 1806 and blockade of Centr. Eur. Powers by Allies during World War.

**Bloemfontein**, cap. Orange Free State, Union of S. Africa; S. Afr. Supreme Court; univ. coll.; Anglican bpric.; pop., 39,000.

**Blois**, cap. of dépt. Loire-et-Cher, France, on Loire; pop., 24,000; château (seat of Dukes of Orleans); preserves, wine, timber, boots, furniture.

**Blok**, Alexander (1880-1921), outstanding lyric poet of mod. Russia; died of starvation; *The Unexpected Joy; The Fair Booth*; etc.

**Blomfield, Sir Arthur Wm.** (1829-99), Eng. architect; pres. of Architectural Assoc., 1861; assoc. with A. E. Street in bldg. of Law Courts, London. **B., Sir Reginald** (1856- ), Brit. archit.; pres. of R.I.B.A., 1914; designed Eng. memorial ch. at Ypres, new bridge at Stratford-on-Avon.

**Bloomfield**, Robt. (1766-1823), Eng. poet of the countryside; *The Farmer's Boy*, 1800.

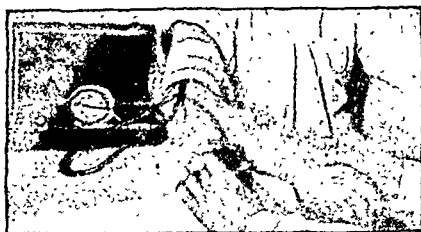
**Blondin**, Chas. (1824-97), Fr. acrobat; crossed Niagara Falls on tight-rope 1,100 ft. long, 160 ft. above water, 1859, and subsequently.

**Blood**, nourishing fluid that flows through heart, arteries, and veins of the body; it consists of c. 80% water and contains proteins and salts in solution in the plasma or fluid part of blood; also contains red and white *corpuscles*, and *fibrinogen* wh. give blood its power of coagulation. In man, weight of B. is abt. one-twentieth of total weight of the body; the number of red blood corpuscles (*Erythrocytes*) is c.  $4\frac{1}{2}$  to 5 million per c.mm.; the number of white corpuscles (*Leucocytes*) 7,000 to 10,000 per c.mm. Red hue of erythrocytes is due to *Haemoglobin* (q.v.); B. is bright red in arteries, where it is rich in oxygen, and dark in veins, where it is rich in carbonic acid. Erythrocytes play important part in respiration (q.v.), and leucocytes serve as a defence agst. infection and bacteria. B. is classified according to its actual constitution, wh. varies in different individuals; see B. GROUPS. **B., circulation of the**, discovered by William Harvey, physician, in 1628; uninterrupted flow of blood through blood-vessels of the body. The aorta rising from left ventricle of heart passes blood on to main arteries, wh. themselves split up into even smaller branches until they end in the fine capillaries (blood vessels as fine as hairs). These unite and form the slenderest veins, and these in their turn link up with the larger veins and finally with the two *venae cavae*. By these blood is sent to right auricle of heart and on through tricuspid valve into right ventricle, whence it passes into lungs through pulmonary artery, capillaries, and veins of the lungs, and thence into left auricle, flowing back into left ventricle through mitral valve. See HEART. **B. coagulation**, clotting of blood on reaching surface after a blood vessel has been opened, caused by fibrin (q.v.) in blood serum, wh. stops bleeding by forming clot; coagulation within blood vessel is called *thrombosis*. **B. groups** (physiol.): accdg. to Landsteiner, there are 4 groups into which blood of man may fall. By comparison of blood of the mother, the putative father, and the child, **B. g. tests** may assist in determining parentage of child. **B.-pressure**, the strength of flow of blood in arteries; measured by



Block and Tackle

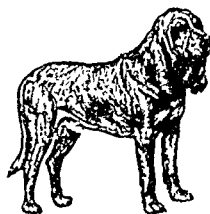
pressure reqd. to stop flow in artery of arm; pressure depends on var. factors: age, constitution, phys. and mental repose, time of day, sex, etc.; B.-p. increased in arterio-



Measurement of Blood Pressure

sclerosis, chronic Bright's disease, nervous troubles, etc. Instr. used to measure B.-p. is the *sphygmomanometer*. **B.-revenge**, custom, still prevailing in Albania, southern Italy and Corsica, and among many savage tribes, of avenging murder of a kinsman by exacting life of murderer or of one of his kinsmen. Among some peoples a payment may be accepted in commutation (*wergeld*); generally prohib. within family, clan, or tribe. **B.-serum**, liquid part of coagulated blood; see *SERUM*. **B.-stone**, haematite, a variety of chalcedony (*q.v.*); a green semiprecious stone with red streaks or spots. **B.-sugar**, dextrose normally found in blood; increased by excessive consumption of carbohydrates (*q.v.*); diabetes (*q.v.*) is a disease in wh. there is excess of sugar in blood, and frequent determination of quantity present in blood is essential in its treatment. **B. transfusion**, conveying blood of one individual directly to veins of another. Adopted in cases of collapse from severe haemorrhage. Blood of donor must be of same group as that of recipient.

**Bloodhound**, large hound with massive head and keen scent, formerly used for tracking escaped convicts, etc.



Bloodhound

**Bloody Assizes**, 1685, spec. commiss. held in W. of Eng. by Judge Jeffreys in 1685, when over 300 persons were exectd. for having taken part in Monmouth's Rebellion.

**Bloomsbury**, dist. of Holborn, W. Centr. London, Eng.; contains Brit. Mus. and Univ. Coll.; fashionable quarter in 18th century.

**Blore Heath**: see *MARKET DRAYTON*.

**Blow**, John (1649-1708), Eng. composer and organist; Purcell was his pupil.

**Blower**, appar. for delivering consid. vol. of air under low or mod-



Bellows

erate pressure; *bellows*, used for smith's etc.; rotary pistons, e.g. *Roof's blower*; *reciprocating piston pumps* (see *COMPRESSORS*); *in-peller fans* and other types for spec. uses.

**Blowitz**, Hy. de (1825-1903), Fr. (naturalized) journalist; Paris correspondent of *London Times* from 1873.

**Blowpipe**, 1) means for producing hot pointed flame, by injecting air, under pressure, into oil or gas flame. Many types: simplest, tube with fine jet through which air can be blown by mouth into oil or gas flame. Ordinary **gas b.**, used for glass-blowing etc., consists of tube with air-jet on axis, gas being admitted from side tube behind air-jet. In **injector b.**, force of jet is used to draw in extra air for combustion. When oxygen is used instead of air in jet, very hot flame is obtained. **Oxyhydrogen**, **oxygen**, and **oxycetylene bs.** use pure oxygen only for combustion, and yield exceedingly hot flames. Used for welding (*q.v.*). B. flames may be oxidizing or reducing, according to relative size of jet and amount of air supply. Used for glass-blowing, small brazing and plumbing, in chemical laboratory. **B. reactions**, for discovering composition of substances, are carried out by heating small amounts on charcoal or other refractory material, and observing effects (reduction to metal, coloration hot and cold, sublimation, action of reagents on residues). Used by prospectors for discovery of valuable ores. 2) Or **blow tube**, weapon used by certain savage tribes in Malay (where it is called *Sumpitan*) and in Guiana (*Zarabatana*), consisting of tube from which poisoned arrow is discharged by blowing with the mouth.

**Blubber**, fat of whales (*q.v.*); source of train-oil.

**Blücher**, Gebhart Leberecht von (1742-1819), Pruss. F.-M., "Marshal Forwards"; deftd. Napoleon several times in Fr.; completed Wellington's victory at Waterloo, 1815, and occupied Paris.

**Blue**, (sport) one who represents either Oxford or Cambridge in one of various sporting and athletic contests betw. these two universities; also the distinction gained by so doing. Certain of the less important contests have "half-blues" assigned to them. **B.-beard**, man in the Fr. fairy tale who murdered his wives; nickname of dissolute Gilles de Rais (1404-40). **B.-bird**, species of N. Amer. thrush, with bright blue plumage; breeds as far N. as Canada and winters in S. United States. **B.-book**, Eng. name for chf. govt. publicatns., because of usual colour of cover, "White Paper" being Parl. publictn. without a cover; both names freq. used loosely. **B.-coat**, dress of 16th-cent. Eng. serving-men; still worn by boys at Christ's Hospital (*q.v.*), the "Bluecoat

School." **B. grass** (*Poa pratensis*), meadow-grass bearing blue flowers; grows in temperate regions, esp. plentiful in Kentucky (U.S.A.), known as the *Blue Grass State*. **B. Grotto**, sea cave, isl. of Capri; known in Rom. times, rediscovered 1826. **B. John**, (min.) type of fluorspar (*q.v.*) found in Derbysh., Eng.; deep blue or purple; also known as *Derbyshire spar*; see CASTLETON. **B. Laws**, name given to a series of rigid enactments, said to have been passed in Connecticut, U.S.A., c. 1644, wh. included death penalty for adultery and conspiracy, heavy fines for non-observance of Sabbath, etc. Hence, term applied in U.S.A. to any tyrannical, extreme laws. **B. Mountains**, range flat-topped hills (2,000-3,000 ft.), 40-120 m. from E. coast, New South Wales, Australia; part Great Dividing Range (see AUSTRALIA); eucalyptus forests. **B. Nile**: see NILE. **B. Peter**, blue flag, with white square in centre, flown by ship about to sail. **B. print**, *Cyanotype*, a simple photog. process for reprodtn. of plans, tech. drawings, etc. (or as a printing process from any negative); invntd. by Sir John Herschel (1840). **B. Riband of the Atlantic**, honour claimed by liner holding speed record on North Atlantic route; see NORTH GER. LLOYD, the CUNARD SS. CO., and ITALIA. **B. Ridge Mountains**, part of *Appalachian* system (*q.v.*); extend through Pennsylvania, Virginia, and N. Carolina, U.S.A.; highest point, Mt. Mitchell, 6,684 feet. See APPALACHIAN MOUNTAINS. **B. roller**, bird with bluish-green, metallic plumage; fnd. in E. Eur. and W. Asia; longish bill, similar to that of a crow; nests in holes in trees. See ROLLER. **B.-throated warbler**, handsome, small, migratory bird, breeding in N. Scand., Russia, and Siberia, wintering in Africa, India, and China. Loud, sweet song. Characteristics similar to those of robin. Flights pass along E. coast of Eng. in autumn, sometimes in spring. **B. vitriol**, sulphate of copper  $\text{CuSO}_4$ , blue crystals used in dyeing for making Scheele's green, preserving wood, and, with lime, as *Bordeaux mixture*, agst. insect pests (phylloxera); powdered substance used as a dressing for seeds. See VITRIOL, OIL OF.



Bluecoat Boy

**Bluebell**: see HYACINTH.

**Bluebottle**, **Blow-fly**, large blue-black loudly buzzing fly; larvae feed on dead animal matter.

**Bluestocking**, derisive term for literary woman; first applied to a club started about 1750 by Mrs. Montagu, to which a Mr. B. Stillingfleet came in stockings of blue worsted instead of the usual black silk.

**Blues**, modern Amer. music orig. in slow time.

**Blundell's School**, Tiverton, Devonsh.; fndd. 1604; rebuilt 1882; 330 boys.

**Blunden**, Edmund Charles (1896- ), Brit. poet and critic. *The Waggoner*, 1920; co-ed. *Poems by John Clare*, 1920.

**Blunt**, Wilfred Scawen (1840-1922), Brit. author and traveller; took prominent part in Liberal Home Rule movement; *Love Sonnets of Proteus*, 1880; *Ideas about India*, 1885.

**Blut und Eisen** (Ger.), blood and iron, (prop., as used by Bismarck with reference to his war policy, *Eisen u. Blut*).

**Blyth**, munic. bor., Northumb., Eng., 15 m. N. E. Newcastle-on-Tyne; colliery port; shipb.; pop., 31,800.

**B.M.A.**, abbr. Brit. Medical Association.

**B.Mus.**, abbr. Bachelor of Music.

**B.O.A.**, abbr. Brit. Optical Association.

**Boa-constrictor**, a handsome, non-venomous snake of S. Amer., sometimes 12 to 14 ft. in length; crushes its victims by compression of the encircling folds of its body. Occasionally attacks and kills deer or peccaries, but prefers smaller mammals.

**Boadicea**, Qn. of the Iceni (c. 60 A.D.) who, after capturing Colchester and London, was defeated by Romans and took her own life.

**Boar**, the male of the pig; the wild boar, found in many forests of Europe, as well as in N. Africa and Asia, is extensively hunted.

**Board of Control**, dept. of Brit. Govt. under legal, med., and lay commissioners, charged with supervising public arrangements for care of mentally deficient. **B. of directors**, controlling body of jt. stk. and other cos.; must hold prescribed amt. of capital in the company. **B. of Trade**, Dept. of Brit. Govt. charged with gen. supervision of commercial interests; e.g., laws relating to bankruptcy, shipping, patents, companies. **B. school**, former name for public elementary sch. administered directly by a school board (*q.v.*).

**Boarhound**, large powerful dog resembling mastiff (*q.v.*), with small erect ears.

**Boat**, hollow receptacle which floats upon water and is capable of sustaining considerable weight; generic term for every sort of water-craft. Also used for various boat-shaped articles.

**Boatbill**, species of South American wading-bird; named from shape of its bill.

**Boatswain**, ship's officer who superintends crew on deck, boats, rigging, etc., and calls the men to duty by sounding a whistle. In the R.N., he is a warrant officer; in merchant service, he is often 3rd or 4th mate.

**Boaz**, (O.T.) rich man of Bethlehem; married Ruth (*q.v.*); grt.-grandfather of David.



Collapsible Boat

**Bobbin**, flanged cylind. spool on wh. thread, wire, etc., can be wound.

**Bobolink, Rice-bird** (*Dolichonyx oryzivorus*), migratory bird of N. Amer.; a divergent form of the family *Icteridae*, resembling the buntings rather than the starlings.

**Bobriki**, tn., 186 m. S. of Moscow, Eur. Russia, created 1929; pop., 50,000. Import. electro-chem. plant.

**Bobsleigh**, form of toboggan (*q.v.*) for 4-10 riders, with steering gear and brake.



Bobsleigh

**Boccaccio**, Giovanni (1313-75), It. poet and novelist, friend of Petrarch; *Decameron* (*q.v.*); *Il Filostrato* (1344-50) is source and original of Chaucer's *Troilus and Criseyde*.

**Bocche di Cattaro**, bay of Adriatic Sea on S. coast of Dalmatia.

**Boche**, (Fr.) opprobrious nickname for Germans during World War.

**Bochum**, tn., Ruhr dist., Westphalia, Prussia; pop., 322,700; large iron and steel works, coal mines.

**Bock**, strong beer made in Czechoslovakia; gen. term for light beer in France.

**Böcklin**, Arnold (1827-1901), Swiss landscape painter.

**Bodaibo**, tn., E. Siberia, on Riv. Vitim, N.E. of L. Baikal, pop., 4,000; centre of Lena-Vitim gold-field; rich auriferous finds in B. Riv. vall.; abt. 260 tons of gold recovered since 1842.

**Bode, Johann Elert** (1747-1826), Ger. astron.; astronomer to Academy of Science, Berlin, 1772; director of observatory, 1786; formulated series of numbers giving approximate proportional distance of the sun from the planets, known as *Bode's Law*; publ. *Guide to the Starry Heavens*, 1768; *Uranographia*, 1801.

**B., Wilhelm von** (1845-1929), Ger. art critic; director, Kaiser Friedrich Museum, Berlin, 1890; director of all royal museums in Prussia, 1905-20.

**Boden**, frontier tn., N. Sweden, on Riv. Lule; pop., 6,750; most northerly rly. junction in world.

**Bodiam Castle**, 14th-cent. fortress on Kent-Sussex borders, dismantled in Civil War. Bequeathed to Nat. Trust by Lord Curzon of Kedleston, 1926.

**Bodkin**, 1) sharp dagger; 2) blunt needle with wide eye for running ribbon or tape thr. a slot; 3) long ornament. pin for the hair.

**Bodleian Library**, library at Oxford, Eng., fndd. 1602 by Sir Thos. Bodley; over 1,300,000 printed books and 40,000 manuscripts.

**Bodmin**, co. tn., Cornwall, Eng.; pop., 5,500; parl. bor. till 1885; agriculture.

**Bodoni**, Giambattista (1740-1813), It. printer, chiefly of classic authors.

**Body colours**, opaque pigments possessing covering power.

**Boehm**, Sir Jos. Edgar (1834-90), Anglo-Hungarian sculptor; statue of Qn. Victoria at Windsor, 1869; equestrian statue of Duke of Wellington; designed coinage for jubilee, 1887.

**Boehm von Bawerk**, Eugen (1851-1914), Austr. economist; auth.: *Capital and Interest*; *The Positive Theory of Capital*.

**Boehme**, Jacob (1575-1624), Ger. mystic; auth.: *Aurora*, 1612.

**Boeotia**, anc. dist., Centr. Greece, betw. Euripos (Channel of Euboea) and Gulf of Corinth; anc. cap., Thebes; chf. riv., Cephissus. Anc. Boeotians reputed to be dull-witted; hence **Boeotian**, boorish, clumsy.

**Boers**, successors of Dut. colonists who emigrated to S. Afr. in 17th cent. and founded the Orange Free State and Transvaal Repub.

**Boer Wars**, 1) 1880-81, betw. Gt. Brit. and the Transvaal, following proclm. of independence of that country. Its chief events were defeat of Brit. at Laing's Nek and Majuba; and it was concl'd. by the Conventn. of Pretoria. 2) By the Transvaal and Orange Free State agnst. Gt. Brit. 1899-1902; caused through refusal of Pres. Kruger and the Boer Govt. to ameliorate the lot of the Uitlanders (mainly British). It ended in annexation of the two Repubs. by Gt. Brit.

**Böethius**, Anicius Manlius (c. 480-525), Rom. philos. and statesman, wrote commentaries on Gr. philosophers, *De Consolatione Philosophiae*, parts of wh. were translated by King Alfred and Chaucer.

**Bog**, marshy ground, especially the peat bogs of Ireland, composed of water-logged vegetation. **B.-bean, buck-bean**, creeping plant of gentian family found in marshy places in temperate regions. Stem used in med. as tonic and febrifuge. **B. butter, butyrellite**, substance resembling butter found in Irish peat-bogs; possibly of animal origin. **B.-moss**, generic name for plant of genus *Sphagnum*, found throughout temperate regions, in large patches, on moss and marshy land. See MOSSES. **B. myrtle**, sweet gale, *Myrica Gale*, sweet-smelling shrub, abt. 3 ft. high; catkins appear before leaves; grows in bogs in N. Eng. **B.-oak**, oak-wood, of unknown age, found buried in peat bogs; deep black colour; used for decorative purposes, carved ornaments, etc.

**Bogdo-ola**, snow-clad range of *Tian-Shan* Mtns., Centr. Asia; av. alt. 12,500 ft.: *Turpanat-tagh* (17,800 ft.), Mongolian holy place.

**Bogey**, (golf) number of strokes which a good average player ("Colonel Bogey") should take over each hole (that which should be taken by a first-class player is "Par").

**Boghead coal, torbanite**, soft yellowish-brown coal, yielding high percentage of gas; found in Scotland at Torbane Hill and Bathville. *Kerosene shale*, found in N.S. Wales, is a similar substance.

**Bogle**, (engin.) small four-wheeled truck, upon which one end of a vehicle (locomotive, railway-carriage, lorry) rests by a swivel-pin or plate, allowing the truck to turn; obviates grinding of tyres of long vehicles in turning corners.

**Bognor Regis**, seaside resort, W. Sussex, Eng.; pop., 13,500.

**Bogomils**, (Slav., "Lovers of God") Christian sect wh. appeared in Thrace and Bulgaria (12th cent.); held dualistic doctrine that God had 2 Sons, viz., Satanael, who became author of all evil, and the Logos (Word) who assumed phantom body and came down to earth to undo wicked work of Satanael.

**Bogorodsk**, tn., Russia, 36 m. E. of Moscow; pop., 38,000; electricity station supplies Moscow with light and power; school for experiments in education.

**Bogotá** (alt. 8,000 ft.), cap. of Colombia, S. Amer.; pop., 160,000; cathed., univ., museum, observatory.

**Bohea**, a kind of black tea from Chin. *Wu-i* hills, in Fu-kien province; term commonly used in 18th cent. for tea in general.

**Bohème, La**, opera by Puccini, 1896.

**Bohemia** (*Czechy*), W. prov. Czechoslovakia; bounded N.E., N., and W. by Ger., S. by Austria, and S.E. by Moravia; 20,102 sq.m.; pop., 6,679,575 (78% R.C.; 4% mill. Czechs, 2% mill. Germans). Surrounded by mtns.: *Erzgebirge* in N.W., *Riesengebirge* and other ranges of the *Sudetes Mtns.* in N.E., *Böhmer Wald* on W., and *Bohemian-Moravian Mtns.* on S.E. Watered by rivs. Elbe, Vltava (Moldau), Eger. Agric. important; orchards, vineyards, forestry, horse-breeding. Minerals include coal, iron, tin, lead, silver, graphite, sulphur, alum, china clay, and semi-precious stones; min. springs at Carlsbad, Marienbad, Joachimstal, Teplitz, etc. Industries include metal-working, automobiles, textiles, glass, china, pottery, breweries, sugar. Cap., *Prague*. Earliest known inhabts., the Boii, conquered by Germanic Marcomanni. Slav invasions in 7th-8th cents. Wenzel ("Good King Wenceslas"; d. 935), the most famous of the early kings; Ottokar II (1253-78) the greatest king of the Premyslide dynasty. Luxemburg dynasty, 1310-1437; Charles IV (1346-1378) elected emperor. Burning of John Huss (q.r.) signal for outbreak of Hussite Wars (q.r.). B. united with Austria under the

Habsburgs (1526-1918); Thirty Years' War began with Defenestration of Prague (1618); battle of White Mountain (1620) crushed national aspirations. Agitation throughout 19th cent. for Czech national autonomy (Revolution of 1848); leading member of Czechoslovakia (q.r.) after World War.

**Bohemian**, orig. a gipsy; aftwds. applied to pers. leading unconventional life, esp. those devoted to lit. or art. **B. Forest**, **Böhmer Wald**, range of mts. constituting frontier betw. Bavaria and Czechoslovakia; highest pt., *Mt. Arber* (4,500 ft.); crossed by three rlys. and four roads; passes, Eisenstein and Tauern; gneiss and granite rock; pine and beech forests; part marshy; graphite mines, glass and timber indus.; flax.

**Bohemian Girl, The**, opera by M. W. Balfe (q.r.) (1843).

**Bohemian-Moravian Brethren**, Christian relig. organisation from which the *Hussites* sprang; dispersed in Thirty Years' War, they still survive in *Moravian Brotherhood* (see MORAVIANS).

**Bohemund** (1065-1111), s. of Robert Guiscard, Prince of Antioch, fought in 1st Crusade (1096).

**Böhmer Wald**: see BOHEMIAN FOREST.

**Bohr**, Niels (1885- ); Dan. physicist; Nobel Prize (Physics), 1922.

**Boieldieu**, François Adrien (1775-1834), Fr. operatic composer; *Le Calife de Bagdad*; *La Dame blanche*.

**Boil**, local inflammation of the skin, usu. involving a sebaceous gland; contains purulent matter with a central core.

**Boileau**, Nicolas (1636-1711), Fr. poet and critic; *L'Art Poétique*; *Satires*.

**Boiler**, closed vessel for converting water into steam; heated by furnace; 2 types: 1) in wh. water surrounds fire; 2) in wh. fire surrounds water. 1) Cornish boiler, fire in 2 large flues passing thr. water; locom. boiler, hot gases from fire pass thr. large no. of tubes surrounded by water. 2) Water-tube boilers, water passing thr. large no. of tubes surrounded by fire; flash-boilers, wh. contain prac. no water, this being forced in and instantly converted into steam. Efficiency of engines is incr'd. by high pressure and high deg. of superheat of steam. **B. compounds**, substances added to hard and impure water when used in B., to prevent formation of adherent scale. Tannates, sodium aluminate, and other substances used, but use of softened water the only satisfactory meth. of preventing scale. **B. explosions** due to corrosion of metal, often on acc. of scale (q.r.) and local superheating. **B. fur**, deposit, usu. consists of carbonates and sulphates of calcium and magnesium (*hardness*), which in boiling are precipit'd. by the water. Prevented by *softening* water before use; see HARDNESS. There are various substances said

to prevent hard adherent fur being formed, but none is very effective.

**Boiling-point**, temperature at wh. the vapour pressure of a liquid is equal to that of the air, allowing bubbles to form and expand in its interior. B-p. increases with increase of air-pressure; e.g., water at atmospheric pressure boils at 100° C, at 2 atmos. press. at 110°. See **HYPSONETER**.

**Bois de Boulogne**, park (2,100 ac.), W. Paris, Fr.; race-courses of Longchamps and Auteuil.

**Boise**, cap., Idaho, U.S.A., on Boise Riv.; pop., 21,550; fruit (by irrigation), gold.

**Boito**, Arrigo (1842-1918), It. operatic composer and poet: *Meplisto*; book of Verdi's *Otello* and *Falstaff*.

**Bojador, Cape**, promontory, Rio de Oro, Sp. W. Africa, facing the Canary Islands.

**Bok**, Edward William (1863-1930), Amer. journalist, b. in Holland (went to U.S.A., 1869); fndd. Bok Syndicate Press, 1886; editor, *Ladies' Home Journal*, 1889-1919; awarded Pulitzer Prize (*q.v.*), 1920; establd. American Peace Prize, supplying fund of \$100,000, 1923.

**Bokhara**: see **BUKHARA**.

**Bolan Pass**, fortified pass, N.W. Baluchistan, betw. Indus Vall. and Quetta; rly. and road.

**Bolas**, S. Amer. weapon; plaited leather thong with a round stone at each end, wh. is swung and thrown at the quarry.

**Boldrewood**, Rolf, pseud. of Thos. Alex. Browne (1826-1915), Australian novelist; pioneer emigrant to Victoria; *Robbery under Arms*, 1888; *The Miner's Right*, 1890; etc.

**Bole**, (geol.) tough, clayey substance containing aluminium and iron, sometimes found betw. layers of basaltic lava, usu. red, brown, or yellow (colour due to iron oxide, Fe<sub>2</sub>O<sub>3</sub>), used as pigment and (*Armenian B.*) cosmetic. **Red b.**, reddle, or red ochre, contains oxide of iron; **white b.**, kaolin, china-clay, argil, potter's clay, a hydrous silicate of aluminium used in manufacture of porcelain.

**Bolero**, Sp. dance, marked by free use of the arms, with low, gliding steps; danced by 1 or more couples.

**Boleslav**, name of 3 kgs. of Poland. **B. I** (992-1025), *The Mighty*; **B. II** (1039-81), *The Bold*; **B. III** (1086-1139), *The Wry-mouthed*.

**Boletus**, genus of fungi, spores of wh. are produced in tubes instead of gills. Some 70 British species, many of which are edible, best known being *B. edulis* (or *cèpe*), with light brown cap, white or yellowish tubes, white flesh.

**Bolingbroke**, Henry St. John, 1st Visc. (1678-1751), Eng. statesman; supported exiled House of Stuart; brilliant but insincere. —Auth., *Idea of a Patriot King*, 1783; etc.

**Bolivar**, Simon (1783-1830), Venezuela: gen.; ended Sp. rule in S. Amer., 1821, created Repubs. of Colombia (1819) and Bolivia (1825).

**Bolivar**, 1) State, Venezuela, S. Amer., watered by Riv. Orinoco; c. 90,000 sq.m.; pop., 75,200; cap., Ciudad Bolivar. 2) Prov., Ecuador, S. Amer.; 1,160 sq.m.; pop., 70,000; cap., *Guaranda*. 3) Dept., Colombia, S. Amer.; 23,500 sq.m.; pop., 642,800; cap., *Cartagena*.

**Bolivar**, gold coin, current in Venezuela (\$0.1930); 25.25 B. = £1 at par (os. 9½d.).

**Bolivia**, inland repub., S. Amer.; area 514,200 sq.m.; pop., 2,900,000; W. plateaus among the Andes, c. 13,000 ft. ab. sea-level, with salt lakes (L. Titicaca) and min. deposits (one-fourth of world production of tin); E. lowlands, primeval forest (rubber); chf. rivs.: Beni, Mamore, Madeira, Paraguay; chf. mtns., *Bolivian Andes*; cap., *La Paz*; legal cap., Sucre. Part of Inca Empire till seized by Spaniards 1539; made indep. repub., 1825; war with Peru against Chile 1879-84 resulted in loss of prov. of Tarapáca, with access to sea, to Chile. Supported Allies in World War.

**Boliviano**, silver coin and standard monetary unit of Bolivia; par value 13.33 to the £, or abt. 1s. 6d., \$0.3650.

**Boll**, old Scot. dry meas., c. 4 bushels (varying).

**Bollandists**, Jesuits, publishers of the *Acta Sanctorum*, named after first editor, John Bolland (1596-1665).

**Bollard**, steel or iron casting on piers and decks of ships for making fast hawsers.

**Bolling Field**, aerodrome in Anacostia, D.C., U.S.A.

**Boll-weevil**, beetle of *Curculionidae* family; attacks bolls (pods) of cotton plant. **B.-worm**, larva of a moth (*Heliothis armiger*) that bores into the boll or fruit of the cotton-plant, causing destruction on a large scale in cotton plantations.

**Bologna**, 1) dist., Apulia, Italy; area, 1,500 sq.m.; pop., 643,000; maize, wheat. 2) cap. of dist., pop., 246,000; rly. centre; rly. rolling stock, sugar refining, macaroni, sausages; univ. (13th-16th. cents.) headquarters of legal and humanist studies; two leaning towers. Etruscan city, 191 B.C.; Charles V. crowned Emperor, 1530.



Bolivar



Bologna Leaning Towers

**Bolometer**, (phys.) instr. for measuring radiation.

**Bolsheviks**, Russ. Communist: *See* BOL-SHEVISM.

**Bolshevism**, doctrine of Lenin, expressed in his *State and Revolution* (1917), wh. contains principles of Bolshevik system. Bolshevism, built up on Marxist foundations, aims at bringing abt. the communist organization of social and economic system. So called from *Bolshevik* (majority party of Russ. Social Revolutionists). Objects: systematic organization of dictatorship of proletariat, wh. is to be transitional only; capitalist class to be radically deprived of rights, Red Army to be created from among working men and peasants to serve as an instrument of power, permeation of whole executive system, including administr. of justice, by members of ruling party, creation of central and local peasants', working men's and soldiers' councils (*soviets*). **ECONOMIC MEASURES**: nationalisation of private industr. and commer. concerns, State monopoly of exports, confiscation of large and medium estates, creation of collective agricultural concerns (grain, factories); general obligation to work, in principle equal pay for manual and intellec. work; distribn. of provisions at cheap rates to workmen organised in trade unions. **EDUCATIONAL MEASURES**: universal school attendance, instruction of illiterates, promotion of collectivist art and lit. for and by proletariat, strenuous opposn. to Ch. by means of agitation and confiscation of Ch. property, improvement of public health by instruction and hygienic methods.



Bolshevik  
Badge

**Bolsover**, urban dist., Derbysh., Eng.; pop., 12,000; coal-mining, quarrying. **B. Castle**, built 11th cent., rebuilt 1613.

**Bolting**, (tech.) process of sieving or separating corn after grinding. **B. cloth**, fine-meshed material of silk or wire, used for bolting (sifting) meal in mills.

**Bolton**, co. bor. Lancs., Eng.; pop., 177,300; cotton centre, woollens, ironworks, collieries. **B. Abbey**, ruined Augustinian priory (c. 1120), W. Riding, Yorks, Eng., 22 m. N.W. Leeds. **B. Wanderers**, Eng. Assoc. Football club fndd. 1887, quickly adopted professionalism; won English Cup 1923, '26, '29.

**Bolts**, short, round pegs for uniting machine parts, having at one end a *head*, hexagonal or square, at the other a *thread*, on wh. a *nut* fits; usu. a *washer* is also used.

**Bolzano**, **Botzen**, prov. cap., Venezia Tridentina, Italy, at junct. of rivs. Talavera and Isarco; pop., 25,500; vines; health resort. Anc. Rom. station; held by Bavarian Counts, A.D. 680; by Italy, 1810; by Austria, 1814-1918.

**Boma**, port and former cap. of Belgian Congo, on Riv. Congo; pop., 5,000.

**Bomb**, metal container filled with explosive, sometimes thrown from aircraft. *See also* GRENADE.

**Bombardier**, N.C.O. in the Royal Artillery; appointment equiv. to lance-corp. in other arms. **B. beetle**, ground beetle that protects itself agst. attack by emitting a jet of caustic fluid from rear end of the body; found in S. and S.E. England.

**Bombardon**, **bass tuba**, brass wind instr. resembling tuba and of very deep pitch.

**Bombay**, 1) maritime prov., Brit. Aerial Bomb India, includes 350 native states; area (excluding Aden [q.v.] and its dependencies), 122,500 sq.m.; pop., 22,209,000 (75% Hindus, 20% Mohammedans, 90,000 Parsis). Riv. Narbada, flowing into Gulf of Cambay (which, with Gulf of Cutch, breaks the coast-line), divides prov. into two: to N. are Gujarat (with Kathiawar and Cutch penins.) and Sind (partly desert; mouth of Riv. Indus); to S. is Maharratta country, incldg. part of Deccan tableland and surrounding Portg. Goa. Chief mtns., W. *Ghats* (8,000 ft.; 1,000 m. long; parallel with coast); ports, Bombay, Karachi. Products include millet, wheat, rice, cotton, oil-seeds; cotton and silk mills, carpets, brasswork. Rlys. c. 6,000 m. 2) City, on Bombay I., cap. of prov., second port and largest commercial and manuf. centre in India (cotton, textiles, handicrafts); great natural harbour; docks; univ. (1887); Anglican and R.C. bprics.; chief centre of the Parsis (Parsees). European quarter on Malabar Hill; area, c. 22 sq.m.; pop., 1,157,900. **B. duck**, term applied by Anglo-Indians to the *hummalo* (fish native to India) after it is dried; has strong flavour; used in curry, etc.

**Bona**, port, Algeria, N. Afr.; pop., 42,000; leather, tapestry, sheep, barley, phosphates.

**Bona Dea**, ancient Rom. and Ital. goddess of fecundity, whose cult, attended with curious mysteries, was observed by women only.

**Bona fide** (Lat.) in good faith.

**Bonanza**, rich vein of ore in a mine; anything that shows prosperity; run of luck, fine weather, and good, plentiful crops, etc.

**Bonaparte**, **Buonaparte**, Corsican family; Napoleon Bonaparte: *see* NAPOLEON I.; his bros.: **Joseph** (1768-1844), Kg. of Naples 1806, of Spain 1808. **Lucien** (1775-1840), Min. of Interior, 1799; supported Napoleon during Hundred Days. **Louis** (1778-1846), Kg. of Holland 1806-10. **Jerome** (1784-1860), Kg. of Westphalia 1807-13. Sisters: **Elise** (1777-1820), Grand Duchess of Tuscany, 1809. **Pauline** (1780-1825), Napoleon's favourite, m. Generaj Leclerc, then Prince Camillo Borghese.





**Caroline** (1782-1839), m. Joachim Murat, 1800, known as Countess Lipana after 1815.

**Bonaventura**, St. (1221-74), "Seraphic Doctor"; scholastic theologian and mystic; commemor. July 14th.

**Bonavista**, seapt. tn., E. coast Newfoundland, on B. Bay, S. of Cape B.; pop., 4,050.

**Bond**, 1) document under seal binding a pers. to pay a specif. sum or to fulfil a contract; 2) surety reqd. by Customs auth. from pers. handling dutiable goods on wh. duties have not been pd., see BONDED WAREHOUSE; 3) (Stk. Exch.) certif. of loan issued by govts., corporns. and rlys. on wh. specified rate of int. is payable; Bs. vary in nature and function, e.g., *active*, on wh. full int. is payable immed., and *deferred*, on wh. payment of full int. is not made at once; *bearer*, payable to "bearer" holding numbered coupons with wh. to claim int., and *registered*, holder of wh. has name registd. and int. forwarded; *drawn*, when B. has been drawn at period. "drawing," and *called*, B. wh. has been drawn and called in for redemption; *collateral*, B. secured by deposit of securities; *convertible*, capable of being converted into shares of the co.; *income*, int. on wh. depends on earnings of co.; *lottery*, issued by a govt. to raise funds for a specif. purpose, prizes being offered to subscribers and drawn for periodically; *redeemable*, repayable at specified date or within specif. period. (ant.: *perpetual*); *gold* and *sterling B.*, payable as to int. and princ. in gold or sterling; *exchequer* and *treasury B.*: see NATIONAL DEBT. 2) (Bldg.) Method of arranging bricks in wall so that they overlap; in *Eng. B.* courses (*q.v.*) consist alternately of "headers" (bricks end-on) and "stretchers" (bricks showing their sides); in *Flemish B.* bricks are arranged alternately in each course. 3) (Chem.): see VALENCY.

**Bonded warehouse**, (commer.) place in wh. goods may remain under bond without payment of customs duty until their destination has been determined.

**Bondfield**, Margaret Grace (1873- ), Brit. trade-union leader and social worker; M.P. from 1926; Min. of Labour, 1929.

**Bond Street**, street in London running N. and S. betw. Oxford St. and Piccadilly; named after Sir Thomas Bond, comptroller of household to Henrietta Maria (*q.v.*). In two portions: **Old B. St.**, betw. Margaret Bondfield Burlington Gdns. and Piccadilly; built, 1686; **New B. St.**, running N. to Oxford St., built c. 1721.

**Bondu**, Fr. protectorate, Senegal, W. Africa, inhab. by Fula.

**Bone**, Muirhead (1876- ), Brit. artist. official artist W. Front and Fleet, 1916-18.

**Bone**, (physiol.) substance consisting chiefly of calcium phosphate and gelatinous organic matter. Bones are firm but elastic, and together form framework or skeleton of vertebrate animals. All bones are covered with *periosteum* and long bones are filled with *marrow* (*q.v.*). **B. ash**, bones burnt in the air; consists mainly of phosphate; a source of phosphorus and used as a manure. **B. oil** (Dippel's Oil): see PYRIDINE. **B. setter**, (med.) practitioner, without med. qualifns., of art of restoring, by manipulation, joints and cartilage damaged by accident or disease; now being introd. into regular med. practice.

**Bon enfant**, (Fr.) good fellow. **Bon gré, mal gré**, willingly or unwillingly; with good or bad grace; **bon mot**, witty saying, epigram; **bonne bouche**, dainty morsel; **bon voyage**, a good, pleasant journey.

**Bo'ness, Borrowstounness**, police burgh and seapt., W. Lothian, Scot., on S. shore Firth of Forth; pop., 10,100.

**Bonheur**, Rosa (1822-99), Fr. painter: *The Horse Fair*.

**Boni**, native State, S. Celebes, Dut. E. Indies, on Gulf of B.; 2,600 sq.m., pop., c. 210,000; formerly most powerful State in Celebes.

**Boniface**, St.; orig. Winfrith (c. 672-754), Eng. Benedictine monk; *Apostle of Germany*; fndd. Abbey of Fulda; said to have cut down Thor's Oak at Geismar; comm. June 5.

**Boniface**, popes of this name are numbered I to IX, of whom the most important, historically, are: **B. III** (606), obtd. recognition of "headship of the Church at Rome" from Phocas, Byz. Emp. **B. IV** (608-13), converted Pantheon, Rome, into Christian church. **B. V** (619-25), promoted Ch. in Eng. and made Canterbury Metropolitan See. **B. VIII** (1294-1303), conflicts with Philip IV of France over taxation of priests. **B. IX** (1389-1404), quarrelled with Richard II of Eng. over collation of benefices; estab. perpetual annates.

**Bonifacio**, port, Corsica; pop., 2,250; olive oil, cork, tobacco. **Straits of B.**, betw. Corsica and Sardinia, 7 m. wide; rocky and dangerous.

**Bonington**, Rich. Parkes (1801-28), Eng. painter of land- and sea-scapes; under influence of Constable, wh. he transmitted to Barbizon School (*q.v.*).

**Bonin Islands**, archipel. betw. Japan and Marianne Isls.; 20 small volcanic isls.; area, c. 27 sq.m.; pop., 6,000; cap., *Omura*; harbour, Port Lloyd, both on Peel Island; valuable timber, turtles. Jap. possession.

**Bonito**, name of various large kinds of tunny of the mackerel family, of Atlantic Ocean, etc., esp. the striped tunny which pursues the flying fish.



Margaret Bondfield

**Bon marché**, system of retailing goods on small-profits basis, orig. instituted in Paris, 1842, by a former shop-girl, Mme. Boucicaut, and her husband, as department store for working-classes.

**Bonn**, tn., Rhenish Prussia, Ger., on Rhine, nr. Cologne; pop., 92,100; old R.C. dioc. see; Rom. military settlement; residence of Electors of Cologne 1273-1794; occupied by Fr. 1801, acquired by Prussia, 1815; birthplace of Beethoven.

**Bonner**, Edmund (c. 1495-1569), Eng. relate; bp. of London, 1539; carried on vigorous persecution of Protestants during reign of Mary; refused to take oath of supremacy at accession of Elizabeth; committed to Marshalsea, where he died.

**Bonnivard**, François de (1493-1570), Genevan prelate and politician; prior of St. Victor, 1514; opposed Charles, Duke of Savoy; confined in Castle of Chillon, 1530-6; *Les Chroniques de Genève*; hero of Byron's *Prisoner of Chillon*.

**Bonny**, port, Nigeria, at mouth Riv. Bonny (an E. distributary of the Niger); exports palm-oil; pop., 7,000.

**Bonsels**, Waldemar (1881- ), Ger. author: *Die Biene Maja*; *Travel in India*; *Notes of a Vagabond*.

**Bonus**, (finan.) shares issued to shareholders in a co. who have a right to a prop. of new shares allotted to them when the capital of the co. is increased.

**Bony-pike**, fresh-water fish of N. Amer., attaining fully 6 ft. in length; head covered with bony plates and whole body with hard, shining quadrangular scales; jaws well armed with teeth.

**Bonze**, term applied by Europeans in Far East to Buddhist priests.

**Booby**, sea-bird, species of Gannet (q.v.), ind. in trop. and sub-trop. seas. Also sailor's name for common gannet.

**Book**, a collection of sheets of paper or other material, blank, written, or printed, bound together. In Babylonia and Assyria place of books taken by series of engraved baked clay tablets; in Egypt, anc. Greece and Rome took form of rolls of papyrus or parchment, written in narrow columns, and mounted on stick or sticks; in early years of Christian Era arose the *codex* (collection of separate parchment sheets bound together in wooden cover); henceforward little change in form of B., save for increased beauty of form, script, and illustration, until invention of printing (q.v.) in West in 15th cent.; first printed books closely copied MS. models, and were often illuminated and sometimes illustrated by hand; printed illustrations from woodcuts begin c. 1460; first printed B. large and heavy, smaller B. being popularized by Aldus, c. 1501; pasteboard bindings and gold tooling commence in 16th cent.; 17th and

18th cents. marked by growth of elegance and variety in binding and illustration; calico and cloth bindings introd. 1820-30; in last decade of 19th cent. beginning of modern methods of illustration by photo-engraving, and large output of cheap reprints of famous works to meet widespread demand caused by general diffusion of education; Morris's *Kelmscott Press* (q.v.) initiated movement for treatment of book-production as an art. **B. louse**, a minute, wingless insect occurring in old books and collections of museum specimens; found in dust particles. **B. production**: *Operations*: 1) Composing: the setting of type (q.v.) either by hand or mechanically (see TYPE-COMPOSING MACHINES); 2) make-up, i.e., arrangement of type into pages; 3) imposition of pages so that they fold correctly; 4) machining or presswork: making the impression by means of a *platen press* (two flat surfaces), a *flat-bed machine* (type on a flat surface, paper applied round a cylinder), *rotary machine* (both printing surface and paper on cylinders); for this machine, curved stereotypes are made (q.v.); 5) bookbinding (q.v.). See also PRINTING. **B.-scorpion**, a small creature allied to the spiders; has claws like those of a true scorpion (q.v.), but no tail; sometimes found among old books and papers; harmless. **B. van**, mobile lending library, chfily. in U.S.A., also in Munich, and, experimentally, in some Eng. county library systems.

**Bookbinding**. Pre-19th cent. books were all bound by hand; now practically the whole process is carried out by machinery, though hand-binding is resorted to for some of the finest work. *Operations*: 1) folding into sections the large printed sheets (usu. of 16 or 32 pp.); 2) gathering sections in order; 3) sewing sections together; 4) pressing ("smashing") to make book a good shape; 5) trimming the three edges (sometimes the fore edge, and sometimes all, left uncut); 6) gluing and rounding the back; 7) fixing mull (q.v.) to the back to form the hinges; 8) attaching end-papers; 9) colouring or marbling edges, when required; 10) casing in. The "case," or cover, is made separately in modern commercial binding.

**Booking**, (finan.) entering in business books of such business transactions as can be expressed by means of figures.

**Book-keeping**, (finan.) written record in set of books of such business transactions as can be expressed in figures. **Single-entry b.**, recording of cash pymts. and receipts and of debits and credits. **Double-Entry b.**, comprises separate books for goods, current (q.v.), and stock accts. in order to obtain full and accurate survey of bookings.

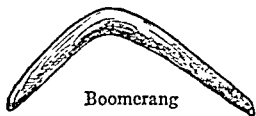
**Bookmaker**, professional betting-man, esp. one who lays "odds" (q.v.) against race-horses.

**Book of the Dead**, most important of ancient Egyptian relig. writings; prayers, hymns, formulae, etc., for use of dead in underworld.

**Bookworm**, larva of a moth or beetle, which burrows into the pages of old books; (fig.) a person engrossed in the study of books.

**Boom**, 1) (naut.) spar for extending bottom of certain sails; chain cable or connecting line of spars, used as barrier in defence of a stretch of water. 2) (Stk. Exch.) marked rise in prices, "bullish tendency." Ant.: *slump*.

**Boomerang**, Australian curved wooden missile; some kinds describe a curve and return to the thrower if they miss the target.



Boomerang

**Boon**, (tech.) woody part of flax and hemp; removed by retting.

**Boone Way**, road between Crab Orchard and Cumberland Gap, Kentucky, U.S.A.; 95 miles.

**Booster**, 1) (elec.) device for regulating current of accumulator; 2) (colloq.) one who increases sale or value of anything by belauding and advertising.

**Boot, Jesse**: see TRENT, 1st. BN.

**Boötes**, the Ploughman, constell. containing bright star Arcturus (*q.v.*); see PL., ASTRONOMY, N.C.H., E.

**Booth, Chas.** (1840-1916), Eng. sociologist and shipowner; chairman of Booth Steamship Co.; *Life and Labour of the People in London*, 1891-1903; *Poor Law Reform*, 1910.

**B., Edwin Thos.** (1833-93), Amer. tragic actor; 1st appeared as Wilford in the *Iron Chest*, 1850; manager of Winter Garden Theatre, New York, 1860; forced to retire, 1865, through assassination of Pres. Lincoln by his bro., J. Wilkes Booth; blt. Booth's Theatre, 1868; visited Europe, 1881 and 1883. **B., Junius Brutus** (1796-1852), Eng. tragic actor; noted for his representation of Richd. III.; father of E. T. Booth and J. W. Booth. **B., William** (1829-1912), fnder. and 1st Gen. of Salvation Army (*q.v.*).

**B., Wm. Bramwell** (1856-1929), son of Wm., 2nd Gen. of Salvation Army.

**Boothia Felix**, peninsula of N. Canada, site of the magnetic N. Pole.

**Bootle**, co. bor., Lancs., Eng., adjacent Liverpool; pop., 76,800.

**Bootlegging**, the illegal sale and distribution of alcoholic liquor in Prohibition countries.

**Bopp, Franz** (1791-1867), Ger. philologist, fndd. science of Comparative Philology.

**Bora**, Katharina von (1499-1552), m. Luther (*q.v.*), 1525; formerly a nun.

**Bora**, cold, dry N.E. wind of Adriatic, blowing in autumn and winter.

**Boracic acid**, white powder which has a mild antiseptic action; used medicinally, and also as a food preservative.

**Borage**, *Borago officinalis*, herb growing 18 ins. high; hairy stems and leaves, purple flowers. Used to flavour "cups"; leaves used in folk med. externally as a poultice and internally as a diuretic.

**Borah**, Wm. Edgar (1865- ), Amer. statesman and senator; chairman Comm. on Foreign Relations, 1924; opposed American entry into League of Nations.

**Borax**, sodium borate ( $\text{Na}_2\text{B}_4\text{O}_7$ ); made from boric acid and washing soda; crystals or white powder used in shampoos and as a gargle and mouth wash.

**Bordeaux**, Henri (1870- ), Fr. novelist, member of the Fr. Acad.; *Le Résurrection de la Chair*, 1920, etc.

**Bordeaux**, cap. of dépt. of Gironde, France, on Riv. Garonne; pop., 267,500; port; brandy, wines, wool, fish, fruit, resin, oil, sugar; univ.; wireless station. Eng. possession, 1154-1451; headquarters of Girondists in Fr. Revol., of Nat. Defence (Gambetta), 1870; and of Fr. Govt., 1914. **B. mixture**, copper sulphate in milk of lime, used for diseases of plants, e.g., *phylloxera vastatrix*. **B. wines**, red or white wines, grown in district of B.; contain from 9 to 11% of alcohol; gen. known in Eng. as *clarets* (*q.v.*); incl. Médoc, Graves, St. Emilion, Sauternes, etc.

**Borden**, Sir Robert (1854- ), Canad. statesm.; represd. Canada, Imp. War Conference, 1917-18; Paris Peace Conference, 1919.

**Border** (theatre), abbreviated drop-scene, hung from flies (*q.v.*) and representing sky, ceiling, foliage, etc.

**Bordereau** (Fr.), covering letter, schedule of contents; word popularized in Eng. during the Dreyfus (*q.v.*) case.

**Border Regiment**, Brit. infantry regt.; union (1881) of old 34th and 55th Foot; depot, Carlisle; record office, Preston; 16 battalions in World War.

**Bordighera**, tn. on Ital. Riviera; pop., 5,000; floriculture; winter resort.

**Bordone**, Paris (1500-71), It. painter of Venetian School; pupil of Titian; *Fisher Presenting a Ring to the Doge*.

**Bore**, 1) (geog.) tidal wave; piling up of water caused by sea at high tide rushing up a constricted river-channel with high cliffs on each side; esp. that of the Severn. 2) (Tech.)



Gen. Bramwell Booth

Elliott and Fry.  
Gen. William Booth

calibrated inner tube of firearms (guns, pistols, cannons). **Axis of the b.**, imaginary line running through centre of the bore. **Boreas**, (Gr. myth.) personification of the N. wind.

**Borecole**: see CABBAGE.

**Borghese**, 1) noble family of Siena settled in Rome c. 1550; **Camillo B.**, elected pope Paul V, 1605; **Pr. Camillo B.** (1775-1832) 2) Pauline, sister of Napoleon I, 1803. 3) 6th-cent. villa in Rome, built by B. family, containing famous art objects transferred from B. palace. Napoleon I removed many valuable works of art from B. palace to Louvre (q.v.). 4) **B. gladiator**, statue dating from early Roman Empire, now in Louvre.

**Borgia**, It. family of Span. origin. **Rod-igo** (1431-1503), Pope Alexander VI (1492); his s. **Cesare** (1476-1507), card., abp., Duc de Valentinois; portrayed in Machiavelli's *The Prince*. **Lucrezia Borgia** (1480-1519), sister of Cesare. The latter two earned sinister reputation as poisoners.



Cesare Borgia

**Borgu**, inland country, W. Africa, W. part French (Dahomey) 2. part British (N. Nigeria; cap., Bussa).

**Borinage**, dist., prov. Hainaut, Belgium; coal mines.

**Boring**, (indus.) in earth for oil or water, or to investigate minerals underground. For hard rock, rotating diamond drills are used, wh. cut solid core a few inches in diam. *Vash-drills* (with water supply) and *percussion drills* also used. Deepest B. abt. 3,000 ft.

**Boris I**, Bulg. tsar (c. 853-903), converted Bulgaria to Chr. faith. **Boris III** (1894-), Kg. of Bulg., 1918.

**Boris Godunov** (1552-1605), Russ. tsar, exterminated House of Rurik, 1598; emancipated Russ. Church. Also, title of tragedy by Pushkin, and of opera by Moussorgsky.

**Borkum**, isl., E. Friesland, in North Sea; area, 12 sq.m.; pop., 3,200; bathing resort.

**Borneo** (see map MALAY ARCHIPELAGO), island, Malay Archipelago (third largest in the world), bisected by the Equator; area, 84,000 sq.m.; pop., c. 2,100,000. Interior mountainous (not fully explored); *Kinabalu*, in N., 13,700 ft.; coasts low and marshy. Climate hot and damp; heavy rainfall. Luxuriant vegetation; forests, of ebony, sandalwood, rubber, ironwood; spices, rice, millet, yams, coffee, sugar, tobacco, indigo; great natural wealth; diamonds, rubies, platinum, gold, coal; pearl-fisheries; fauna include orang-utan, tapir, wild boar; edible birds' nests. Inhabts. include Dyaks (in the

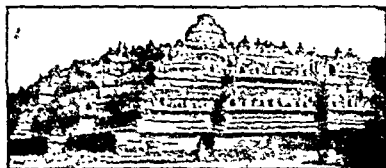
interior), Malays, and Chinese traders. Politically divided betw. the Dutch (in the S.; abt. three-quarters) and the British. **Dutch Borneo** (W. Div.: cap., Pontianak; E. Div.: cap., Banjarmasin); area, c. 207,000 sq.m.; pop., 1,822,400 (4,518 Europeans). Brit. interests are: **British North Borneo**, in N.; area, 31,100 sq. m.; pop., 258,000; cap., Sandakan, port, Jesselton; *Brunei* (q.v.), protectorate on N.W. coast; and *Sarawak* (q.v.), protectorate on N.W. coast. I. of *Labuan*, though only 6 m. off N.W. coast, is administratively part of Straits Settlements.

**Bornholm**, Dan. isl. Baltic Sea; area, 22 sq.m.; pop., 45,675; fisheries, flax, oats, hemp; granite hills in N. and deposits of porcelain clay, precipitous fissured cliffs; sand dunes on S.E. and W.; heaths in interior, meadows and woods; medieval ruins and monuments; fortified round church; chief town, Rønne, pop., 10,520.

**Bornite**, natural copper-iron sulphide, the raw material from which copper is obtained.

**Bornu**, dist., centr. Sudan, mainly in Nigeria and partly in Cameroons (Brit. section); area, c. 50,000 sq.m.; pop., c. 5 million; L. Chad in N.-East.

**Boro-Budur**, sanctuary of Buddha in



Boro-Budur

centr. Java; enormous temple buildings (8th-9th cents. A.D.).

**Borodin**, Alexander Porfiryevich (1834-87), Russ. composer; opera, *Prince Igor*; symph., *In the Steppes of Central Asia*.

**Borodino**, vil., 70 m. W. of Moscow, Russia; scene of Napoleon's victory over Kutusov's forces, 1812.

**Boron**, (chem.) light, non-metallic element, symbol B, at. wt. 10.82; obtd. from borax (q.v.).

**Boro-silicate glass**, type of G. containing boric oxide, with silica, small amt. of alkali and, sometimes, alumina and zinc oxide. Valuable as: 1) heat-resisting, for cookery; 2) chemical-resisting, used in laboratories; 3) thermometer glass.

**Borough**, tn. disting. by incorporation of its mayor, aldermen, and burgesses. Bs. in Eng. date from Nor. times, but are now regulated mainly by Municipal Corporations Act, 1882; govt. is by a town council comprising mayor and aldermen with elected town councillors; its powers are wider than those of an urb. dis. council (q.v.), and, if bor. be a "co. bor.," are equiv. to those of a co. council.

**Boroughbridge**, small mkt.-tn., W. Riding, Yorks., Eng.; scene of defeat of Earl of Lancaster by Edward II in 1322.

**Borromean Islands**, four rocky islands in Lake Maggiore, Italy.

**Borromeo**, St. Carlo (1538-84), Card., Abp. of Milan; commem. Nov. 4th.

**Borromini**, Francesco (1599-1667), It. archit.; assisted in completion of St. Peter's, and designed churches of *St. Agnese*, *La Sapienza*, and *San Carlino alle Fontane* in Rome.

**Borrow**, George Henry (1803-81); Eng. traveller, romance-writer and philologist; *Lavengro*, 1851; *Romany Rye*, 1857; *Wild Wales*, 1862; *The Bible in Spain*, 1842.

**Borrowstounness**: see BO'NESS.

Borrow



**Borstal institutions**, places of detention for juvenile offenders (16-21 yrs.) in wh. they are subjected to instruction and discipline with a view to reclaiming them from crime. First institute (1902), for boys only, at Borstal, Kent. Now, 3 establishments for boys, one for girls. **B. Association**, provided for by Act of 1908; body occupied in after-care of young persons upon their discharge from a Borstal Institution.

**Borzhom** ("Pearl of the Caucasus"), health resort, on Riv. Kura, Georgian S.S.R.; carbonated, alkaline springs; water exported in bottles.

**Borzoi**, Russ. wolfhound resembling a large black and white deerhound (*q.v.*).

**Bosboom**, Jan (1817-91), Dutch painter: *Hoorn Church*.

**Bosch**, Hieronymus (c. 1460-c. 1530), Dut. painter: *Visions of Hell*.

**Boscobel House**, Salop, Eng., 6 m. N.E. Shifnal; after battle of Worcester (1651), Charles II hid beneath a trapdoor in the house, subseqly. taking refuge in an oak-tree near by.

**Boscombe**, seaside resort, Hants, Eng., E. suburb of Bournemouth.

**Bosco-Reale**, tn. at S. base of Mt. Vesuvius, Italy; pop., 10,500; Graeco-Roman remains.

**Bose**, Sir Jagadis Chandra (1858- ), Ind. physicist and biol.; fndd. *B. Research Inst.*, Bombay.

**Bosnia and Hercegovina**, dist., Jugoslavia; area, 19,767 sq.m.; pop., 1,630,225; very mountainous (*see* DINARIC ALPS); fertile valleys in basins of rivs. Bosna, Drina, and Save; half area forest land; iron and coal; fruit (plums), tobacco, and grain (maize and barley); fur-trapping; sheep-breeding (largest flocks in Eur.); cap., *Sarajevo*. Formerly part anc. Illyria; Serbo-Croatian in Mid. Ages; Hungarian preponder-

ance since 12th cent.; kingdom in 1376; annexed by Turkey, 1463; insurrections, 1831, followed by Austrian occupation; (with Hercegovina) annexed by Austria, 1908; amalgamated with Yugoslavia, 1918.

**Bosphorus, Bosporus**, strait betw. Black Sea and Sea of Marmora, 17 m. long,  $\frac{1}{2}$  m. to 2 $\frac{1}{2}$  m. wide; closed to warships unless with consent of Turkey.

**Boss**, (archit.) ornamental keystone at the intersection of vault ribs or other forms.

**Bossage**, (archit.) masonry in wh. corners of the stones are cut off, so that a space is left betw. them.

**Bossuet**, Jacques Bénigne (1627-1704), Bp. of Meaux; orator and writer: *Oraisons Funébres*.

**Boston**, 1) munic. bor., Lincolns, Eng., at mouth of Riv. Witham; pop., 15,600; seaport, fishing; "Boston Stump" (Ch. tower, 288 ft.). 2) port and cap.,

Mass., U.S.A.; pop., 793,000; univ. (1869); library; museum; chf. building: State capitol (1795-98); manuf. machinery, clothing, shoes, furniture, patent medicine. Scene of events leading to War of Independence: tea thrown into harbour ("Boston Tea Party"), 1773; birthplace of Franklin. **B. and Maine Railroad**, U.S.A., connects New England States of Massachusetts, New Hampshire, Maine, Vermont, and New York, terminal Boston; 2,090 miles. **B. Post Road**, betw. Boston and New York, U.S.A.; 235 m.; forms part of Atlantic Highway. **B. 3)** dance. mod. variation of waltz (*q.v.*).

**Boswell**, Jas. (1740-95), Scot. lawyer and author, friend and biographer of Dr. Johnson.

**Bosworth, Market Bosworth**, mkt. tn., Leics., Eng., 11 m. W. of Leicester; pop., 700. **Bosworth Field**, 1485, decisive battle in Wars of the Roses, when Richard III was defeated and slain by Henry, Earl of Richmond, who was at once acknowledged as Henry VII.

**Botany**, science of plants, comprises: 1) *Systematic B.*, arrangement and classification; 2) *Morphology*, form and development; 3) *Anatomy*, internal structure; 4) *Histology*, minute anatomy; 5) *Cytology*, structure and behaviour of cells; 6) *Physiology*, nutrition, metabolism, and all other life-functions; 7) *Ecology*, relation of plants to one another and to environment; 8) *Palaentology*, or *Palaeo-botany*, study of fossils; 9) *Genetics*, study of breeding and heredity; 10) *Plant-pathology* or *Phyto-pathology*, study of disease in plants. **Botanical classification**: All plants are either *Cryptogams*, having no



Boston Stump

flowers producing seeds, or *Phanerogams*. Cryptogams comprise protophyta (algae, fungi, bacteria); bryophyta (liverworts, mosses); pteridophyta (ferns, horsetails). Phanerogams include all higher plants; divided into gymnosperms (male and female organs not found in single flower), and angiosperms (seed enclosed in ovary, and male and female organs usu. together). Angiosperms are divided again into monocotyledons and dicotyledons (one- and two-seed leaf plants). See also under separate headings.

**Botany Bay**, bay on the coast of New South Wales, so called from the variety of plants found at the time of its discovery (1770); first penal settlement, 1788; now a sea-side suburb of Sydney. **B. wool**, finest quality Australian merino.

**Botfly**, large, hairy fly whose larvae live parasitically in body and skin of mammals, especially cattle; eggs are laid on the skin; larvae leave host when full-fed; often cause tumour-like swellings.

**Botha**, Louis (1862-1919), S. African soldier and statesman; Boer commdr. in 2nd S. Afric. War; Pr. Min. Union of S. Africa, 1910; conq. Ger. S.W. Africa, 1915.

**Bothnia**, Gulf of, N. inlet of Baltic Sea, 400 m. long, 155 m. wide, studded with isls. and rocks; waters are almost fresh and freeze quickly.

**Bothwell**, James Hepburn, 4th E. of (1536-78), 3rd husb. of Mary, Qn. of Scots; murdered Darnley, her 2nd husband.

**Bothwell**, small tn., Lanarksh., Scot., on Riv. Clyde; at battle of B. Bridge the Covenanters were defeated by Claverhouse in 1679.

**Botolph**, St., Eng. monk; fndd. monastery at Ikenhoe, Lincs. (now Boston), where he instituted Benedictine rule, 654; commem. 17th June.

**Botosani**, tn., N. Moldavia, Rumania; pop., 33,000; commerc. centre for wheat and cattle.

**Bo tree**, name given by Buddhists to sacred wild fig or Pipul; accordg. to tradition, Buddha sat under wild fig when attaining perfect knowledge. Specimen at ruined city of Anuradhapura, grown from branch of parent tree, still revered by pilgrims.

**Böttger**, Johann Friedrich (1682-1719), Ger. apothecary; 1st maker Saxon porcelain.

**Botticelli**, Sandro (1447-1510), It. painter. pupil of Filippo Lippi: *Portrait of Dante*; *Birth of Venus*; *Primavera*.



Botfly



Botha

**Bottle**, hollow vessel for storage and conveyance of substances, mostly made of glass and earthenware; of iron for mercury, of lead and gutta-percha for hydrofluoric acid. Princ. users of bottles are the mineral water

and brewing industries; cleaning, filling, stoppering, and labelling are performed by automatic machines. Manuf. formerly done by hand, now mechanical. **B.-blowing machines** of Severin and Owen blow bottles automatically and continuously in moulds from liquid glass supplied from furnace. **B. post**,

letter enclosed in sealed bottle and flung into ocean; seldom used since introduction of wireless on ships.

**Bottomry**, loan, secured on ship and freight, to enable vessel to proceed on its return voyage. **B. bond**, document defining such loan.

**Botucatu**: see BUTUCATU.

**Botulism**, rare disease caused by the ingestion of ham, sausages, or canned foods infected by the bacillus *botulinus*; characterized by double vision and other eye symptoms, and by paralysis of the pharynx and diaphragm.

**Bötzberg**, pass over Jura Mtns. from vall. of Rhine to vall. of Aare. **B. Rly.**, Basle-Brugg (36 m.), passes thr. tunnel  $1\frac{1}{2}$  m. long.

**Botzen**: see BOLZANO.

**Boucher**, François (1703-70), Fr. historical and pastoral painter.

**Bouches-du-Rhone**, dépt., S.E. France; area, 2,010 sq.m.; pop., 1,100,000; marshy plain (Camargue) in W., hilly in E.; olives, vines, almonds, mulberries, wheat, oats, silk, pottery, soap; cap., Marseilles.

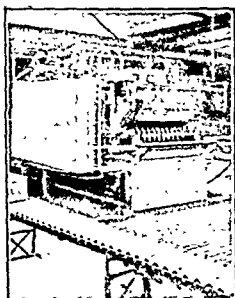
**Boucicault**, Dion (1822-90), Anglo-Amer. actor-manager and playwright: *London Assurance*, 1841; *The Colleen Bawn*, 1860; *The Shaughraun*, 1874.

**Bougainville**, Louis Antoine de (1729-1814), Fr. navigator; A.D.C. to Montcalm.

**Bougainville**, largest of the Solomon Isls., area, c. 3,860 sq.m.; pop., c. 50,000; volcanic, thickly wooded; chf. tn., Kieta.

**Boughton**, Geo. Hy. (1833-1905), Anglo-Amer. painter: *Lake of the Dismal Swamp*; *The Scarlet Letter*; *The Return of the Mayflower*, etc. **B., Rutland** (1878- ), Eng. composer: *The Immortal Hour*.

**Bougie**, port, dept. Constantine, Algeria; pop., 25,300; cap. of Vandal kgdm. of



By courtesy of the Liquid Carbonic Co., Ltd.

Automatic Bottle-rinsing Machine

Genseric in 5th, and Berber kgdm. in 11th, century.

**Bougie**, 1) instrument for dilating urethra; 2) slender pencil of cocoa butter (*Theobromine*) containing medicament to be applied to urethra.

**Bouguereau**, Adolphe Wm. (1825-1905), Fr. painter: *Triumph of Venus*; *The Martyr's Triumph*; *Charity*.

**Bouillabaisse**, stew of fish flavoured with garlic and spices made in S. France.

**Bouillon**, formerly a duchy, now small tn., in Belgian province of Luxembourg, nr. Fr. frontier; French from 1678 to 1815; has famous castle.

**Boulanger**, Georges (1837-91), Fr. Gen. and politic.; Min. of War (1886-88); tried for conspiracy, and exiled.

**Boulder**, tn., Colorado, U.S.A.; pop., 11,200; univ. (1861); gold, silver, coal, mineral springs.

**Boulevard** (Fr.), wide circular road in a town, originally on site of old city walls. **Boulevardier**, lounge who frequents the Paris boulevards.

**Bouleversement** (Fr.), upheaval; overthrow; confusion.

**Boulogne-sur-Mer**, tn., dépt. Pas-de-Calais, France; pop., 55,400; port and seaside resort; cross-Channel service to Folkestone. **B.-sur-Seine**, W. suburb of Paris; pop., 68,000; N. of Bois de Boulogne.

**Boulton**, Matthew (1728-1809), Eng. manufacturer and engineer; collaborated with Watt in improving the steam-engine and adapting it to new purposes; invented coining apparatus and struck coins for the Sierra Leone and East India companies and for Russia; produced new copper coinage for Gt. Britain, 1797.

**Bounty, Mutiny of the**, mutiny of crew of Eng. ship the *Bounty*, after leaving Tahiti, 1789; capt. and 18 of crew set adrift in small boat and reached England; mutineers, led by John Adams, settled on Pitcairn Isl., in Pacific, and mingled with natives to form a civilised community; their descendants were transferred to Norfolk Island in the Pacific in 1856.

**Bouquet**, flavour and aroma of wine produced by volatile oils. Depends on variety of grape, locality, climate, method of manufacture. **B. garni**, bunch of dried herbs (thyme, parsley, bay-leaf) used for flavouring.

**Bourbaki**, Charles (1816-97), Fr. Gen., fought in Crimea and in Franco-Prussian War.

**Bourbon**, Fr. royal fam. after 1589; overthrown by Revolution 1792 (Louis XVI); retnd. 1814, 1815 (Louis XVIII); banished after Revol. 1848 (Louis-Philippe). Other branches ruled in Spain (until 1931), in Sicily (until 1860), and in Parma (until 1859).

**Bourbon**, Chas., Duc de (1490-1527), Fr. general; created Constable of France, 1515; made alliance with Hy. VIII of Eng. and Emp. Chas. V, who promised him an independent kgdm. wh. was to include Provence, Bourbonnais, Auvergne, and Dauphiné; fled from France, 1524; helped to drive French from Italy, 1524; took part in battle of Pavia, 1526; killed in attempted sack of Rome.

**Bourdon gauge**, (phys.) instrument for indicating fluid pressure or suction, consisting of flat tube bent into an arc of a circle and closed at one end. When pressure or suction is applied to the other, the tube bends outwards or inwards respectively, and this motion is transmitted by toothed gearing to a pointer which moves over a graduated scale.

**Bourg, Bourg-en-Bresse**, cap. dépt. Ain, France; pop., 20,360; agric., poultry-farming.

**Bourgeois** (*pron.* bur-jois'), a size of type (see POINT SYSTEM: TYPE).

**Bourgeoisie**, orig. Fr. mid-class, betw. nobility and working-class; term now often appld. to class of smaller capitalists, as opposed to *proletariat* (q.v.).

**Bourges**, cap. of dépt. Cher, France; pop., 46,000; govt. arsenal and gun foundries, breweries, leather, biscuits, cutlery; episc. see; famous cathed.; Rom. remains.

**Bourget**, Paul Charles Joseph (1852- ), Fr. author: *La Vie Inquiète*; *Outre-Mer*, 1895; *Le Danseur Mondain*, 1926.

**Bourget, Lac du**, lake, dépt. Savoie, Fr.; largest wholly in France (c. 20 sq.m.); Aix-les-Bains on E. shore.

**Bourogne**: see BURGUNDY.

**Bourlon Wood**, wood, 4 m. W. Cambrai, Fr.; hotly contested in battle of Cambrai (Nov.-Dec., 1917).

**Bourne**, Francis (1861- ), Eng. cardinal; ordained priest, 1884; fndd. Southwark diocesan seminary, 1889, and became its rector; bp. of Southwark, 1897; succeeded Cardinal Vaughan as archbp. of Westminster, 1903; created cardinal, 1911.

**Bournemouth**, co. bor., Hants, Eng., seaside resort; pop., 116,800.

**Bournville**, model vill., 4 m. S. of Birmingham, Eng., fndd., 1879, by George Cadbury; chocolate and cocoa works; pop., c. 5,000.

**Bourrée**, old French clog-dance.



Cardinal Bourne



Photo. Reade, Bournemouth  
The Sands, Bournemouth

**Bourrienne**, Louis Ant. F. de (1769-1834), Fr. diplomat; priv. sec. to Napoleon in Egypt, 1798; sent as Fr. envoy to Hamburg, 1804; recalled to France in disgrace for accepting bribes, 1813; embraced royal cause, 1814, and became minister of state, under Louis XVIII; *Mémoires sur Napoléon*, 1829.

**Bourse**, (finan.) name for Europ. Stk. Exch., esp. *Paris Bourse*.

**Boutroux**, Émile (1845-1921), Fr. philosopher.

**Bouts**, Dierick (c. 1410-75), Dut. painter, disciple of the Van Eycks. Five panels in Ch. of St. Peter at Louvain; 2 panels in Brussels gallery.

**Bouvet Island**, in Atlantic Ocean; Norweg. since 1927; 22½ sq. m.; inhabited occasionally; whaling station.

**Bow**, 1) primitive weapon of flexible wood, the recoil of which, when bent and then released, propels an arrow by means of a string stretched betw. its extremities; also, slender piece of wood strung with horsehair, with which the strings of the violin, 'cello, etc., are made to sound. 2) (Naut.) Forepart of ship; stem; prow. **B.-leg**, condition of having legs curving outwards from knee; freqtly. caused by rickets (*q.v.*).

**Bow**, or **Stratford-le-Bow**, par., E. London, on Riv. Lea; the "French of Stratford-atte-Bow" mentioned by Chaucer. Bow china at its best c. 1750.

**Bow Church**, **St. Mary le Bow**, church in Cheapside, London, Eng., built by Wren (*q.v.*), 1680, over the Norman crypt of an earlier ch., from arches of wh. the name *Bow* is derived (see also ARCHES, COURT OF). True Londoners are said only to be those born within sound of the "Bow Bells."

**Bowdler**, Thomas (1754-1825), Eng. editor and expurgator of Shakespeare and Gibbon; hence to *bowdlerize*, to expurgate a text without reference to sound taste or judgment.

**Bowel**, intestine (*q.v.*).

**Bowen**, Marjorie, pseud. of Gabrielle Margaret Long; novelist, essayist, and historical writer: *The Viper of Milan*, 1906; *William the Silent*, 1928; *Dark Rosaleen*, 1932; etc.

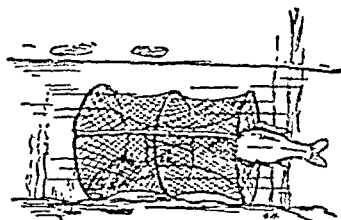
**Bower-bird**, closely allied to Bird of Paradise; nest consists of remarkable *bowers* constructed by male bird. **Satin b.-b.** of Australia makes an arched bower of sticks built on the ground and decorated with parakeet's feathers, snail shells, coloured leaves, and small bleached bones.

**Bow Fell**, mtn. (2,960 ft.), Cumberland, Eng. Lake Dist., N.W. Wast Water.

**Bowls**, game played on a lawn ("green") by rolling biased wooden balls ("woods") as near as possible to a small object ball (the "jack").

**Bowness**, par., Cumberland, Eng., on the Solway; W. end of Roman Wall (*q.v.*). **B.-on-Windermere**, vil., Westmorland, Eng., on L. Windermere; pop. included in tn. of Windermere (*q.v.*).

**Bow-net**, stationary trap of netting for



Bow-net

catching fish, lobsters, eels, etc., beneath surface of water.

**Bowood Park**, seat (Marq. of Lansdowne), Wilts., Eng., 2 m. S.W. Calne; picture-gallery.

**Bowsprit**, (naut.) spar projecting from ship's bow.

**Bow Street**, Covent Garden, London; street in wh. Covent Garden Theatre (*q.v.*) and the princ. London police court are situated. **Bow St. Runners**, name given, in 18th cent., to men attached to the police offices of London, employed in detection of crime; also known as *Robin Redbreasts*, on acct. of their red waistcoats. Abolished on formation of new police force (1829).

**Box**, 1) (bot.) *Boxus sempervirens*, evergreen shrub or tree of Medit. area; much used for edging garden paths. 2) Hard wood used for wood-carving, turnery, and wood-wind instruments. 3) (Theat.) Enclosed space for party of spectators in theatre. **B. calf**, leather made from calfskin and prepared in a partic. way. **B. office**, ticket office at theatre. **B.-spanner**, tool for turning nuts in machinery; tube fitted at one end to shape of nut (usu. hexagon), and having means of applying turning leverage (hole for bar) at other end. Used where nut is inaccessible to ordinary spanner. **B. thorn**, *Lycium barbarum*, solanaceous climbing plant, with purple flowers.

**Boxer Rebellion**, anti-foreign rising in China, 1900, wh. led to occup. of Pekin by Eur. troops. See CHINA.

**Box Hill**, hill (506 ft.) on N. Downs, Surrey, Eng., 1 m. N.E. Dorking; so called from its box trees; 652 acres. Presented to or acquired by the Nat. Trust. 1914-26.

**Boxing**, art or sport of fighting with fists encased in *B. gloves*. Contests decided by a "knock-out" (*q.v.*) or on points. Boxers classified by weight: Fly-weight, 8 st.; Bantam, 8 st. 6 lb.; Feather, 9 st.; Light, 9 st. 6 lb.; Welter, 10 st. 7 lb.; Middle, 11 st.



6 lb.; Light-Heavy, 12 st. 7 lb.; Heavy, over 12 st. 7 lb.

**Boyar**, 1) ancient order of the Russ. aristocracy; 2) the Conservative party in Rumania.

**Boy-bishop**, boy elected on feast of St. Nicholas (Dec. 6th); dressed in bp.'s robes, he held mock jurisdn. till Holy Innocents' Day (Dec. 28th). Common in Mid. Ages on the Continent and in Eng. (esp. at Salisbury). **B. Scouts**, voluntary organisation founded by Sir Robert (Lord) Baden-Powell, 1908, for training boys in discipline, wood-craft and good-citizenship; movement has spread rapidly in Brit. Isles, U.S.A., and elsewhere.

**Boyce**, William (1710-79), Eng. composer; compiled 3 vols. *Cathedral Music* (1760-78); composed song, *Hearts of Oak*.

**Boycott**, Charles C. (1832-97), land-agent of Ld. Erne in Ire.; 1st victim of boycotting, i.e., injurious social and commercial ostracism, 1880.

**Boyle**, Robert (1627-91), Eng. chem. and physicist, disc. with Mariotte (q.v.) Boyle-Mariotte Law, that product of pressure and volume of a gas is a constant.

**Boyne**, riv., Leinster, I.F.S.; rises in Bog of Allen, flows through Co. Meath into Irish Sea 4 m. below Drogheda; length 70 m.

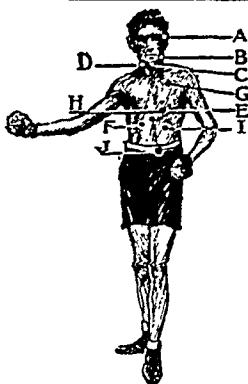
**Battle of the B.**, victory of William III over forces of James II, 3 m. W. of Drogheda, 1 July, 1690.

**Boys' Brigade**, The, organisation founded in Glasgow (1883) for training and welfare of boys; has definitely relig. basis.

**Boz**: see DICKENS, CHARLES.

**B.P.**, abbr. Brit. Pharmacopoeia; **b.-p.**, abbr. boiling-point.

**B.P.O.E.**, abbr. Benevolent and Protective Order of Elks (U.S.A.).



Points of a Boxer

- A Temple
- B Angle of Chin
- C Point of Chin
- D Carotid Artery
- E Solar Plexus
- F Spleen and Liver
- G Above Heart
- H Heart
- I Stomach
- J Belt



Boy Scout

**Br**, (chem.) symbol for bromine (q.v.).

**Brabant**, Mediaev. duchy of Netherlands; now divided betw. Holland and Belgium.

**North B.**, prov., Holland; area, 1,922 sq.m.; pop., 836,900; cap., 'sHertogenbosch; Dut. since 1648. **South B.**, prov., Belgium; area, 1,267 sq.m.; pop., 1,642,900; cap., Brussels. Belgian since 1830; fertile country, agric. and cattle-breeding.

**Brac**, **Brazza**, largest of Dalmatian isls., off Split (Spalato), Yugoslavia, N. Adriatic; area, c. 190 sq.m.; pop., 19,250; orchards and vineyards.

**Brace**, 1) portable boring instr. provided with a crank by wh. it is turned; also, means for pressing it agst. the work. Used mainly by wood-workers; *ratchet-B.* provid. with ratchet so that handle can move one way without turning tool. Tools are called *bits*, most common being: centre-bits, augers, screw-drivers, and countersinks. 2) (Naut.) A rope passing through a block at the end of a yard (q.v.) for regulating its movement.

**Bracegirdle**, Anne (c. 1674-1748), Eng. actress; renowned for her Belinda (Vanbrugh's *Provoked Wife*) and Almira (Congreve's *Mourning Bride*); superseded in popular favour by Mrs. Oldfield.

**Brachiopoda**, marine animals; externally somewhat resemble bivalve molluscs, but differ entirely in structure, as the two valves of the shell lie on the back and front of the animal, not on its sides, and each is symmetrical. Popularly called *lamp-shells* from the resemblance in many species to shape of a Roman lamp. Swarmed in the seas of past geological epochs, but to-day greatly reduced in species and genera.

**Brachycephalic**, designation of races with round skulls; opp. *Dolichocephalic*.

**Bracken**, a tall fern, common in England and many other countries; remains standing when dead, affording cover for game.

**Bract**, small leaf of flower; also thin leaf, or plate, of metal.

**Brad**, small headless nail used in cabinet-making.

**Bradbury**, John Swanwick Bradbury, 1st bn. (1872- ), Brit. civil servant; Joint Perm. Sec. of Treasury, 1913; princ. Brit. Repr. on Reparations Commission, 1919-25.

**Braddon**, Mary Elizabeth (1837-1915), Eng. novelist: *Lady Audley's Secret*, 1862.

**Bradfield College**, Berks., Eng.; public school for boys, fndd. 1850; 368 boys; open-air performance of Gr. play every 3 years.

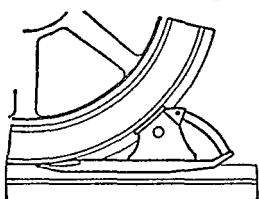
**Bradford**, Wm. (1589-1657), one of the Pilgrim Fathers; elected governor of Plymouth colony, 1621; *History of Plimouth Plantation* (1646), 1st. pubd. 1856.

**Bradford**, city, W. Riding, Yorks., Eng.; pop., 298,000; centre worsted trade; wool mkt.; *Bolling Hall*, ancestral home of wife of Pres. Wilson. **B.-on-Avon**, tn., Wilts.,



block of frictional material (asbestos-metal composition) is pressed upon metal ring by hand, compressed air, vacuum, hydraulic power, magnetic force, or other means. **B.-ramp**, device at end of rly. line to stop carriages; gen. provided with buffers (*q.v.*).

**B. shoe**, or **slipper**, applied to rly. lines; brings shunted goods-wagons to halt. **B. horse-power**, in motors, power actually available; indicated *H.-P.*, horse-power generated in cylinder of an engine = brake *H.-P.* + loss by friction.



Brake Shoe

**Bramah**, Joseph (1748-1814), Eng. mechanic and inventor; patented **B. lock** (1784) and hydraulic press (1796).

**Bramante**, Donato (c. 1444-1514), It. archit. and artist; undertook rebuilding of St. Peter's, Rome, begun 1506, but not carried out according to his design.

**Bramble**, a prickly shrub, esp. the blackberry.

**Brambling**, bird of the finch family; winter visitor to Great Britain.

**Bramham**, par., W. Riding, Yorks, Eng., 3 m. W. Tadcaster. **Battle of B. Moor**, defeat of rebel Earl of Northumberland by army of Henry IV, 1408.

**Brampton**, Hy. Hawkins, 1st Bn. (1817-1907), Brit. judge; called to Bar, 1843; judge, 1876; prominent in many famous Victorian trials, esp. in Tichborne case and that of Sugden v. Ld. St. Leonards; reputation for severity.

**Bran**, outer coat or husks of corn, separated by bolting or sifting process in milling.

**Brancker**, Sir Wm. Sefton (1877-1930), Brit. airman; Royal Artillery, 1896; served in S. Afric. War, 1899-1902; deputy director of milit. aeronautics, 1914; director of civil aviation, 1922; air vice-marshal, 1924; killed in R101 airship disaster, 5 Oct., 1930.

**Brandenburg**, prov. Prussia, Ger.; area, 15,080 sq.m.; pop., 2,599,300; two administ. dists.: Potsdam, Frankfurt-on-Oder; cap., *Potsdam*. One-third of surface sandy soil (pine forests), otherwise arable; many lakes. Orig. inhabs. Germanic Semnones; then Slavs; dist. ptly. subdued by Charlemagne and conquered by Henry the Fowler; subseqtly. colonised by Gero; Albert the Bear appointed margrave, 1134; succeeded by his heirs (Ascanian line) till 1320. Wittelsbach dynasty, 1324; recognised as Electorate, 1356; Prussian State of Brandenburg created by Frederick William, "the Great Elector." See PRUSSIA.

**Brandes**, Georg (1842-1927), Dan. critic

and writer: *Main Currents of Nineteenth Century Literature*.

**Branding**, marking skin with a hot iron, a mediaeval punishment; marking cattle, sheep, etc., with symbol denoting ownership.

**Brandon**, 1) mkt. tn., Suffolk, Eng. (borders of Norfolk), on Little Ouse; pop., 2,500; flint-knapping; 2½ m. N. are Grime's Graves (*q.v.*). 2) Tn., Manitoba, Canada; pop., 16,500; dairying and agric., brick-fields.

**Brandy**, alcoholic liquor distilled from fermented grapejuice; alcoholic content varies from 48-56%.

**Brandywine Creek**, riv., Pennsylvania and Delaware, U.S.A. **Battle of B.**, victory of British under Sir Wm. Howe over Washington in War of Independ., 11 Sept., 1777. Led to occupn. of Philadelphia.

**Brangwyn**, Frank (1867- ), Brit. artist and illustrator; R.A. 1919.

**Brantford**, tn., Ontario, Canada, on Grand Riv.; pop., 30,000; manuf. agric. machinery, rly. material. Named after Joseph Brant, Mohawk chief, leader of Iroquois on Brit. side in Amer. War of Independence.

**Brantgoose**, **brentgoose**, small species of wild goose, dark in colour, visiting Britain from Arctic during winter. Also called *barnacle goose* (*q.v.*).

**Branting**, Karl Hjalmar (1860-1925), Swed. politic.; Pr. Min. 1921-23; Nobel Peace Prize 1921.

**Brantôme**, Pierre de Bourdeille, Seigneur de (1540-1614); Fr. author: *Memoirs*, 1665-66.

**Brasenose College**, Oxford; fndd. 1509, by William Smith, Bp. of Lincoln, and Sir Richard Sutton, of Prestbury, Cheshire. Commonly known as "B.N.C."

**Brasov**: see KRONSTADT (Rumania.)

**Brass**, port and dist. cap., Nigeria, W. Africa, on B. Riv. (tributary of the Niger).

**Brass**, alloy of copper and zinc; many tech. uses. Easier to cast and work with tools, also cheaper and stronger than copper, but less resistant to corrosion.

**Brasses**, **monumental**, form of memorial in wh. sheet of engraved brass was embedded in floor or wall of a church, usu. bearing portrait and epitaph. Intro. 13th cent. and common at one time in Eng., France, Germany, Flanders. Although many brasses were stolen, fine examples are still found in Eng. (esp. E. Anglia, Surrey), Germany (Meissen, Freiburg), and Belgium (Bruges).

**Brassey**, Thos. B., 1st Earl (1836-1918), Brit. politcn.; civil lord of Admiralty, 1880-85; Gov. of Victoria, 1895-1900; acct. of his voyages in yacht "Sunbeam," written by his wife; fndd. *The Naval Annual*.

**Brassy**, wooden golf-club with brass sole.

**Bratianu**, Ion (1864-1927), Rum. statesman; Pr. Min. 1909-11, 1913-18; instrumental in Rum. joining Allies 1916.

**Bratislava, Pressburg, tn.,** Czechoslovakia, on Riv. Danube; pop., 123,852; chf. river-port of republic; many Hungarian kings crowned in its cathed.; univ., president's palace, annual fair; metal, textile, and tobacco industry; arsenal. Hungarian cap. and coronation city, 1540-1784; Peace Treaty betw. Austria and France, 1805.

**Braun, Karl Ferdinand** (1850-1918), Ger. physicist; Nobel Prize (physics), 1909, with Marconi (q.v.).

**Braunau** (Czech *Broumou*), tn., Czechoslovakia, on Bohemian-Silesian frontier; pop., 8,500. Suppression of Prot. Church in 1617 occasioned Thirty Years' War.

**Braxy**, (vet.) disease of sheep in wh. blood coagulates, causing arrest of circulation and apoplexy.

**Bray, 1)** vil., Berks., Eng., on Riv. Thames; pop., 3,500; home of "Vicar of Bray," who thrice changed his beliefs to keep his living. **2)** Seaside resort and mkt. tn., Co. Wicklow, I.F.S.; pop., 8,500.

**Brazil**, federal republic, S. America; 3,285,320 sq.m.; bounded on E. by Atlantic, on N., W., and S. by most of the other S. Amer. countries; low-lying unhealthy region of Riv. Amazon in N. and W., covered with trop. forests; densely wooded plateaux (7,000 ft.) in E.; arid steppes (*campos*) in interior. Chf. tribs. of Amazon are Rio Negro, Japura, Madeira, Tapajoz, Xingu; Riv. Tocantins flows into Pará estuary, Riv. San Francisco into Atlantic; in S. are headwaters of rvs. Paraguay and Paraná. Climate varies. *Products*: coffee (two-thirds of world-production), cocoa, cotton, rubber, sugar, rice. *Principal ports*: Santos, Rio de Janeiro, Victoria, Bahia, Pernambuco. Pop., 40,270,000, mostly Cath. (40% whites, 32% half-castes, 15% Negroes, 9% Indians). Ger. settlements (pop., c. 1,000,000) in S.E. Cap., *Rio de Janeiro* (future federal cap., *Brasília*, in construction since 1924). Twenty states, 1 territory, 1 federal district. Discovered in 1500 by Cabral; Port. colony till 1822; independent empire under Pedro I and II; republic, 1889. **B. nut**, the hardshelled seed of *Bertholletia excelsa*, Brazilian tree. The nuts, wh. are edible and oily, are contained in a globular fruit. **B. wood**, orange-red wood of tree *Caesalpinia echinata*, from wh. dye is obtained.



**Brazing**, process of uniting metals (iron, steel, copper) by means of *hard solder* (q.v.), *silver solder*, or *spelter*, i.e., copper-zinc alloys wh. fuse at a red heat. Borax is used as flux.

**Brazos River**, in Texas, U.S.A.; empties into Gulf of Mexico; 950 miles.

**Brazza**: see BRAC.

**Brazzaville, cap. tn.,** Middle Congo; pop. c. 5,000; on N. bk. of Stanley Pool, Riv. Congo; cataracts begin 4 m. below. See FRENCH EQUATORIAL AFRICA.

**Breach of privilege**, gen. any act wh. either House of Parl. decides to treat as an offence. Formerly, many acts so treated, e.g., newspaper criticism of members and pub. of debates. Specifically, attempt by Hse. of Lds. to deal with finance, over wh. Hse. of Com. possesses exclusive control.

**Bread**, form of food produced by baking of flour (q.v.) mixed with water and usu. with leaven or yeast (q.v.). Most anc. form of food-production: primitive man probably baked cakes of crushed grain on heated stones covered with hot ashes. The *dough* formed by mixture is kneaded (formerly by hand, now by machinery) and baked in special ovens, the yeast causing it to rise in the process, by fermentation. **B.-fruit tree**, *Artocarpus communis*, tree growing freely in S. Pacific lands; fruit when baked resembles bread and is an important article of food in Polynesia.



Fruit of Bread-fruit Tree

**Breadalbane**, territorial dist. of Perthshire, Scotland.

**Breaking off of diplomatic relations**, recalling of diplomatic representatives, not amounting to declar. of war, but commonly a prelim. to it.

**Break-spark**, (elec.) spark or momentary arc produced at point where an elec. current is broken.

**Breakwater**, barrier built out into the sea to break the force of the water; vary from small wooden structures to massive works in stone or concrete, e.g., those at Dover, Plymouth, Fishguard, and Cherbourg.



Bream

**Bream**, carp-like fish of the genus *Abramis*: has an elongated, laterally compressed body, short, blunt snout, silvery-grey or brown. Common in English lakes and rivers and in N. Europe.

**Breast**, upper front part of body betw. the shoulders. See MAMMARY GLANDS. **B.-bone** (*sternum*), flat, narrow bone in centre and front of chest to wh. ribs are attached. **B.-stroke**, (swim.) slow stroke useful for long distances; arms are thrust forward and swept round thr. 90°; legs drawn up and kicked outwards as widely as possible (see PL., SWIMMING).

**Breccia**, (geol.) composite rock, consisting of small angular pieces, held together by a natural cement; hence, term applied to mass of shingle or stones held together by frozen snow or ice.

**Brechin**, royal burgh, Angus, Scot.; pop., 6,800; 12th cent. cath. (now parish church); 10th cent. Round Tower (87 ft.); linen, flax, rope-making.

**Brecknockshire, Brecon(shire)**, inland co., S. Wales, area, 733 sq.m.; pop., 57,800; surface mountainous (*Brecon Beacons*, 2,907 ft., highest in S. Wales; *Black Mtns.*, 2,660 ft.); orchard valleys in E.; rlys. Wye and Usk; agric., cattle and sheep breeding; dairy produce; coal and iron. **Brecknock, Brecon**, co. tn. on Riv. Usk; pop., 5,300; Priory Church (cathedral).

**Brecon**, see BRECKNOCKSHIRE.

**Bregenz**, cap. of Vorarlberg, Austria, on L. Constance; pop., 12,500; silk; summer resort.

**Brehm**, Alfred Edmund (1829-84), Ger. naturalist; estab'd. the Berlin Aquarium, 1869; auth. *Animal Life*, 1863-69.

**Brehon Laws**, anc. laws of Ireland, said to have originated in 5th cent.; transcripts now preserved in MSS. of somewhat later date. *Brehon* was the title of the judge.

**Bremen**, city, Ger., cap. free state same name; free Hanseatic tn. on Riv. Weser; pop., 304,500; includes exclaves of *Vegesack* and *Bremerhaven* (99 sq.m.; pop., 338,845). Largest Ger. port after Hamburg; shipbuilding, trade in cotton, wool, tobacco, rice, coffee.

**Bremerhaven**, foreport of Bremen, Germany, on Riv. Weser, at mouth of Geeste; pop., 23,900; four harbours; shipbuilding.

**Brendon Hills**, range (1,390 ft.), W. Somerset, Eng., E. of Exmoor Forest.

**Brennan**, Louis (1852-1932), Brit. inventor; Brennan dirigible torpedo, and gyroscopic monorail transport; superintendent of Govt. B. torpedo factory, 1887-96.

**Brenner**, mtn. pass betw. Austria and Italy, 4,484 ft.; rly. constructed, 1864-67.

**Brennus** (fl. 390 B.C.), leader of Gauls, defeated Rom. at the Allia (387 B.C.); plundered and burned Rome; saying, *Vae victis!* (Woe to the vanquished) attribd. to him.

**Brenta**, riv. (106 m.), N. Italy; rises Tyrol; flows into Adriatic S. of Venice.

**Brentford**, Wm. Joynson-Hicks, 1st Visc. (1865-1932); Brit. statesman; Home Sec., 1924-29.

**Brentford and Chiswick**, munic. bor., Middx., Eng., part Greater London; *Brentford* united with *Chiswick*, 1927; pop., 62,600; sit. at confluence of Brent and Thames; waterworks, saw-mills, mkt. gardens.

**Brentwood**, mkt. tn., Essex, Eng., 18 m. N.E. London; pop., 7,000; breweries, brickworks.

**Brera**, palace of Milan, Italy, containing library, museum, and renowned art gallery (Raphael's *Sposalizio*, etc.).

**Brescia**, 1) prov., N. Italy, area, 1,822 sq.m.; pop., 652,225; silk, leather, machinery,

wine, fruit, maize. 2) Cap. of prov.; pop., 105,000; textiles, iron, and steel.

**Breslau**, cap. of Pruss., prov. of Lower Silesia, on Riv. Oder; pop., 617,000; chf. Silesian market; iron-founding, machinery, textiles, paper, furniture; famous wine and beer house (Schweidnitzer Keller), used since 1355; univ.; techn. school. Anc. *Wratistlaw*; seat of dukes of B.; purchased by John of Bohemia 1335; passed to Prussia 1741.

**Brest**, seapt., W. coast of France, chf. Fr. naval base; pop., 90,500; arsenal, fisheries.

**Brest-Litovsk, Brzesc-Litewski**, fortified tn., Poland, on Riv. Bug; cap. prov. of Polesie; pop., 29,555; part of triangle of fortification comprising Warsaw, B., and Iwan-gorod. Armistice, Dec. 5, 1917, followed by **Treaty of B.-L.**, betw. Russia and Central Powers, 3 March, 1918 (annulled by Treaty of Versailles, 1919).

**Brethren of the Free Spirit**, pantheistic mystics of Mid. Ages without eccles. ties, chiefly laymen; influenced *Beghards* and *Bequines* (q.v.).

**Brétigny, Peace of**, concluded betw. Eng. and Fr., 1360; Eng. undertook to renounce her claims to Fr. crown, Maine, Anjou, Normandy, and Touraine, and to release Kg. John; Fr. to surrender Gascony, Guienne, Poitou, Saintonge, Périgord, Limoges, Montreuil, Ponthieu, and Calais, and to pay 3,000,000 gold crowns. The treaty was not carried out.

**Breton**: see LANGUAGE SURVEY, *Brit. Languages*.

**Bretwalda** (Ruler of the Britons), title given to certain Kgs. of the Heptarchy (q.v.) chosen to lead combined forces in war.

**Breughel, Brueghel**, fam. of Flem. painters: **Pieter** (1525-69), The Elder; his



Lotus-Eaters, after Brueghel

sons **Pieter** (1564-1637), nicknamed "Hell," and **Jan** (1568-1625), nicknamed "Velvet"; **Jan** (1601-79), The Younger, son of Jan.

**Brevet**: see RANK.

**Breviary**, book containing prayers, lessons, hymns, etc., which the Cath. Ch. requires its clergy to recite daily in the Divine office. Different parts of the office assigned to different Canonical Hours (q.v.); several

times revised, last by order of Pius X in 1911.

**Brevier**, a size of type. See POINT SYSTEM; TYPE.

**Brevi manu**, (Lat.) with short hand; i.e., summarily.

**Brewster**, Sir David (1781-1868), Scot. physicist; investigated polarization (q.v.) of light; joint fnder. Brit. Association.

**Brian** (926-1014), Irish kg.; known as B. Boroinhe or Boru; became Kg. of Munster, 978; acknowledged as chf. Kg. of Ireland, c. 1002; deftd. the Danes at Clontarf, 1014; slain in his tent after the battle.

**Briand**, Aristide (1862-1932), Fr. statesman, Premier and For. Min.; Nobel Peace Prize, 1926, with Stresemann and Sir A. Chamberlain as signatory of Locarno Pact (q.v.).

**Briar**, **brier**, thorny-stemmed plant, e.g., Sweet Brier. **B. root**, wood from French heather-root; used for making tobacco-pipes.

**Bribery**, act of corrupting a person with money or gifts, to betray a trust or duty, or illegally to obtain an advantage. See CORRUPT PRACTICE.

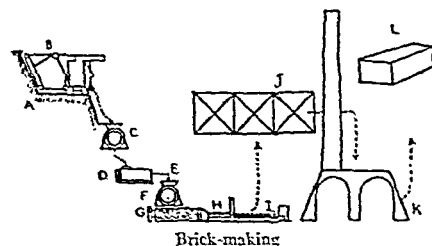
**Bric-à-brac**, objects of slight artistic value; curios.

**Brick**, Dudley (1839-1909), Amer. composer; operas, oratorios, anthems, songs, etc.

**Brick**, oblong, rectang. block of hard, burnt clay used in building. History of



Briand



Brick-making

- |                    |                  |
|--------------------|------------------|
| A Clay Deposit     | G Expelling Worm |
| B Excavator        | H Die            |
| C Rolls            | I Soft Brick     |
| D Cutter and Mixer | J Drier          |
| E Cutter           | K Ring Kiln      |
| F Pug-mill         | L Standard Brick |

b.-making goes back to earliest records of civilisation. The clay is moulded wet or semi-dry. In wet or plastic system, the mass is made very wet, pressed out into a continuous piece and cut into suitable lengths by wire; in stiff and plastic system, clay is forced into a mould by a pug-mill. The *Filton* or semi-dry B., hardest and strongest kind, is moulded under heavy pressure; staple building brick of London. Bricks are fired in kilns, after partial drying; modern con-

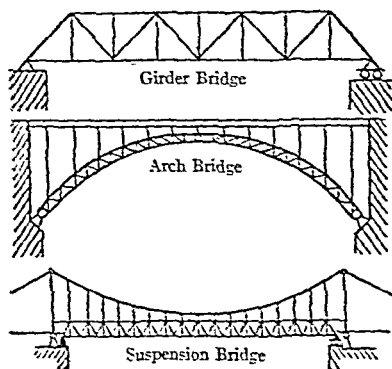
tinuous ring kiln consists of a ring of fire-chambers, hottest point being moved round by dampers; loading and unloading effected at cold points. *Tunnel kiln* has fire at one point, the bricks moving through continuously. Standard size of B. in Gt. Brit. is  $8\frac{1}{4} \times 4\frac{1}{4} \times 2\frac{3}{4}$  inches.

**Bridal Veil**, 1) waterfalls in Yosemite Nat. Park, California, U.S.A.; 620 ft. 2) Part of Niagara Falls, betw. U.S.A. and Canada; 162 feet.

**Bridewell**, penitentiary, so called from palace of Henry VIII, nr. St. Bride's Well, Blackfriars, London, Eng., which later became house of correction for vagabonds and loose women.

**Bridge**, Frank (1879- ), Eng. composer and conductor; orchest. works, chamber music, and songs.

**Bridge**, 1) (tech.), structure spanning a watercourse, highway, railway, etc., as means of transport. Chief varieties: a) **Girder**, theoretical limit of single span about 800 ft.; up to half this has been built. b) **Arch**, span of 1.675 ft. in Sydney Harbour (completed in 1932). c) **Suspension**, theoret.



Forms of Bridge

limit 7,000 ft. **Materials**: steel, reinforced concrete. **Opening B.'s**, to allow ships, etc., to pass; various types: swing, bascule (drawbridge type, e.g., Tower Bridge, London), roller, vertical lift, transporter (high bridge with road ferry suspended from car travelling on span). 2) (Mus.) Small piece of wood over which the strings of an instr. are stretched. 3) Card-game developd. from whist (q.v.), in wh. trumps are made by dealer, whose partner's hand (dummy) is exposed after first lead; scoring is by tricks and honours, only tricks counting towards rubber (q.v.).

**Bridge-building Brotherhood**, (eccles.) arose twds. end of 12th cent. in S. France, with hospices at chief fords of main rivers; built bridges and maintained ferries; recognised by Clement III (1189).

**Bridgend**, mkt. tn., Glam., S. Wales; pop., 7,000; coal, iron, limestone quarries;  $\frac{1}{2}$  m. S. is *Ewenny Priory* (1141).

**Bridge of Allan**, police burgh, Stirlingsh., Scot., on Allan Water; pop., 2,900; inland spa. **B. of Sighs**, bridge (1597), Venice, over Rio della Paglia, betw. Doge's Palace and prisons.

**Bridgeport**, seapt., Connecticut, U.S.A., at mouth of Pequonnock Riv.; pop., 146,700;

airport; manuf. iron, steel, munitions, sewing machines, typewriters, and motor cars.

**Bridges**, Robt. (1844-1930), Eng. poet; Poet Laureate, 1913. *Shorter Poems*, 1890; *The Testament of Beauty*, 1929.

**Bridget (Brigid or Bride)**, St. (c. 500), a patron saint of Ireland, died at Kildare, 523. Prob. inherited some of the sanctity orig. attaching to ancient Celtic goddess of same name; commem. Feb. 1st.

**Bridgetown**, cap. and port Barbados, W. Indies, on S.W. coast; cathed., Govt. house, barracks, arsenal; pop., 13,500.

**Bridgewater**, Earls and Dukes of, Eng. titles held by Egerton family 1617-1829; title, *Earl of B.*, 1st bestowed on **John Egerton** (d. 1649), 1d. lieut. of Wales, 1631; Milton's masque *Comus* written for celebrations of appt. at Ludlow Castle. His great-grandson, **Scroop** (1681-1745), 4th earl, 1701; created *1st Duke of B.*, 1720. His elder son d. 1748 without children, and the title passed to his 2nd son, **Francis** (1736-1803), 3rd duke; developed his coal-mines in Lancs.; employed Jas. Brindley (*q.v.*) to construct **B. Canal**, first Eng. canal, from Manchester to Runcorn, 1758-65; length (inclgd. branches), 40 m.; now superseded by Manchester Ship Canal (*see* MANCHESTER). Ducal title became extinct at his death; title, Earl of B., passed to his cousin, **John Wm.** (d. 1823), as 7th earl; and at his death to his bro., **Francis Hy.** (1756-1829), 8th and last earl; naturalist; antiquary; bequeathed Egerton MSS. to Brit. Mus.; fndd. *Bridgewater Treatises*, 1833-40.

**Bridgittines**, relig. order, under rule of St. Augustine, founded in Sweden by St. Bridget (c. 1302-1373), consisting of nuns, priests, deacons and lay-brothers; suppressed in Sweden, 1595; convent now exists at South Brent, Devonshire.

**Bridgnorth**, munic. bor., Salop, Eng., on Riv. Severn; pop., 5,200; manuf. carpets.

**Bridgwater**, munic. bor., Somerset, on Riv. Parrett; manuf. bath brick; pop., 17,100. Birthplace, Adml. Blake.

**Bridlington**, tn. and seaside resort, E. Riding, Yorks., Eng.; pop., 19,700.



Robert Bridges

**Bridport**, seapt., Dorset, Eng.; pop., 5,900; manuf. ropes, sail-cloth; harbour at West Bay,  $\frac{1}{2}$  m. south.

**Brie**, agric. dist., dépt. Seine-et-Marne, France; area, 2,400 sq.m.; dairy produce (cheese); cap., Meaux.

**Brief**, (legal) document of instructions, prepared by solicitor, giving barrister, or counsel, a compendious statement of facts in a case to be tried in court. *See also* PAPAL BRIEF.

**Brienzen**, vil., Berne, Switzerland; on *L. Brienzen* (12 sq.m.); pop., 2,600; wood-carving.

**Brierley Hill**, urb. dist., S. Staffs., Eng.; pop., 14,500; manuf. bricks, pottery, nails, glass.

**Brieux**, Eugène (1858- ), Fr. didactic playwright: *Damaged Goods*; *The Three Daughters of M. Dupont*.

**Briey**, arrondissement, dépt. Meurthe-et-Moselle, France; pop., 3,000; large iron-ore deposits providing two-thirds of Fr. production.

**Brig**, square-rigged sailing-ship, with two masts.

**Brigade**, milit. formation; *Infantry Bde.*, 3 or 4 battalions; *Cavalry Bde.*, 3 regts.; *Artillery Bde.*, 3 batteries.

**Brigadier**, 1) Brit. Army, temp. appointment of officer commanding infantry or cavalry brigade (*q.v.*), or holding a staff office of similar status; immediately senior to colonel. Until end of World War, known as **b.-general**, then until 1928 as **colonel-commandant** or **colonel-on-the staff**. 2) Fr. Army, corporal.

**Brigantine**, two-masted vessel, with square-rigged foremast, and fore and aft sails on mainmast.

**Briggs**, Henry (1556-1630), Eng. mathematician, introd. *Briggsian* logarithms (*q.v.*) with unity taken as log. of ratio of 10 to 1.

**Bright**, John (1811-89), Eng. Lib. statesman and orator; leader, with R. Cobden (*q.v.*), of Manchester school (*q.v.*).

**Brighton**, co. bor., Sussex, on Eng. Channel; largest and best-known seaside resort in Eng.; pop., 147,400.

**Bright's disease**, first described by Eng. doctor, Richard Bright (1789-1858); chronic kidney disease (nephritis) with dropsy and presence of albumen in urine.

**Brigid**, St.: *see* BRIDGET.

**Brill**, food-fish of the turbot family; plentiful in Brit. waters.

**Brill.** (mus.) abbr., *brillante* (Ital.), brilliantly.

**Brillat-Savarin**, Anthelme (1755-1826), Fr. gastronomist and author: *The Physiology of Taste*.



John Bright



Photo, Brighton Publicity Dept.  
Brighton: The Front, from King's Cliff

**Brilliant**, properly, a cut diamond; term also used for cut-glass gems, silvered at back.

**Brilliantine**, hair-oil, gen. a mixture of petrol. oil with vaseline, or of castor oil and spirit, perfumed.

**Brimstone**, popular and trade-name for sulphur (*q.v.*). **B. butterfly**, species distribtd. over Europe and Asia; emerges in early spring; has bright yellow wings.

**Brindisi**, seaport tn., Lecce, Apulia, Italy, on Adriatic; pop., 29,000; harbour; steamer services to Near East.

**Brindley**, Jas. (1742-72), Brit. engineer; introduced many improvements in machinery, incldg. a steam engine, 1758; designed Bridgewater Canal from Worsley to Manchester, 1759, for Duke of Bridgewater; later constructed extensions of canal to the Mersey and Trent.

**Brine**, natural or prepared water containing at least 1½% rock-salt in solution.

**Brinell test**, (phys.) method of testing hardness of materials in wh. a  $\frac{3}{8}$  in. hard steel ball is pressed on to material by standard pressure, and diameter of impression is measured.

**Brington**, Great, hamlet, Northants., Eng., on W. side Althorp Park (*q.v.*). Church contains tombs of Laurence Washington, ancestor of Geo. Washington, and of the Spencers. **Little B.**, hamlet, Northants, Eng., 1 m. S. of Gt. B.; home of Washington family after removal (17th cent.) from Sulgrave.

**Brio**, (mus.) liveliness; **brioso** or *con brio*, with spirit.

**Briani Islands**, group, N.W. Pola, N. Adriatic, Italy; **B. Maggiore**, now a frequented resort and spa.

**Briquette**, small block of any material, prod. by pressing powder into mould, usu. with add. of binder. Coal dust with tar or pitch as binder yields domestic fuel.

**Brisbane**, cap. Queensland, Australia, on navigable Brisbane Riv., 25 m. from its mouth in Moreton Bay; pop., 313,250; univ.;

Anglican and R. Cath. cathedrals; shipping; docks.

**Briseis**, maiden captured by Greeks during siege of Troy and allotted to Achilles; taken from him by Agamemnon, after latter had restored Chryseis (allotted to himself), thus causing famous quarrel between Agamemnon and Achilles.

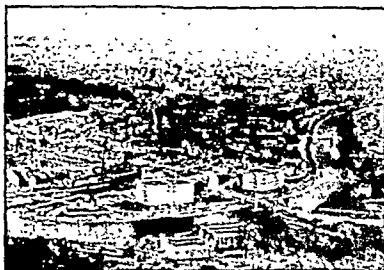
**Bristol**, city and co., S.W. Eng., on Riv. Avon, 7 m. from its port, *Avonmouth*, on B. Channel. B. stands mainly in Glos. and partly in Somerset; pop., 396,900; important manufacturing tn.: chocolate, tobacco, glass, leather, machinery; and seap. trade with America; univ. (1909); cath.; ch. of St. Mary Redcliffe (13th-14th cents.). **B. Channel**, estuary of Riv. Severn, sepa-



By courtesy of the  
Australian Government  
Treasury Building,  
Brisbane



Brilliant



By courtesy of Bristol Port Authority  
City Docks, Bristol

rates S.W. Eng. from S. Wales (Cardiff, *q.v.*); important fisheries; tidal bores.

**Britain**, anglicized form of Britannia, Rom. name for Eng. and Scot. (prev. called Albion), perhaps derived from Phoenician word meaning "land of tin." For hist., see GREAT BRITAIN.

**Britannia**, ancient name of Gt. Brit.; now used poetically and as name of imaginary personification of the English nation.

**B. metal**: see ANTIMONY.

**Britannicus**, Tiberius (41-55), s. of Rom. Emp. Claudius, poisoned by Nero.

**British Academy**, fndd. 1899 for promotion of historical, philosoph. and philological studies; incorp'd. by royal charter 1902. Membership ltd. to 150; governed by a president and council of 15, elected annually.

**B. and Foreign Bible Society**, The, founded 1804 for disseminating the Bible throughout the world, by translating it into the var. languages; has been instrumental in committing many little known languages to writing. **B. Association**, fndd. 1831, for advancement of scientific knowledge. Holds annual conference in diff. tns. of Brit. Empire; grants funds for scientif.



research, etc. Headquarters: Burlington House, London. **B. Broadcasting Corporation**, body establd. by State but working indeptly., managing broadcasting monopoly in Gt. Britain

**British Columbia**, maritime prov., W. Canada, bounded N. by Yukon and N.W. Territories, E. by Alberta, S. by U.S.A., W. by Alaska and Pacific Ocean; includes Vancouver Isl. and Queen Charlotte Isl.; area, 355,900 sq.m.; pop., 524,600. Coast-line much indented; interior mountainous; crossed by *Rocky Mts.* (12,000 ft.) and by *Coast Range* (10,000 ft.); chf. rivs., Fraser, Thompson, Peace. Many lakes; much forest land. Agric.; dairy farming; cattle, sheep, horses, pigs; fruit growing; lumbering; wood-pulp, fisheries; minerals include coal, gold, silver, lead, copper, asbestos. Cap., *Victoria*, on Vancouver Isl. largest tn., Vancouver.



By courtesy of the High Commissioner for Canada

Yoho National Park, British Columbia

**British Empire**, general designation for all territories under Brit. Crown, i.e., Great Britain and Northern Ireland, the Indian Empire, the dominions, crown colonies, and protectorates; aggregating 14,220,000 sq.m., with a pop. of 458,200,000. **Order of the B. E.**, fndd. during the World War (1917) as mark of recogn. for special services; open to women as well as men. Five classes: knights and dames grand cross (G.B.E.), knights and dames commanders (K.B.E., D.B.E.), companions (C.B.E.), officers (O.B.E.), members (M.B.E.); ribbon: *milit.*, purple with narrow vertical red central stripe; *civil*, purple.

**British Honduras**, Brit. Crown colony, Central America, in Bay of Honduras, Caribbean Sea; bordered on N. by Mexico, on W. and S. by Guatemala; area, 5,600 sq. m.; pop., 52,000; traversed by Riv. Belize. *Cockscomb Mts.* reach 4,000 ft.; most of country swampy; exports mahogany, logwood, sugar, coffee, cotton, bananas, pineapples, and other fruits; cap., *Belize*. Settled by Brit. from Jamaica c. 1640; Brit. sovereignty recognized by Spain at close of 18th cent.; declared a colony, 1862.

**British India**, embraces India proper, from Indus in W. to Salween in E., and from the *Karakoram Mts.* and Himalayas in N. to Gulf of Manar, betw. Ceylon and mainland, in S. Area, 1,805,000 sq.m.; pop., 353 millions (75% Indian; relig. sects: 70% Hindu, 22% Moslem, 3% Buddhist); cap., *Delhi* (seat of the Viceroy). The richest component of the British Empire, strongly

protected by British possessions in Indian Ocean, including E. Africa and Australia, as well as by the strongholds of Gibraltar, Malta, and Aden, on lines of communication from England, which pass through Suez Canal. *See also* INDIA.

**British Isles**, archipelago N.W. Eur., sep. from Fr. by Strait of Dover and Eng. Channel; comprises two large isls. (Gt. Brit. and Ire.) and c. 5,000 small islands and islets, incl. Isle of Man, Isle of Wight, Anglesey, Orkneys, Shetlands, Hebrides, Scilly Isls., and Channel Isls. (the last geogr. French); total area, 121,100 sq.m.; pop., c. 48,532,000.

**British Legion**, organization consisting of associations of ex-service men; fndd. by Field-Marshal Earl Haig, 1921; administers assistance of various kinds to these and their families; has establd. factories for employment of disabled ex-soldiers, and village industrial settlements for tuberculous patients.

**British Medical Association**, fndd. 1832; princ. medical organization of Gt. Brit., with branches throughout Brit. Empire. Publishes *Brit. Medical Journal* (1857 onwards).

**British Museum**, in Bloomsbury, London; national museum, orig. based on collection of Sir Hans Sloane (*q.v.*), purchased by Brit. Govt., 1753, to wh. were added the library of printed books and MSS. of Sir Robt. Cotton (1571-1631), Harleian MSS. (*see* ROBT. HARLEY, *Earl of Oxford*) and Royal MSS. from time of Henry VII. Present site (Montagu House) acquired, 1754; existing bldg. commenced, 1823. Museum consists of: *Library of Printed Books*, the finest in existence; *Manuscript Dept.*, contng. *Codex Alexandrinus* of Greek Bible, Queen Mary's Psalter, etc.; *Depts. of Antiquities, Oriental Antiquities and Ethnography, Coins and Medals, Prints and Drawings*, etc., in wh. are representd. the art and hist. of Egypt, Assyria, Greece, Rome, China, Japan, India, Persia, Mexico, Peru, etc. Among the greatest treasures of B.M. are: Elgin Marbles (*q.v.*); the Demeter of Cnidos; a Hermes ascribed to Praxiteles; the Rosetta Stone (*q.v.*). Natural History collections removed to S. Kensington, 1881-85. *See* NATURAL HISTORY MUSEUM.

**British Thermal Unit**, amt. of heat reqd. to raise 1 lb. of water 1° F. *Cf.* CALORIE.

**Britt.**, abbr. on coins, *Britanniarum* (Lat.), of all the Britains.

**Brittany, Bretagne**, form. prov., France, now divided into dépts. Ille-et-Vilaine, Côtes-du-Nord, Finistère, Morbihan, and Loire-Inférieure; many harbours on coast; high plateau in interior; Celtic inhab., largely engaged in fishing.

**Brittle-star**, small starfish (*q.v.*) with disc-shaped body and five long, spine-

covered arms wh. break readily; fnd. under rocks and seaweed at low tide.

**Brixham**, seapt. and fishing tn., S. Devon, Eng., on S. shore of Tor Bay, 6 m. S. Torquay; pop., 8,000. In **B. Cave** prehist. stone implements were found.

**Brixton**, dist., S. London, incl. in metrop. bor. Lambeth; pop., 77,000.

**Brno**: see BRÜNN.

**Broach, Baroach**, 1) dist., Gujarat, Bombay, India; area, 1,467 sq.m.; pop., 307,750; wheat, cotton. 2) Chf. tn. of dist.; pop., 45,670; cotton exports.

**Broad arrow**, mark on Brit. Govt. property. **B. bean**, large cultivated bean (*q.v.*).

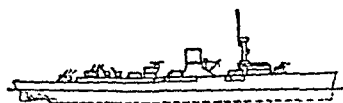
**Broadcasting**, dissemination, by electromagnetic waves, of news and entertainment, for reception anywhere within range by apparatus reproducing sound and/or pictures. For technique, see WIRELESS TELEGRAPHY, TELEVISION. **B.** takes place from stations, to each of which a wave-length is assigned by international agreement. Management in England in hands of British Broadcasting Corporation (*q.v.*); in U.S.A. under private enterprise; in Germany, Austria, etc., under form of commercial company, with govt. possessing controlling interest. **B.** may be direct from station, speakers, musicians, and artists assembling there; by land-line from theatres, concert-halls, individuals, portable sets picking up crowd, animal, and other sounds (or sights); by relaying material received by wireless, often from extreme distances; by reproduction of sound records (gramophone, magnetic tape) and films. Maintained in Great Britain by imposition on each receiving-set owner of 10/- annual licence fee, half of which goes to Postmaster-General (*cf.* WIRELESS LICENCES).

**Broadmoor**, asylum, parish of Sandhurst, Berks., Eng., for criminal lunatics; opened 1863.

**Broads, Norfolk, Broadland**, dist., Norfolk, Eng.; shallow lagoons and navig. rivs. in level country; sailing, angling, wildfowl-shooting.

**Broadsheet**, sheet of paper printed on one side only, forming one large page; hence ballad or piece of ephemeral lit. so printed; also called *broadside*.

**Broadside**, simultaneous discharge of all guns on one side of a ship; also that part of



Broadside

the side of a ship (esp. a warship) that is above water. *Cf.* BROADSHEET.

**Broadstairs**, seaside resort, Isle of Thanet, Kent, Eng.; pop., 12,700.

**Broadway**, 1) vil., Worcs, Eng., at foot Fish Hill (Cotswolds); Elizabethan houses; pop., 1,900. 2) Principal thoroughfare of N. York City, U.S.A.

**Broddingnag**, island in *Gulliver's Travels* (*q.v.*) inhabited by giants.

**Brocade**, rich fabric interwoven and embossed with gold and silver thread or adorned with raised ornamentatn.; term also used for embossed cotton fabrics.

**Broca's convolution**, centre of speech; discvd. by Paul Broca, Fr. physician (1824-80), to be posterior part of left third frontal convolution of brain.

**Brocatel**, coarse brocade used for tapestry, carriage-linings, etc.

**Broccoli**, species of cauliflower which puts out numerous sprouts, each like a miniature cauliflower.

**Broch**, prehistoric, round stone tower found in Orkneys and Shetlands, etc.

**Brochure** (Fr.), origly. a collection of sheets of paper, stitched together, but not properly bound; usually applied to a small pamphlet or tract, irrespective of how it is bound.

**Brock**, Sir Thomas (1847-1922), Eng. sculptor; memorial to Qn. Victoria, Buckingham Palace, 1911, etc.

**Brockdorff-Rantau**, Ulrich, Ct. von (1869-1928); Ger. diplomat; For. Min. 1918; head of Ger. peace delegation (Versailles), 1919; Ambass. in Moscow, 1922.

**Brocken**, Mt., Prussia, Germany, highest of *Harz Mts.* (3,730 ft.); barren summit; meteorol. observatory.

**Brockhaus**, Friedrich Arnold (1772-1823), Ger. publisher; encyclopaedia (*Konversations Lexikon*) begun 1796.

**Broderie anglaise**, embroidery in wh. holes are punched in material in patterns, the edges being stitched round. *Swiss Embr.*, a similar type (chfly. machine-work) is one of the princ. indstrs. of Switzerland.

**Brogie**, Fr. ducal family: 1) **Victor François** (1718-1804), Marshal of France in the Seven Years' War. 2) **Victor Albert** (1821-1901), statesman and historian.

**Broken Hill**, 1) tn., New South Wales, Australia; silver-lead mines; pop., 23,000. 2) Tn., N. Rhodesia; zinc and lead mines; skull of *Homo rhodesiensis*, discovered, 1921.

**Broker**, profess. agent who buys and sells on behalf of other pers., e.g., stock B., exchange B., ship B., insurance B.; has a right to commission or *brokerage*.

**Brokerage**, broker's fee, usu. payable in equal proportions by buyer and seller, for whom broker has acted; a stockbroker's fee is called a commission.

**Bromberg, Bydgoszcz**, tn., prov. of Poznan, W. Poland, on Riv. Brahe and Bromberg Canal; pop. (1931), 117,519; engineering rly. workshops, shipbuilding.

**Brome-grass, *Bromus***, several varieties; most are weeds, but *B. inermis* (awnless) is cultivated for forage.

**Bromelia**, tropical Amer. plant, akin to the pineapple. *B. pinguin*, wild pineapple, yields valuable fibre.

**Bromide paper**, (photog.) printing paper coated with emulsion of silver bromide in gelatine; requires development.

**Bromine**, (chem.) element; heavy, dark reddish-brown liquid, symbol Br, at. wt. 79.916, b.p. 63°C; a halogen (*q.v.*); obtd. from carnallite deposits at Stassfurt and from sea-water; very poisonous and corrosive; the soluble salts, *e.g.*, potassium bromide, are used medic. as sedatives; **silver B.** used in photography.

**Bromley**, comun. bor., Kent, Eng., residential sub. London; pop., 45,300.

**Bromoil**, (photog.) process for producing prints in permanent oil pigments upon a base consisting of a bromide print or enlargement. Print treated so that shadow parts "take" oil pigment when dabbed on wet print.

**Brompton**, district of S.W. London in Royal bor. of Kensington and city of Westminster, mainly residential. **B. Oratory**, R.C. Ch. in Ital. Renaissance style (archit., H. Gribble); completed, 1884; façade and dome added, 1897. See ORATORY.

**Bronchi**, the 2 branches or tubes into wh. the trachea (*q.v.*) divides before entering the lungs.

**Bronchial catarrh**, inflammation of mucous membrane of small bronchi.

**Bronchitis**, inflammation of bronchial tubes, often due to cold; freqtly. causes excessive expectoration.

**Brontë**, name of 3 sisters, Eng. writers: 1) **Charlotte** (1816-55), pseudon. *Currer Bell*, novels: *Jane Eyre*, *Shirley*, *Villette*, 2) **Emily** (1818-48), pseudon. *Ellis Bell*: novel: *Wuthering Heights*. 3) **Anne** (1820-49), pseudon. *Acton Bell*, collab. in vol. of poems by "Currer, Ellis and Acton; novel: *Agnes Grey*.



Charlotte Brontë

**Brontosaurus**, fossil of giant lizard found in Jurassic System of N. America; largest terrestrial animal, up to 65 ft. long. See DINOSAUR.

**Bronze**, reddish-yellow alloy of copper with tin, used in ancient times for weapons and utensils. **B. age**, prehist. era betw. Stone and Iron ages, during wh. bronze was widely used for utensils and weapons. Generally lasted 2200-1000 B.C.; in Crete (Minoan civilization) began c. 3500 B.C.; three periods: Early (3500-2200), Middle (2200-1600), Late (1600-1100 B.C.). See

AEGEAN CIVILIZATION; MINOAN; HELLADIC; CYCLADIC; MYCENAEAN. In Mexico and Peru still in existence at time of discovery by the Spaniards.

**Bronzed skin**, disease; see ADDISON'S DISEASE.

**Bronzino**, IL. (1503-72), nickname of Angelo Allori; Florentine artist, disciple of Michael Angelo: *Venus, Cupid, Folly and Time*, in Nat. Gall., London.



Rupert Brooke

**Brooke, Sir James** (1803-68), Eng. soldier, 1st white Rajah of Sarawak, 1841. **B., Rupert** (1887-1915), Eng. poet. Died of blood-poisoning in Scyros, while on active service.

**Brooklands**, motor racing track, nr. Weybridge, Surrey, Eng., opened 1907; reserved as R.A.F. ground during World



Brooklands Motor Track

War; re-opened 1920. Maximum circuit of 3½ m., with width of 100 ft. Track is banked (see BANKING) on the curves to enable cars to race at high speed. Used to test speed and endurance of motor vehicles. See MOTOR RACING.

**Brookline**, tn., Mass., U.S.A.; pop., 47,500; suburb of Boston.

**Brooklyn**, one of 5 bors. which constitute N.Y. City, U.S.A., on Long Island; pop. (1930), 2,560,401.

**Brookwood**, dist. 4 m. S.W. Woking, Surrey; cemetery and crematorium of London Necropolis Co.

**Broom**, (bot.) *Sarothamnus scoparius*, member of pea and bean tribe; yellow flowers, black pods. The tops (*Scoparii cacumina* of old Pharmacopoeia) are used in med. as a diuretic in dropsy.

**Brotherhood**, association or guild for religious, benevolent, or professional purposes.

**Brothers of Common Life**, former R.C. relig. community in Netherlands; *Thomas à Kempis* lived in their earliest establishment; chiefly laymen ("We are not monks; to live piously in the world is our purpose").

**Brougham**, light, four-wheeled, one-horse carriage designed by Lord Brougham (1838).



Brougham

**Brougham and Vaux**, Henry, 1st bn. (1778-1868), Eng. lawyer, statesman, author, and social reformer; defended Qn. Caroline at her trial, 1820; Ld. Chanc. 1830-34.

**Brouwer**, Adrian (1606-38), Dut. painter of peasant scenes, landscapes; chief works at Munich and Dresden.

**Brown, Sir Arthur Whit-**  
**ten:** see ALCOCK, SIR JOHN.

**B., Ford Madox** (1821-93), Eng. painter; teacher of D. G. Rossetti; assoc. of Wm. Morris. **B., Geo. Douglas** (1869-1902), Scot. novelist; pseud., George Douglas: *The House with the Green Shutters* (1901). **B., John** (1800-59), Amer. abolitionist; attempted forcible suppression of slavery; ordered massacre of pro-slavery settlers at Pottawattomie, 1856; led attack on Harper's Ferry, 1859; captured arsenal, but later forced to surrender; tried for treason and murder; hanged; original of Jn. Brown in marching song, *John Brown's body lies a-mouldering in the grave*. **B., John** (1810-82), Scot. medical man and author: *Rab and His Friends* (1859); *Marjorie Fleming: a Sketch* (1863); *Horae Subsecivae* (1853-61). **B., Thos. Edw.** (1830-97), Manx poet; schoolmaster; *Fo'c's'le Yarns*, 1881; *The Doctor*, 1887; *The Manx Witch*, 1889.

**Brown Bess**, (fam.) flintlock musket of the Brit. Army throughout 18th cent. and until 1842. **B. owl:** see OWL.

**Browne, Chas. Farrar:** see WARD, ARTEMUS. **B., Hablot Knight** (1815-82), Eng. caricaturist and illustrator; pseud., Phiz; illustrated novels of Dickens and works of Byron and Scott. **B., Robert:** see BROWNISTS. **B., Sir Thos.** (1605-82), Eng. physician and author: *Religio Medici*. **B., Thos. Alex.:** see BOLDREWOOD, ROLF.

**Brownian motion**, (phys.) disc. by Robt. B. (1773-1838), Eng. botanist. Rapid irreg. motion of very fine particles suspended in liquid (gamboge, colloidal metals). Due to bombardment of particles by invis. molecules of the liquid, motion of wh. constitutes heat.

**Browning, Robert** (1812-89), Eng. poet: *The Ring and the Book*, *Pippa Passes*, *Men and Women*; m. (1846) **B. Elizabeth Barrett** (1806-61), Eng. poetess: *Sonnets from the Portuguese*.

**Browning**, small auto-



Lord Brougham



Sir Thomas Browne



Robert Browning

matic pistol. **B. gun**, automatic rifle, used largely on aircraft.

**Brownists**, Eng. Prot. sect founded by Robert Browne (1550-1633); fore-runners of *Congregationalists* (q.v.); also known as *Independents*.

**Brownsville**, tn., Tex., U.S.A., on Rio Grande; pop., 22,000; fruit, rice, cattle, sugar-cane; centre of operations in Civil War.

**Brown Willy**, highest hill in Cornwall, Eng. (1,375 ft.).

**Bruce, Maj.-Gen. Sir David** (1855-1931), Brit. expert on trop. diseases; member Army Medical Advisory Bd., 1902-11; director of Royal Society's commission on sleeping sickness in Uganda, 1903, 1908-10, and of commission on Medit. fever at Malta, 1904-06; commandant R.A.M. College, 1914-19. Publ. papers on sleeping sickness, tsetse-fly, Malta fever, etc. **B. Jas.** (1730-94), Scot. explorer in Africa; travelled in Syria, the Nile Vall. and Abyssinia, 1768-73; reached source of Blue Nile, wh. he regarded as main source of the Nile; publ. *Travels to Discover Sources of Nile* (5 vols.), 1790. **B., Robert:** see ROBERT. **B., Stanley Melbourne** (1884-), Australn. statesman; Prime Minister of Australia, 1923-29; repres. Commonwealth at League of Nations Assembly, 1921; at Imperial Conferences, London, 1923 and 1926; resid. minister, London, 1932.

**Bruch, Max** (1838-1920), Ger. composer; songs, choral works, pianoforte pieces.

**Brucline:** see NUX VOMICA.

**Bruckner**, Anton (1824-96), Austr. composer: Masses, symphonies.

**Bruges, Brugge**, cap. of Flanders, Belgium; pop., 51,500; connected by ship canal with Zeebrugge; lace-making; belfry, 353 ft.; anc. tn. with many canals; Burgundian possn. in 15th cent.; greatest Eurpn. wool market after Venice in 17th century.

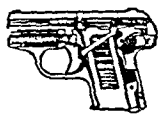
**Bruise**, injury to flesh, caused by blow wh. does not draw blood or break the skin, but results in discoloration of skin caused by subcutaneous bleeding; *treatment* by cold applications.

**Brumaire**, Oct. 22nd-Nov. 20th in Fr. Repub. Calendar (q.v.).

**Brummell**, George Bryan (1778-1840), **Beau B.**, Eng. dandy and wit.

**Brunanburgh, battle of**, victory of Kg. Athelstan over Danes of N. England and their Irish, Scot., and Scand. allies, 937; recorded in poem in *Anglo-Saxon Chronicle* (q.v.); conjectures as to site incld. neighbourhoods of Burnley and Axminster, and co. of Dumfriesshire.

**Brunei**, unfederated sovereign sultanate in N. Borneo, under Brit. protection; area, c. 2,500 sq.m.; pop., 30,000, incl. 60 Europeans



Browning Automatic

and 2,680 Chinese. Cap., *Brunei*; pop., 10,400; exports rubber.

**Brunel**, Isambard Kingdom (1806-59), Brit. civil engineer and naval archt.; assisted in construction of Thames Tunnel (*q.v.*); engineer to Grt. Western Rly.; designed the steamships "Great Western," 1838; "Great Britain," 1845; "Great Eastern," 1858.

**Brunellesco**, **Brunelleschi**, Filippo (1379-1446), It. arch.; designed *Pitti Palace*; *Santa Maria del Fiore*, Florence.

**Brunhilda**, in *Song of the Nibelungs* (*q.v.*), wife of Gunther, encompasses death of Siegfried.

**Brüning**, Heinrich (1885- ), Ger. statesman; Chancellor of Reich, 1930-32; Chmn. of the Centre Party, 1933.

**Brünn**, **Brno**, cap. of Moravia, Czechoslovakia, at junct. of rivs. Svatka and Svltava; pop., 221,760; principal Czechoslovakian cloth and wool centre, engineering works, leather, Czech university.

**Bruno**, 1) **St. B.** (c. 1040-1101), fndd. Carthusian order of monks. 2) **B., Giordano** (c. 1548-1600), It. philos. of pantheist tendencies, adopted Copernican system of astronomy; burnt for heresy by Inquisition.

**Brunswick**, **Braunschweig**, 1) Repub., Germany; area, 1,419 sq.m.; pop., (1925), 508,660; agric., coal, iron, sugar, chemicals; *Harz Mts.* in S.; chf. rivs.: Weser and Oker; beech, fir, oak, and pine forests. 2) Cap. of repub., pop., 146,900; printing, jute, machinery.

**Brusa**, **Broussa**, **Bursa**, vilayet and tn. in Asia Minor; vilayet, 5,237 sq.m.; pop., 399,945 (tn. pop., 61,450); fertile dist.; silver and lead mines; sulphur baths; carpet, silk, and brocade factories; many churches and mosques (incl. famous Green Mosque).

**Brusilov**, Alexei Alexievich (1853-1926), Russ. Gen.; leader of offensives 1916, 1917.

**Brussels**, **Bruxelles**, cap. of Belgium, in prov. Brabant, on Riv. Senne, joined to Scheldt by Brussels Canal; pop., 833,000; carpets, lace, glass, coal, candles; famous *palais de justice*, town hall, royal palace, houses of parliament, free univ.; resid. of dukes of Brabant in 12th cent.; centre of cloth indus. in Mid. Ages; world exhibition, 1910. **B. sprouts**, variety of cabbage with small green leaf-heads on the stem, resembling miniature cabbages.

**Brut**, *Layamon's*, M.E. poetic legendary history of Britain by L. (c. 1200), paraphrase of Wace's Fr. *Roman de Brut*, concerning wanderings of Brutus, great-grandson of Aeneas and Kg. of Britain.

**Brutum fulmen** (Lat.), a harmless thunderbolt; ineffectual menace.

**Brutus**, 1) **Lucius Junius**, Rom. Consul, expelled Etruscan dynasty (Tarquins) and establd. Repub. (c. 509 B.C.). 2) **Deci-**

**mus Junius** and 3) **Marcus Junius** were among the assassins of Julius Caesar on the Ides of March (15 Mar., 44 B.C.).

**Bruyère**, root of tree heather; see **HEATH**.

**Bryan**, William Jennings (1860-1925), Amer. politician and orator; Sec. of State 1913-15; prominent fundamentalist, (*q.v.*).

**Bryanites**, a sect of Methodists (*q.v.*), fndd. 1815, known also as Bible Christians.

**Bryansk**, 1) prov., Russian S.F.S.R.; 15,800 sq.m., pop., 1,996,100; soap, leather, tobacco, chemical factories; 2) cap. of prov., on Riv. Desna; pop., 47,705; rlwy. junctn.; arsenals, glass works; Lithuanian, 13th cent.; Russian, 17th century.

**Bryant**, Wm. Cullen (1794-1878), Amer. poet and journalist; *Thanatopsis* (1816); ed. of *Evening Post*, 1826; opposed extension of slavery; supported the Union.

**Bryce**, James B., 1st visct. (1838-1922); Brit. statesman and histor.; Pres. Board of Trade (1894-95); Irish Sec. (1905-07); Ambass. at Washington (1907-13); *The Holy Roman Empire*.

**Bryce Canyon**, national park (1928) in S.W. of Utah, U.S.A.; 55 sq.m.; countless brilliantly coloured rock pinnacles made by erosion.

**Brydges**: see **BUCKINGHAM AND CHANDOS**.

**Bryonia**, **white**, *Bryonia dioica*, wild vine, English mandrake; climbing plant with whitish flowers, turning to red berries, which are poisonous; root is used in small doses in folk med. **Black b.**, *Tamus communis*, has a black tuberous root, heart-shaped leaves, green flowers, and bright red berries; root is used in folk med. to reduce bruises (Black-eye Root) and taken internally as a diuretic.

**Bryophyta** (bot.), one of the great divisions of plants, wh. includes the mosses and liverworts (*qq.v.*).

**Bryozoa** (zool.), colony-forming polyp-animals, marine and fresh water; colony may consist of horny frond-like growth (*sea-mats*) or beautiful calcareous masses (*lace-corals*). See **POLYZOA**.

**B.Sc.**, abbr., Bachelor of Science.

**B.S.G.D.G.**, abbr., *brevet(é) sans garantie du gouvernement* (Fr.), patented without govt. guarantee.

**B.T.U.**, abbr. 1) Board of Trade Unit. 2) Brit. Thermal Unit.

**Bubastis**, (anc. geog.) city, Lower Egypt, nr. the mod. Zagazig, site (*Tell Basta*) excavated 1886; city of Ubasti, a cat goddess.

**Bubble and squeak**, cold potatoes and green veg. mashed together and lightly fried.

**Bubo** (med.), inflammation and swelling of glands, usu. of the groin or armpit. **Bubonic plague**, see **PLAGUE**.

**Buccaneer**, filibuster, pirate, esp. of 17th cent. on Span. Amer. coast.

**Buccleuch**, Earls and Dukes of, titles in peerage of Scotland. **Sir Walter Scott** of **Buccleuch** fought for James II of Scot. agst. the Douglasses, 1452; his descendant, **Sir Walter**, fought at Pinkie, 1547 (insprd. *Lay of Last Minstrel*); his g.-g. son **Sir Walter** (1565-1611), cr. **Bn. Scott of B.**, 1606; his successor became **Earl of B.**, 1619; Anne, dau. of 2nd E. (1651-1732), m. Duke of Monmouth, who took surname of Scott and was cr. Duke of Buccleuch, 1663; her g.-s., **Francis**, became 2nd duke; his s., **Henry**, 3rd duke (1746-1812), also succeeded to dukedom and estates of Queensberry (1810), and marr. dau. of Duke of Montagu; his g.-s. **Walter Francis**, 5th duke (1806-84), was lord privy seal, 1842-46, and president of the council, 1846; built Granton Harbour, nr. Edinburgh, at cost of £500,000; his s., **William H. W. Montagu-Douglas-Scott**, 6th duke (1831-1914), m. Lady Louisa, dau. of 1st Duke of Abercorn and mistress of the robes to Qn. Victoria; his s. **John Charles**, 7th Duke (1864- ). Eld.-est s. of dukes of B. bear title of Earl of Dalkeith.

**Bucentaur**, Venetian State barge, used on Ascension Day from 12th cent. until 1789, in annual ceremony of espousal of Adriatic by the Doge.

**Bucer**, or **Butzer**, Martin (1491-1551), Ger. Dominican, then Prot. reformer; regius prof. of divinity, Cambridge, 1549.

**Buchan, Alex.** (1829-1907), Scot. meteorologist; sec. of Scot. Meteorol. Soc., 1860-1906; from records and observations noted follg. periods as likely to be "cold" and "warm" respectively: (c.) 7-10 Feb., 11-14 Apr., 9-14 May, 29 June-4 July, 6-11 Aug., and 6-12 Nov.; (w.) 12-15 July, 12-15 Aug., and 3-9 Dec. **B., John** (1875- ), Brit. soldier and author; H.Q. Staff (Fr.) 1916-17; Director of Information, 1917-18; M.P., 1927; *Greenmantle*; *Hist. of the Great War*, etc.

**Buchan**, dist.; N.E. Aberdeensh., Scotland, betn. rivs. Ythan and Deveron; includes tns. of Peterhead and Fraserburgh. *Earls of Buchan* (Scot. peerage) include the Wolf of Badenoch (q.v.); present creation (family name Erskine) dates from 1469.

**Buchanan, Geo.** (1506-82), Scot. historian; tutor to James VI of Scot.; *De jure regni apud Scotos*, 1579; *Rerum Scoticarum historia*, 1582. **B., Sir George William** (1854-1924), Brit. Ambassador to St. Petersburg (Leningrad), 1910-17. **B., James** (1791-1868), 15th Pres. of U.S.A. (1857-61). **B., Robt. Williams** (1841-1901), Scot. poet and novelist; *London Poems*, 1866; *The City of Dreams*, 1888; *The Wandering Jew*, 1893.

**Bucharest, Bucuresti**, cap. Rumania and of prov. Great Wallachia; pop., 890,000; univ., Gr. Orthodox churches, royal palace, civil, military, and eccles. offices, archiepis.

patriarchate; textiles, metals, corn exchange, timber, petroleum. Seat of Wallachian princes 15th-17th cents.; repeatedly occupied by Turks, Serbs, Russians, and Austrians till 1861; scene of many peace treaties in 19th and 20th centuries.

**Buchner**, Eduard (1860-1917), Ger. chemist; Nobel Prize (Chem.) 1907, for research with regard to fermentation and enzymes.

**Buckbean**, marsh trefoil, *Menyanthes trifoliata*, rose-coloured flowers; root used in folk med. as a bitter tonic.

**Bucket-shop**, (Stk. Exch.) firm of stock brokers not members of Stk. Exch. (*outside brokers*), engaged in questionable practices, e.g., advertising comparatively worthless shares with promise of early appreciation in value; offering facilities for gambling in speculative deals, etc.

**Buckeye State**: see OHIO.

**Buckfast Abbey**, Benedictine abbey, nr. *Buckfastleigh* (pop., 2,250), Devonsh., Eng.; re-fndd. 1137; abbey church rebuilt by Benedictine monks, completed 1932.

**Buckhaven and Methil**, police burgh, Fife, Scot., on Firth of Forth; port; pop., 17,700.

**Bucking hammer**, heavy hammer used for pulverizing mineral, etc., on bucking board or plate; used with grinding and rolling action.

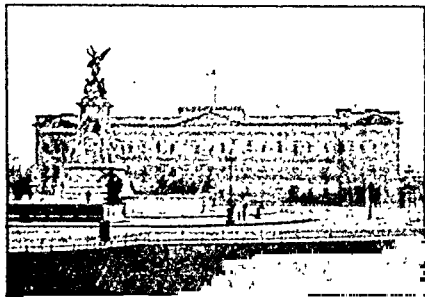
**Buckingham**, Geo. Villiers, 1st duke of (1592-1628), Eng. courtier and politic.; chf. minister (1624-28); assass. by John Felton.

**Buckingham**, former co. tn. of Bucks, Eng.; pop., 3,100. Stowe is 3 m. N. **Buckinghamshire**, or *Bucks.*, inland co. in Eng.; area, 750 sq.m.; pop., 271,600; fertile agric. land, undulating; *Chiltern Hills* in S.; watered by Riv. Thames; public schools, Eton College and Stowe; co. tn., Aylesbury.

**Buckingham and Chandos**, Barons and Dukes of: **John Brydges**, 1st Bn. Chandos (c. 1490-1556), took part in quelling Wyatt rebellion, 1534; as lieut. of Tower had in his custody Lady Jane Grey; cr. Bn. Chandos of Sudeley, 1554; **Grey B.**, 5th Bn. (c. 1580-1621), lord-lieut. of Gloucestershire, known as *King of Colswolds*; his s., **George**, 6th Bn. (1620-55), supptd. Charles I against Parliament; fought at Newbury, 1643; succ. by bro., **William** (c. 1676), when barony passed to **James Brydges** (1642-1714), Eng. ambass. to Constantinople, 1680-85; his s., **James**, 1st duke (1673-1744), paymr.-gen. to forces, 1705-13 (War of Span. Succession); cr. Visc. Wilton and E. of Carnarvon, 1714, and Marq. of Carnarvon and Duke of Chandos, 1719; patron of Handel and Pope; his g.-s., **James**, 3rd duke (1731-89), left no sons; his only dau., Anna Elizabeth, marrd. **Richard Grenville** (1776-1839), who succ. his f. as Marq. of

Buckingham, 1813, and was cr. Duke of Buckingham and Chandos, 1822; his s., **Richard**, 2nd duke (1797-1861), opp. repeal of Corn Laws, hence called the Farmers' Friend; Lord Privy Seal, 1841-42; **Richard**, 3rd duke (1823-89), chairman of L. and N. W. Rly. (1853-61); gov. of Madras (1875-80); on his death, dukedom became extinct.

**Buckingham Palace**, Brit. sovereign's London residence; built, 1703, by Duke of



Buckingham Palace

Buckingham; bought by George III, 1762; altered in 1822, 1847, and 1913.

**Buckle**, Henry Thomas (1821-62), Eng. historian: *History of Civilization in England* (1857).

**Buckmaster**, Stanley Owen B., 1st visct. (1861- ), Brit. lawyer and polit.; M.P. for Cambridge, 1906-10; for Keighley, 1911-15; solicitor-general, 1913; director of Press Bureau, 1914-15; ld. chancellor, 1915-16.

**Buckram**, strong linen fabric stiffened w. flour paste, china clay, and glue; used to stiffen clothes and in book-binding.

**Bucks.**, abbr. Buckinghamshire.

**Buckskin**, spec. prepared leather made from deer or sheepskin.

**Buckthorn**, *Rhamnus catharticus*, shrub with clusters of small green flowers, serrated leaves, and black berries. **Alder b.**, *R. frangula*, also green flowers, entire leaves; bark used as a laxative.

**Buckwheat**, *Fagopyrum*, species of knot-grass; plant with triang. seeds, wh. are ground and used as flour in U.S.A. The white flowers yield good honey.

**Bucolic poetry**, pastoral poetry. **B. poets**, poets of pastoral idylls, e.g., Theocritus, Virgil.

**Budapest**, cap., Hungary; two tns., *Buda* and *Pest*, on right and left banks of Danube; pop., 1,005,000; centre of mid-Danube trade, corn, cattle, wine, tobacco, leather. *Buda*: princ. seat of gov.; royal castle, public offices; min. springs, baths. *Pest*: commerc. centre, houses of parliament, univ., academies of science and art, opera-house.



Buckwheat

**Buddha**, the "Enlightened," title of **Gautama Siddhartha**; born c. 567 B.C. of an Ind. royal family; became an ascetic at age of 29. **Buddhism**, his philos. and relig. system. *Main features*: Suffering is universal, caused by desire, wh. leads to re-birth and the continuance of misery; deliverance can be obtained only by suppression of all desire by pursuing the *8-fold path*, viz., right belief, right aspiration, right speech, right conduct, right means of subsistence, right aim and effort, right memory, right meditation; thus will *Nirvana* (q.v.) be attained. B. in time divided into 2 main branches, the more philosophical and purer *Hinayana* (still folld. in Burma and Ceylon), and the ritualist and more corrupt *Mahayana*, wh. in turn developed into the modern forms found in Tibet (Lamaism), China (Foism), and Japan, where it has mingled with Shintoism.



Buddha

**Bude**, port and seaside resort, N. Cornwall, Eng.; pop., 3,800.

**Budge**, Sir Ernest A. Wallis (1857- ), Brit. Egyptol. and Assyriologist.

**Budgerigar**: see LOVE-BIRD.

**Budget**, estimates of receipts and expenses for coming yr.; natl. B., gov't's estimates of revenue and expenditure. **Brit. B.** is announced in Parl. usu. in April, for fiscal yr. beginning Apr. 6th, and passed by Hsc. of Com. in Finance Bill; set out in form of *National Balance Sheet* (q.v.).

**Buds**, (bot.) nascent or rudimentary state of the flower or branch.

**Budweis**, **Budejovice** **Česko**, tn., S. Bohemia, Czechoslovakia, on Riv. Moldau; pop., 44,025; bpric.; lead pencils, beer, chemicals, porcelain.

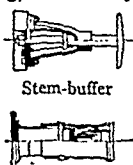
**Buenos Aires**, federal cap., Argentina, on La Plata estuary; pop., 2,120,000; chf. manuf. and trading port in S. America; fine squares and parks; univ.; rly. term.; exports cattle, corn. Fnndd. 1535; destroyed 1537 by Indians; rebuilt 1580; federal cap. since 1862.

**Buff**, (tech.) rapidly rotating brush of fibrous material charged with polishing material (putty powder, rouge) for giving bright polish to metal or other hard objects.

**Buffalo**, tn., N.Y., U.S.A., on L. Erie; pop., 573,100; univ. (1845); grain, meat, coal, lumber; shipbuilding; petroleum.

**Buffalo**, ungulate mammal of massive build, short neck, large head; curved horns nearly as large in female as in male. **Indian b.** of Oriental countries, a huge, ungainly beast with long horns and almost naked skin. **Cape b.** and allied species inhabit S. and Centr. Africa. Term applied to N. Amer. bison, now protected in National Reservations in U.S.A. and Canada.

**Buffer**, 1) (mechan.) shock-absorbing device, usu. some kind of spring, as railway buffer (see illust.) In most effective type, power is absorbed and dissipated by liquid friction, as in *terminus* b. 2) (Electrochem.) Solution wh. resists change in its acidity or alkalinity by addition of acid or alkali. **B.-battery**, (elec.) battery of accumulators connected across a supply main, taking charging current when demand is low, and delivering current when demand is high. **'B.-state**, a small State betw. 2 great Powers.



Forms of Buffer

**Buffo**, comic singer in opera.

**Buffon**, Georges Louis Leclerc, Comte de (1707-88), Fr. zoologist and botanist.

**Bufs**, the (East Kent Regiment), Brit. infantry regt.; old 3rd Foot: raised 1660 as one of the London train bands (q.v.); depot. Canterbury; record office, Hounslow; 16 battalions in World War. **Ross-shire Bs.:** see SEAFORTH HIGHLANDERS.

**Bug**, 1) riv., c. 450 m., S. Russia, rises in Avratynsk hills, near Poland, falls into Black Sea at Nikolayev; 2) trib., c. 400 m., of Riv. Vistula; rises near Tarnopol, enters V. 23 m. N. of Warsaw; navig. from Brest-Litovsk.

**Bug**, insect of the order Hemiptera; more specifically, bedbug (q.v.).

**Buggy**, light, one-horse vehicle, with large wheels.

**Bugle**, 1) (mus.) bell-mouthed brass wind instrument, mainly used in the army, navy, and mercantile marine for signals and warnings, e.g., reveille, fire-alarm, etc. 2) (Bot.) *Ajuga reptans*, blue flowers on a spike, grows in woods, abt. 6 in. high. Used in folk med. in consumption.

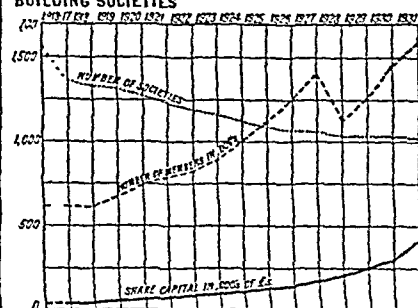
**Bugloss**, (bot.) viper's bugloss, *Echium vulgare*, member of borage tribe; blue flowers, long rough leaves, grows in loose soil; used in folk med. in fevers.

**Buhl**, or **Bouille**, André Charles (1642-1732), Fr. cabinet-maker, developed style of furniture known as *buhl*; wood inlaid with mother-of-pearl, tortoise-shell, and bronze.

**Building Society**, an association formed to raise a fund, by subscriptions and contributions, out of which loans may be made to members to build houses, buy existing houses, or pay off mortgages; expenses are met by difference (usually c. 1%) betw. rate of interest paid to depositors and that received from borrowers. First societies were *terminating*, i.e., had limited number of members and came to an end when the agreements of all these had been fulfilled; in 1931, 171 of these still survived in Gt. Brit.; all modern societies are *permanent* (Gt. Brit., 1931, 812), unrestricted by legal limits of time or the

number of shares that may be issued. Earliest society, Birmingham, 1781; *permanent* societies began to appear abt. 1846. By

# BUILDING SOCIETIES



Steady growth in recent years but tendency for societies to consolidate and hence to reduce in number. Fall in membership after 1927 due to change in statistics, figures after that date referring to share investors only. Depression has stimulated investment in building societies

Bldg. Societies Act, 1874, every new society had to be incorporated; very few unincorporated societies survive. Failure of "Liberator" society, 1892, resulted in legislation to provide agst. certain doubtful practices. Prominent among rather over 1,000 societies in Gt. Brit. are the *Halifax Permanent*, *Abbey Road*, and *Woolwich Equitable*. Share and loan capital in 1932 amounted to £447,364,000, held by nearly 1,578,000 investors. See also BIRKBECK, STARR-BOWLETT.

**Bulst**, Hugo Massac (1878- ), Eng. writer, pioneer of motoring and aviation; early advocate of mechanized mil. transport and artillery.

**Buitenzorg**, Eur. tn., Batavia, Java; pop., 61,000; seat of governor-general of Dut. E. Indies; health resort.

**Bukhara, Bokhara**, 1) prov. of Socialist Sov. Repub. Uzbek, Centr. Asia, since 1924; under Turks in 6th-7th cents., thence, to 19th cent., Arabs and Persians. 2) Tn., Old B.; pop., 72,100, mostly Uzbegs. Seven-mile bazaar for cotton, silk, carpets, leather, karakul, dried fruit; oil mills; centre of Mohamm. learning; many mosques. Tower of the Dead, minaret, 203 ft., from which criminals (prior to 1871) were thrown. 3) New B., 8 m. from Old B., centre of Bogoyetidin district.

**Bukken Fjord**, S. Norway, nr. Stavanger.

**Bukovina**, prov., Rumania; area, 4,031 sq.m.; pop., 820,000; maize, oats, wax, honey, timber, wool; cap., *Cernauti* (*Czernowitz*). Gt. part of dist. occupied by *Carpathian Mtns.*; extensive forests (conifers and beeches); watered by Dniester, Pruth, and Siret (*Sereth*).

**Bulair**, isthmus, S.E. Europe, connecting Gallipoli Penins. with E. Thrace; separates



Gulf of Xeros from Sea of Marmora; held by Turks in first and second Balkan wars and in Dardanelles campaign (World War).

**Bulawayo**, tn., S. Rhodesia, S. Africa; pop., 31,000; gold mining; chf. commercial centre.

**Bulbul**, *Persian nightingale*, thrush-like singing bird of S. Asia and Africa.

**Bulgaria**, kgdm. on E. side Balkan Peninsula; bounded N. by Riv. Danube and Rumania, W. by Yugoslavia, S. by Greece and Turkey in Europe (*Rhodope Mtns.*), and E. by Black Sea; 39,824 sq.m.; pop., 5,825,000 (mostly Bulgars; 520,340 Turks; Rumanians, Greeks, gypsies, etc.).

Divided by Balkans (*q.v.*) into Danubian B. and terr. formerly known as E. Rumelia. Chf. riv., Maritza; rlys., 1,835 m.; continental climate; agric. chf. industry: wheat, maize, barley, tobacco, vineyards, orchards, rose-gardens; minerals include coal, copper, zinc, and lead; exports wheat, attar of roses, silk, tobacco, eggs, and skins. Chf. tns., *Sofia* (cap.), Philippopolis, Trnovo (mediev. cap.), Ruschuk (on Danube), and Varna and Burgas (Black Sea ports). Orig. part of Rom. prov. of Moesia and Thrace. Invaded in 5th-7th cents. by Slavs and Bulgars; Bulg. Empire (conflicts with Byzantium) 9th-10th cents.; short-lived revival (W. Bulg. kgdm. 11th cent.); second Bulg. Empire, 1185-1330; subject to Serbs, 1330-56; to Turkey, 1396-1878; revolt of 1876 barbarously suppressed (*Bulgarian Atrocities*). Indept. principality, 1878; union with E. Rumelia and war with Serbia, 1885; indept. kgdm., 1908; Balkan Alliance (B., Serbia, Greece, Montenegro) and first Balkan War (with Turkey), 1912; second Balkan War (B. against former allies and Rumania), 1913; defeat of B. Net result of two Balkan Wars, acquisition of portion of W. Thrace. On side of Central Powers in World War (from Oct., 1915); lost W. Thrace, 1919 (to Greece). **B.**, **Eastern**, extinct kgdm. (5th-15th cents. A.D.), Centr. European Russia; extended from Saratov to Perm. See Map, BALKAN PENINSULA.

**Bulgarian**: see LANGUAGE SURVEY: *Slavonic*, Lit., 9th cent. transl. of Bible, by Cyril, (*q.v.*); mod. lit., folk-song and fairy tale collections.

**Bulgarian Atrocities**, massacres of Christians by Mohammedan inhabitants of Bulgaria in 1876.

**Bulkheads**, water-tight thwartship divisions to a ship's hold, usu. of steel, with vertical stiffening or bars, and dividing the hull into complete compartments, access from one to the other being possible only by means of doors, so arranged that they can be closed mechanically from the bridge when, and as,

necessary. Fore and aft bulkheads are fitted on tankships or vessels which carry crude or refined oils in bulk, for the purpose of breaking the free surface of the liquid into small areas.

**Bull**, John, Dr. (c. 1562-1628), Eng. organist and composer; wrote numerous pieces for virginals, one of which said to be orig. source of *God Save the King*.

**Bull**, 1) uncastrated male of any of bovine group; 2) (Stk. Exch.) speculator who buys low in expectation of rise in price; 3) (astron.) *Taurus*, one of the signs of the Zodiac; 4) (eccles.) papal document (so-called from the *bull* or round leaden seal) of more formal character than a brief (*q.v.*); many famous papal enactments have taken this form; 5) ludicrous blunder in speech or conduct; esp. *Irish bull*. **B. account** (Stk. Exch.), case in wh. there are more buyers than sellers of a security or buying is effected by *speculators* likely to sell as soon as there is a rise in price, rather than by *investors* who buy shares as means of income (from dividends).

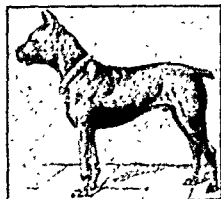
**B.-baiting**: see BEAR-BAITING. **B.dog**, small, compact but powerful dog, with protruding under-jaw and tenacious grip; formerly used for bull-baiting. **French b.d.**, small breed with pointed ears. **B.-fight**, anc. sport prob. introduced into Sp. at time of Moorish conq. of Andalusia, popular in Sp. and S. Amer. Bulls let loose in an arena are goaded by picadors and banderilleros, and killed by the matador (*qq.v.*).

**B.-frog** (*Rana caatesbyana*), large N. Amer. frog; measures abt. 8 in.; the hind legs may be 10 in. long; frequents shady streams and rivers. Distribtd. from Mexico to Canada. **B.-terrier**, cross betw. terrier and bulldog; powerful and pugnacious breed, usu. white.

**Bullace**: see PLUM.

**Butler**, Sir Redvers Hy. (1839-1908), Brit. soldier; served in China, 1860; Red River exped., 1870; Ashantee exped., 1873-74; Kafir War, 1878; Zulu War, 1879; Boer War, 1881; Sudan, 1884; in command in 2nd Boer War, 1899; relieved Ladysmith, after severe reverses at Colenso and Spion Kop; superseded by Lt. Roberts; attacked by press; relieved of Aldershot command after indiscreet speech in his own defence, 1901.

**Bullet**, missile used in ammuntn. for small arms; since introd. of rifle, round lead bullet superseded by cylindrical, conical-headed type, consisting of lead core, and outer cover of alloy of nickel and steel or copper. **Tracer b.** has attachment at base leaving trail of smoke to mark track; use of



Bull-terrier

**Explosive and Expanding bs.** in war forbidden by international law (Geneva Convention, 1906).

**Bulletin**, daily report; authenticated offil. rept., concerning some pub. event, issued for informatn. of public; periodical publicatns. recordg. proceedgs. of learned societies.

**Bullfinch**, member of group of birds found in N. and Centr. Eur. and Siberia; usu. with short, thick beak, black, pointed wings, forked tail; breast of male red. See FINCH.

**Bullinger**, Heinrich (1504-75), Swiss Prot. reformer; successor of Zwingli (q.v.) at Zurich.

**Bullion**, gold or silver bars, or gold and silver in the mass; also gold and silver coin in large quantities when reckoned by weight. **B. points**, equiv. to *gold points*. See GOLD STANDARD.

**Bull Run**, stream, Virginia, U.S.A.; battle of **B. R.**, 1861, Confederate victory in Civil War.

**Bull's-eye lantern**, lantern with strong condensing lens and means for darkening completely by shutter.

**Bülow**, Friedrich Wilhelm von (1755-1816), Pruss. gen. in Napoleonic Wars.

**Hans von** (1830-94), Ger. composer, pianist, and conductor; m. (1857) Liszt's dau., Cosima, who later deserted him for Wagner whom she m., 1870. **Karl von** (1846-1921), F.-M., Ger. Army, commd. in World War. **Bernhard**, Prince von (1845-1929), Imp. Chanc. (1900-09); *Memoirs*.

**Bulrush**, *Scirpus lacustris*, plant found in marshy places or on river-banks, having long, thick stem, almost leafless, ending in close clusters of red-brown flowers. Stems used in weaving chair-seats, mats, baskets, etc.

**Buluwayo**: see BULAWAYO.

**Bulwarks**, continuation of sides of ship above weather-deck on each side. In mod. shipbldg., B. are of steel, usu. stiffened by brackets or angle bars and equipped with freeing ports or apertures wh. permit of escape of any water deposited on deck.

**Bumboat**, small, broad-beamed boat used to bring provisions to ships lying in port or off shore.

**Bumper**, cup or glass filled to the brim for the generous toasting of a guest; also a large decorated goblet on a stem, often with a lid.

**Bunch**, (text.) package of yarn containing a number of bundles (q.v.).

**Bundesgericht**, Fed. Supreme Court of Switzerland. **Bundesrat**, Swiss Fed. Executive Council. **Bundesversammlung**,

Swiss Fed. Legislative Assembly of two houses.

**Bundle**, 1) (text.) a number of hanks of yarn tied together; B. of flax = 20 hanks = 6,000 yards. B. of cotton (fine) = 5 lbs.; B. of coarse cotton = 10 lbs. 2) (Paper meas.) 2 reams.

**Bungay**, mkt. tn., E. Suffolk, on Riv. Waveney, 6½ m. W. Beccles; pop., 3,000; 11th cent. castle, Norman and 15th cent. churches; printing works, flour-mills, iron-foundry.

**Bunhill Fields**, burial ground in bor. of Finsbury, London; used by Nonconformists from 17th cent. to 1852. Burial place of John Bunyan, George Fox, Daniel Defoe, William Blake.

**Bunion**, inflamed swelling containing fluid, esp. on large joint of great toe; treatment by hot fomentations and avoidance of pressure.

**Bunker**, 1) (naut.) portion of ship's structure devoted to carriage of fuel for operation of the engines. 2) (Golf) Natural or artificial obstacle on course.

**Bunker Hill**, nr. Boston, Massachusetts, U.S.A.; scene of first serious engagement in American War of Independence, 1775; British victory at great cost.

**Bunsen**, Robert Wilhelm von, Ger. chem. (1811-99), discvd. with Kirchhoff (q.v.) uses of spectrum analysis (q.v.); invented **B. gas burner**, still used in laboratories, and **B. cell**, primary battery constg. of zinc in sulphuric acid and re-tort carbon in nitric acid or aqua regia. **B. element**: see GALVANI.

**Bunter**, (geol.) designation of beds of red sandstone and pebbles, reaching a thickness of 2,000 ft.; the lowest part of Brit. Triassic (q.v.) rock, extending over large areas in Devonshire and the Midlands; form the source of water-supply for many large Midland towns.

**Bunting**, 1) grain and insect-eating bird related to finches (q.v.); often brightly coloured; widely distributed. **Yellow B.** (Yellow-hammer) is common in N. Europe. Other Europn. species are: Snow, Cirl, Corn, and Lapland B. The ortolan, most freqt. in S. Eur., but also fnd. in Scand., is related to the cirl bunting. 2) Coarse, loosely-woven woollen cloth, gen. brightly coloured and used for making flags; collectively, flags in general, esp. those of a ship.



Prince von Bülow



Bunsen Burner



Bunting

**Bunyan, Jn.** (1628-88), Eng. writer; Nonconformist; imprisoned (1660-72); *Pilgrim's Progress* (1678).

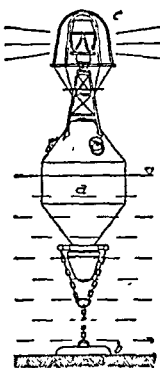
**Buoy**, contrivance made of wood or metal, hollow, usu. globe-shaped, wh. floats easily in water, and is moored to the bottom of sea or river, either to mark a channel or to indicate position of submerged wreckage, etc.



Bunyan

**Breeches b.**, pair of canvas breeches attached to life-belt, used in cases of shipwreck; slung from rescuers to wreck by a rope wh. is often fired across by rocket. (See ill., SAFETY FIRST).

**Life-b.**, circular or horseshoe-shaped apparatus made of, or lined with, a buoyant material; keeps human body afloat. **Light b.**, steel, floating structure, c. 6 ft. diam.; may be either cone, can, or barrel shaped, placed in navig. channels to mark shoals or sandbanks; often with flashing light in its upper portion, sometimes combined with bell or whistle; the largest, flashing buoys very similar to small, automatic light-ships. See BEACON.



Light-Buoy  
a Buoy, b Anchor  
c Flashing Light

**Buoyancy**, upward thrust exerted by a liquid upon a body immersed in it; equal to wt. of liquid displaced by body. Floating body displaces liquid equal to its own weight.

**Burbage**, Richd. (1567-1619), Eng. actor and friend of Shakespeare; excelled in tragedy; seems to have played the original rôles of Hamlet, Lear, and Othello; part-owner of the *Blackfriars* and *Globe* theatres.

**Burbank**, Luther (1849-1926), Amer. botanical experimentalist; developed many new species, esp. of plums and other fruits.

**Burbot**, large fresh-water cod found both in Europe and N. America.

**Burckhardt**, Jakob (1818-97), Swiss historian of art and letters; *Cicerone*; *History of the Renaissance in Italy*, etc.

**Burdett**, Sir Francis (1770-1844), Eng. polit.; M.P. for Westminster, 1807-37; publd. speech denying right of Commons to imprison delinquents; imprisoned in Tower for some months; opposed war with France.

**Burdett-Coutts**, Angela Georgina B.-C., Bness. (1814-1906), Brit. philanthropist; dau. of Sir Francis Burdett (1770-1844); cr. peeress, 1871; endowed bprcs. of Cape Town and Adelaide, 1847; supp. formation of Soc. for Prevention of Cruelty to Children; raised fund for starving fugitives in Russo-Turk. War, 1877-78.

**Burdock**, *Arcium Lappa*, plant of thistle family, grows 4 ft. high; purple flowers. Used largely in herbal med. as a "blood purifier."

**Bureaucracy**, rule by officials of national govt. or of local authorities; commonly used to imply absence of popular repres. or control.

**Burette**, graduated glass cylinder, usu. with a tap at one end; capacity varies from 25 to 100 cc.

**Bureya**, navig. trib. of Riv. Amur; Centr. Asia. **B. Mountain Territory**, centr. district of Amur province.

**Burgee**, small flag or pennant, triang. or swallow-tailed; used by merchant vessels and yachts.

**Burgenland**, prov., Austria, W. of L. Neusiedl; 1,545 sq.m.; pop., 287,000; hemp, flax, grain, vegetables, sugar beet; hills rich in lignite; few manufactures. Hungarian till 1921, Austrian since 1922.

**Bürger**, Gottfried August (1747-84), Ger. poet: famous ballad, *Leonore*.

**Burgess**, Frank Gelett (1866- ), Am. humorous writer and draughtsman; *Why Men Hate Women*, 1927.

**Burgess**, person enjoying privileges and bearing burdens attaching to inhab. of a borough. In mod. Eng. this means, in practice, right to elect members of tn. council, liability to pay rates.

**Burgh**, Hubert de (d. 1243), Eng. statesman; castellan of Falaise during captivity of Prince Arthur; refused to obey Kg. John's orders to blind the prince; supported John at Runnymede, 1215; deftd. Eustace the Monk in naval battle, 1217, compelling Louis VIII to conclude Treaty of Lambeth; regent 1219-32.

**Burgkmair**, Hans (1473-1531), Ger. painter and wood-engraver.

**Burgos**, 1) inland prov. N. Spain, watered by rivs. Ebro, Arlanzón, Pisuerga, and Douro; 5,480 sq.m.; pop., 344,400; mountainous in N. (*Cantabrian Mtns.*) and E., plateau in centre; forests, pasture, agric. (cereals), vineyards. 2) Cap. of prov., on Riv. Arlanzón; pop., 33,700; 13th cent. cathed., convents; woollen and leather goods.

**Burgoyne**, John (1722-92), Eng. gen. and dramatist; surrendd. at Saratoga (Amer. War of Independence, 1777).

**Burgundy**, **Bourgogne**, fertile dist. E. France, watered by Riv. Saône, famous for its wines (Côte d'Or). **B. Canal** (150 m.) unites rivs. Saône and Yonne. Burgundian Vandals from E. Germany fndd. in 413, under King Gunther, a kgdm. on the Mid. Rhine (Nibelung legend); after the sack of their cap., Worms, by the Huns (443) migrated to the Rhone, where they fndd. 1st kgdm. of B. Conquered by Frankish kings, 533; Frankish prov., 613. Kgdm. of *Provence* (*Cisjuran B.*) fndd. 879; kgdm. of *Trans-*

**Juran B.** fndd. 888; united 933 to form kgdm. of *Arles* (q.v.). Name of Burgundy gradually restricted to **Countship of B.** (Upper B., or Franche-Comté, q.v.) and **Duchy of B.** (Lower B., W. of the Saône). Duchy fndd. by Carolingian kgs. in opposition to Boso, who had fndd. Provence; reunited to France 1015. First Capet dukes of B., 1032-1361. Passed to Philip the Bold 1363 (second Capet house); period of prosperity, expansion, and independence. Philip the Good (1419-67) inherited the Netherlands; Charles the Bold (1467-77) vainly attempted to extend frontiers. On his death Burgundy passed to France, except Dutch possessions which, as **Circle of B.**, became an admin. unit of the Empire. **B. wines**, name given to red and white wines produced in district of B.; e.g., Chambertin (red); Chablis (white).

**Burial clubs**, mutual insur. unions for collecting money in periodic small sums for funeral charges; see FRIENDLY SOCIETIES.

**Buriat Mongol**, auton. S. S. R., E. Siberia, created 1923; 162,000 sq.m.; pop., 576,000, incl. 43.8% Buriats (mainly Buddhists), 52.7 Russians; hunting and fishing; cap., *Verkhne-Udinsk*; (pop., 28,920).

**Buridan**, Jean (c. 1300-58), Fr. nominalistic philos.; author of sophism, **B.'s Ass**, which starved betw. two equal bundles of hay, symbolical of impotence of the will when actuated by two equally powerful motives.

**Burin**, pointed tool used by stone or metal engravers, the point being lozenge- or diamond-shaped, flat or grooved, etc., accdg. to purpose for wh. intended.

**Burke, Edmund** (1727-97), Brit. statesman, orator, and polit. writer: *Thoughts on the Causes of the Present Discontents*, 1770; *Reflections on the Revolution in France*, 1790, etc. **B., Sir John Bernard** (1814-92), Eng. genealogist; Ulster kg-at-arms; ed. *Burke's Peerage*; publ. *History of the Landed Gentry*, 1843. **B., Robt. O'Hara** (1820-61), Australian explorer; crossed continent of Australia, 1860-61; d. of starvation on return journey. **B., Wm.** (1792-1829), murderer and body-snatcher; with Wm. Hare, supplied Dr. Robt. Knox of Edinburgh with corpses for experimental dissection by making victims drunk and suffocating them.



Edmund Burke

**Burleigh or Burghley**, William Cecil, Bn. of (1521-98), Eng. statesman, Ld. High Treas., 1572-98; chief min. of Qn. Elizabeth; one of most brilliant polit. leaders during one of greatest periods of Eng. history.



Lord Burleigh

ing one of greatest periods of Eng. history.

**Burlington House**, 1) old B.H. in Piccadilly, London, bought for nation in 1854, and leased to Royal Academy of Arts in 1867; annual exhibition of contempor. Eng. art, and other important art exhibitions are held there. 2) New B.H., built on site of B.H. gardens in 1872, is meeting place for Royal Astronomical, Geological, and other societies.

**Burma**, prov., Brit. India, largest in Indian Empire (annexed 1886); area, 233,700 sq.m.; pop., 14,665,600 (preponderatingly Buddhist). Divided into Upper and Lower Burma; Shan States, administered by their own chiefs, are tech. part of Upper Burma. Surface mountainous in W. and N. (up to 11,200 ft.); chief rivs.: Irrawaddy, Salween; rlys., c. 2,000 m. Forests of teak, ironwood, and bamboo; minerals include gold, silver, copper, tin, amber, ruby, jade, coal, petroleum; crops: rice, millet, sesame, pulses. Climate hot and moist; rainfall heavy. Architectural features are the innumerable pagodas and monasteries. Cap., *Rangoon*; former cap., Mandalay.

**Burmese**: see LANGUAGE SURVEY, *Indo-chinese*.

**Burnand**, Sir Francis Cowley (1836-1917), Eng. humorist; writer of novels, plays, and sketches; ed. of *Punch* 1880-1906; *Black-eyed Susan*, 1866; *Happy Thoughts*, 1871.

**Burne-Jones**, Sir Edward (1833-98), Eng. painter; Pre-Raphaelite (q.v.); A.R.A., 1885.

**Burnet**, Gilbert (1643-1715), Brit. prelate and historian; chaplain to Wm. III, Bp. of Salisbury, 1689; *History of the Reformation of the Church of England*, 1679, '81, 1715; *History of His Own Times* (ed. by his sons), 1723; *Exposition of the Thirty-Nine Articles*, 1699.

**Burnet**, small diurnal moth, brightly coloured, usually grey-black with crimson spots; abundant in Gt. Brit. and Europe. **B. saxifrage**, *Pimpinella saxifraga*, aromatic plant; grows in dry meadows, umbelliferous, 18 ins. high.

**Burnett**, Frances Hodgson (1849-1924), Amer. authoress: *Little Lord Fauntleroy*, 1886.

**Burney, Charles** (1726-1814), Eng. music. histor.; father of Madame d'Arblay (q.v.); *A General History of Music* (4 vols., 1776-89). **B., Frances**: see ARBLAY, D.

**Burnham**, Edw. Levy Lawson, 1st Bn. (1833-1916), Eng. journalist; editor (1856-88) and sole controller (1888-1903) of the *Daily Telegraph*; raised to the peerage, 1903. His son, **Harry Lawson Webster Lawson**, 1st Viscount B. (1862-1933), took over directorship of the *Daily Telegraph*, 1903; pres. Internat. Labour Conference of League of

Nations at Geneva, 1921; chmn. of standing committees on teachers' salaries; M.P. 1885-92, 1893-95, 1905-06, 1910-16, when he succeeded to the title; Companion of Honour, 1917; Viscount, 1919. **B. scale**, graduated scale of salaries and pensions for teachers in state-aided schools in Gt. Brit., recommended by Joint Committees representing teachers and local education authorities, 1919-21 (chairman, Ld. B.); put in force 1924, and widely adopted by independent schools.



Lord Burnham

**Burnham Beeches**, Bucks., remainder (440 acres) of anc. forest; the greater part purchased by Corporation of City of London for public in 1879; augmented by gift from Lord Burnham, 1921.

**Burning glass**, convergent lens, by which sun's rays can be concentrated.

**Burnish**, to give a smooth bright finish to surfaces, by rubbing with hard, smooth *burnisher* (steel, agate).

**Burnley**, co. bor., Lancs., Eng.; coal, cotton, iron; pop., 98,300. Eng. Assoc. Football club, fndd. 1881; won Assoc. Cup, 1914; League Champions, 1924.

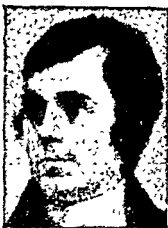


Burnous

**Burnous**, Arab hooded cloak.

**Burns, John** (1858- ), Eng. politic., pioneer of labour movement; Pres. Board of Trade, 1914. **B., Robert** (1759-96), national lyric poet of Scotland; son of poor cotter, himself a farmer, later exciseman. Many poems insp. by romantic attachments with (e.g.) Jean Armour, Mary Campbell; *Tam o' Shanter*, *Ye Banks and Braes*.

**Burns and scalds**, injuries caused either by dry heat (burns) of 140° F. and upwards, or by moist heat (scalds) of over 120° F. Similar in effect and treatment. Slight burns cause redness and swelling and subsequently peeling of skin; more severe burns result in blisters (q.v.), inflammation, and sometimes permanent discoloration of skin; deep burns cause destruction of skin, formation of pus (q.v.), and often leave unsightly scars. See FIRST AID.



Robert Burns

**Burntisland**, royal burgh and seapt., Fifesh., on Firth of Forth; ferry to Granton, Edin.; pop., 5,400.

**Burr**, 1) round, prickly, sticky seed-vessels of cert. plants; 2) rough edge or line left by engraver's tool on copper; 3) rough, flinty stone used for millstones or whetstones.



Burr

**Bursar**, treasurer of school or college; holder of scholarship or exhibition (bursary) at Scottish school or university.

**Burslem**, manuf. tn., Staffs., Eng., one of the "Five Towns" of the Potteries; pop. included in Stoke-on-Trent (q.v.).

**Burton, Sir Richd.** (1821-90), Eng. explorer, orientalist and writer; translr. of *Arabian Nights*, Camoëns' *Lusiads*, etc.; **B., Robt.** (1577-1640), Eng. scholar and writer: *Anatomy of Melancholy* (1621).

**Burton-upon-Trent**, co. bor., Staffs., on left bank Riv. Trent; pop., 49,500; centre of Eng. brewing.

**Burujird**, tn., cent. Persia, pop., 22,000; carpet-knotting, cottons.

**Bury**, 1) co. bor., Lancs., Eng.; manuf. cotton, paper, dyeworks; pop., 56,200. 2) Engl. Assoc. Football club, formed 1885; won Engl. Cup, 1903, beating Derby Co. by largest margin on record (6 goals to nil). **B. St. Edmunds**, munic. bor. and admin. H.Q., W. Suffolk, mkt. tn.; pop., 16,700, manuf. agric. implements; ruined 11th cent. abbey, founded in memory of Edmund, last Kg. of E. Anglia (d. 870).

**Burying beetle**, species of carrion beetle of genus *Necrophorus*, feeding on carcasses of small animals (moles, mice, etc.), which it buries by excavating under them.

**Burzenland, Barcz-asag**, S.E. dist., Transylvania, Rumania; cap., *Brasov* (*Kronstadt*).

**Busento**, riv., Cosenza, S.W. Italy; traditional burial-place of Alaric.

**Bush**, (geog.) tract of country covered with shrubs; esp. wild country in Australia and Africa.

**Bushel**, Brit. and U.S. dry meas., 8 gallons or 4 pecks; U.S. bushel = 0.97 imperial bushel.

**Bushey**, urb. dist., Herts, 1½ m. S.E. Watford; pop., 11,000; Herkomer School of Art; at **B. Heath** (1½ m. S) is reservoir of Colne Vall. waterworks.

**Bush House**: see KINGSWAY.

**Bushido**, (Jap.) way of warrior; unwritten code of honour and chivalry as observed by the Samurai (q.v.).

**Bushire**, port, S. Persia, on Pers. Gulf; pop., 25,000; exports petroleum, carpets, dates, hides, iron, opium.

**Bushman**: see LANGUAGE SURVEY, *Elhiop. language*.

**Bushmen**, Negroid race of S. Africa (Kalahari Desert); small stature, yellow-brown complexion; nomadic hunters living

in small bands and speaking own lang.; now almost extinct as a pure race.

**Bushranger**, name formerly applied in Australia to an escaped convict living as a highwayman in the bush.

**Bushy Park**, royal park (1,100 ac.), Midd., on Riv. Thames, adjoining Hampton Court; horse-chestnut trees; "Chestnut Sunday," first or second week in May. **B. House**, home of Nat. Physical Laboratory (fndd. 1901).

**Business cycle**, economic phenomenon of periodic cycles of increasing trade, boom, crisis, depression, increasing trade—and so on; historically observable in, roughly, 10-yr. periods, and usu. accentuated after wars; important subject of modern econ. study.

**Busiris**, name of several mythical kgs. of Egypt, one of whom sacrificed a Greek every year in order that a famine should cease, and was ultimately slain by Hercules (q.v.). Milton, in *Paradise Lost*, gives the name to the Pharaoh drowned in Red Sea.

**Buskerud**, prov., S.E. Norway; area, 5,720 sq.m.; pop., 148,010; forest dist.; cap., *Drummen*.

**Buskin**, 1) boot worn by actors in anc. Athen. tragedy, hence applied to tragic drama. 2) Mediev. boot, gen. laced and reaching calf of leg; of leather or embrd. silk.

**Busoni**, Ferruccio (1866-1924), It. composer and pianist; operas: *Turandot*, *Faust*, *Harlequin* (Arlecchino).

**Bussa**, tn., N. Nigeria, W. Africa; cap. Brit. Borgu. Mungo Park drowned here in 1806.

**Bustard**, large, handsome bird more than 3½ ft. high, with mottled brown, white, and grey plumage; male has angular pouch by which throat is inflated as part of its mating display. Formerly indigenous to Britain, now only a rare visitor. Still found on plains of Europe from Centr. Germany to Spain, and in Centr. Asia; also migrates to N. Africa. **Little B.**, similar in habit and range; abt. 17 in. in length.



Bustard

**Butcher bird**: see *SHRIKE*.

**Butcher's broom**, *Ruscus aculeatus*, small shrub 3 ft. high; small white flowers growing from centre of leaves (which end in spine); large red berries. Used in herbal med. for jaundice, etc.

**Bute**, Earls and Marquesses of, titles in peerage of Scot. and Gt. Brit.; **Sir James Stuart** (d. 1710) was cr. 1st earl, 1703; his son, **James**, 2nd e. (d. 1723), m. dau. of 1st Duke of Argyll; his s., **John**, 3rd e. (1713-92), was Prime Min., 1762-63; his s., **John**, 4th e. (1744-1814), was cr. marquess, 1796; his g.-s., 2nd marq. (1793-1848), prefixed *Crichton* to his surname; his s., **John Pat-**

**rick Crichton-Stuart**, 3rd marq. (1847-1900); his s. **John**, 4th marq., K.T. (1881-), is hereditary sheriff and coroner of Bute, and hered. keeper of Rothesay Castle.

**Buteshire**, co., S.W. Scot., comprising islands of *Bute* (50 sq.m., with cap. *Rothesay*), *Arran* (165 sq.m., mountainous, *Goatfell*, 2,866 ft.), and the *Cumbraes*; total area, 218 sq.m.; pop., 18,900; summer resorts.

**Butler**, **Joseph** (1692-1752), Eng. theologian; Bp. of Durham, 1750; author of *The Analogy of Religion, Natural and Revealed, to the Constitution and Course of Nature*, 1736. **B., Nicholas Murray** (1862-), Amer. educationalist and writer; Pres. Columbia Univ., 1901; strong advoc. of better internat. understanding; Nobel Peace Prize, 1932; *The Meaning Of Education; The International Mind*; fndd. and ed. *The Educational Review*, 1889-1920. **B., Samuel**, (1612-80), Eng. poet and satirist: *Hudibras*. **B., Samuel** (1835-1902), Eng. critic, sociolog. writer, and novelist: *Erewhon; The Way of All Flesh*; etc.

**Butt**, Clara, D.B.E. (1873-), Eng. vocalist; 1st appeared in Royal College of Music students' performance of *Orfeo*, Lyceum Theatre, 1892.

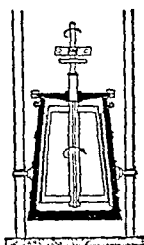
**Butt**, 1) thick end of weapon or tool; thickest part of a tree-trunk. 2) (Mach.) **B. joint** or weld, joint betw. two pieces simply placed in contact. 3) (Mil.) A mark for shooting; also mound behind target in a shooting range. 4) (Meas.) Large cask; Brit. and U.S. liquid meas.; beer or sherry, 108 gallons (129½ U.S. gallons).

**Butte**, cap., Montana, U.S.A.; pop., 39,550; copper, iron, machinery, gold, silver.

**Butter**, fatty product of firm consistency derived from cream; cream is collected from milk by skimming or in a separator (worked by centrifugal force) and is churned in a **butter-tub** or *churn* until the milk-fat, or butter, is separated; from 25-28 lbs. of milk are reqd. to make 1 lb. of butter. **B. nut**, hard-shelled nut of the N. Amer. white walnut tree; kernel has buttery flavour and is used in confectionery.

**B. of antimony**, trichloride of antimony (SbCl<sub>3</sub>); used as caustic in medicine, in preparation of tartar emetic (q.v.) and for bronzing gun-barrels. For latter, saturated solution in olive oil is used. **B. of tin**, anhydrous dichloride of tin (SnCl<sub>2</sub>); more commonly, hydrated tetrachloride of tin (SnCl<sub>4</sub>·5H<sub>2</sub>O). Also called *oxymuriate of tin*; used by dyers as mordant (q.v.).

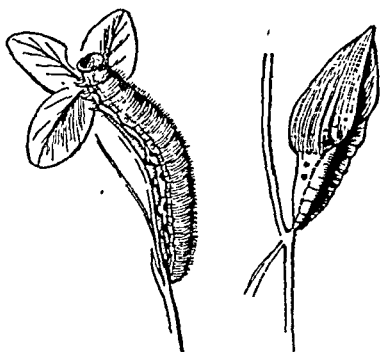
**Buttercup**, name given to sev. members of the *Ranunculus* (q.v.) tribe. Common weed, so-called from deep yellow of flower;



Butter Churn

common varieties: *R. acris* (meadow crow-foot), *R. bulbosus* (grows 12 in. high, bulbous root), and *R. repens* (creeping buttercup).

**Butterflies**, insects forming part of the order Lepidoptera (*q.v.*); nearly all are diur-



Caterpillar (pupa), Chrysalis and Imago of the Clouded Yellow Butterfly (*Colias edusa*)

nal. The antennae end in a knot or club; wings, when at rest, are usu. folded vertically.

**Buttermere**, lake, Cumberland, in Eng. Lake Dist.;  $1\frac{1}{2}$  by  $\frac{1}{2}$  miles.

**Butterwort**, *Pinguicula vulgaris*, carnivorous plant; grows on heaths; has large purple flowers at the top of the stem 4 ins. high; leaves formerly used to "sour" milk.

**Butt joint**, (bldg.) side-to-end joint of timber or steel structural members.

**Buttress**, (bldg.) pier (*q.v.*), broader at base than top, supporting a diagonal stress.

**Butucatu**, Indian people of Western Brazil; wear wooden plugs in ear-lobes and under-lip.

**Butyl alcohol**,  $C_4H_9OH$ , occurs in 4 isomeric forms: normal, iso-, secondary, and tertiary. Found in brandy, fusel oil, products of fermentation, etc.

**Butyric acid**,  $C_4H_7O_2$ , formed when milk and butter become rancid; present in perspiration; has a very objectionable smell.

**Buxton**, Sydney Charles, 1st E. (1853- ), Brit. statesman; P.M.G. 1905-10; introd. penny post between Gt. Brit. and U.S.A., and Canadian magazine post.

**Buxton**, munic. bor. Derbysh., Eng., centre Peak Dist. (*q.v.*); highest tn. in Eng. (1,000 ft.); watering-place, mineral springs; pop., 15,400.

**Buys Ballot's Law**, (meteorol.) relates

to angle betw. barometric gradient and wind; a corollary of Ferrel's Law (*q.v.*); states that low-pressure area will always be on left of observer standing with his back to the wind; this, and its converse, approx. true in high N. and S. latitudes respectively; not so true in low latitudes.

**Buzzard**, widely distribtd., medium-sized bird of prey, mostly resembling small eagle in habits; useful to agric. as it feeds chfly. on rats and mice, insects and small reptiles.



Buzzard

**Buzzard's Bay**, inlet of Atlantic, in S. of Massachusetts, U.S.A.; 30 m. long, 5-10 m. wide; bndd. on S. by Elizabeth Isls.

**B.V.M.**, abbr. *Beata Virgo Maria* (Lat.), the Blessed Virgin Mary.

**Byblos**, 1) anc. city, Syria, overlooking Mediterranean, 20 m. N. Beirut; site occupied by mod. *Jebail*. Greater than Tyre and Sidon in 3rd millennium 'b.c., noted in the Bible for its masons (I Kings, v, 18) and ship-caulkers (Ezek. xxvii, 9). Seat of cult of Adonis. Royal necropolis excavated, 1922. 2) Anc. tn., Lower Egypt, S. of Bubastis.

**Bydgoszcz**: see BROMBERG.

**Bye**, (golf) the holes remaining after a match has been completed; (cricket) run scored for ball that passes the batsman and is missed by the wicket-keeper. **Leg-b.**, run scored after the ball has touched any part of the batsman's person other than his hand.

**By-law**, originally borough law, now various enactments made by local authorities (binding all persons within their districts), companies (e.g., for management of railways), etc. By-laws (except those made by private societies, which bind their own members alone) must (in mod. Eng. law) be on subjects authorized by Parliament, and usually must be confirmed by a Minister of the Crown before acquiring legal force. **B.-pass**, 1) side-passage in pipe, etc., to control and divert circulation of air, gas, etc. 2) New road connecting two points of old road, constructed to divert traffic from a town.

**Byling**, early Russ. epic songs; Slav equiv. of Fr. *chansons de geste* (*q.v.*), Scand. *saga* (*q.v.*); chfly. assoc. with chronicle-cycle of Kiev; see CHRONICLES OF KIEV.

**Byng**, John (1704-57), Brit. admiral; through inefficiency of Eng. war ministry unsuccessful in expedition to relieve Minorca, 1756; court-martialled to divert blame from ministry; sentenced to death; shot.



Lord Byng (p. 167)

**Byng**, of Vimy, Julian Hedworth Geo. B., 1st visc. (1862- ), Brit. gen.; com. Cavalry Corps, 1915; IX Army Corps (Gallipoli), 1915; Canad. Army Corps, 1916, on W. Front; capt. Vimy Ridge, 1917; com. III Army, 1917-18; Gov.-Gen. of Canada, 1921-26; Comm. of Met. Police, 1928-31.

**Byrd, R. E.** (1888- ), Amer. aviator, flew with Floyd Bennett from Kingsbay (Spitsbergen) to N. Pole and back, 1926; New York-France, 1927; undertook flight of exploration to S. Pole, 1929-30. **B., William** (1543-1623), Eng. composer; one of outstanding masters of polyphonic era; madrigals, songs, etc.

**Byro-Bidjan**, Jewish colony, Crimea, Russia, formed in 1928 by Soviet Govt.; c. 7,730 sq.m.; pop., 310,000; agriculture.

**Byron**, George Gordon, 6th bn. B. (1788-1824), Eng. poet; poems: *Childe Harold's Pilgrimage*, *Don Juan*; plays: *Manfred*, *Cain*. Died at Missolonghi commdg. Greeks in War of Independence.

**Byssus**, (zool.) 1) viscous, quick-hardening gland-secretion of mussels and other molluscs, by means of wh. the animals anchor themselves to rocks, wooden piles, and breakwaters. 2) In antiquity, fine fabric of flax, cotton, or silk, such as that in wh. Egypt. mummies were wrapped.

**Byzantine art**, designatn. of works of transitional style wh. came into being as result of adaptation of Early Roman art to requirements of Christian faith (fl. c. 328-1453). In eccl. archit., domes on substructures with 4 or more corners (*San Vitale*, Ravenna; *St. Sophia*, Constantinople); in painting preference for bright colours (gold, blue) and austere, slender figures; mosaics on church

walls (esp. in Rome, Ravenna, and Venice).

**Byzantine Empire**, Empire of the East, came into existence A.D. 395, as result of partition of Rom. Empire betw. sons of Theodosius the Great, Arcadius (who took E. Empire) and Honorius (W. Empire). A centralised bureaucracy composed of many Balkan and Western Asiatic tribes, under Gr. suzerainty; up to A.D. 1261, a succession of dynasties worked for restoratn. of ancient Rom. World-dominion; Justinian (525-567) est. power of State over Ch. and codified Rom. laws (*corpus juris*); in 536-55 his generals, Belisarius and Narses, annihilated kingd. of Ostrogoths and that of the Vandals in Afr.; from 5th to 7th cents. invasions of Slavonic tribes in Thrace, Macedonia, and Thessaly; 565 It. again lost; 641-942 battles with Arabs. In 679 arose an independent Bulgarian kingd., overthrown in 976. In 10th cent. extension of empire to Euphrates and Tigris and to Tripoli; 1040 dispersal of Arab. pirates, domination of the Levant trade. In 11th cent. Normans invaded Thessaly, and the Seljuks Asia Minor; they were dislodged in 1083-1191 by Barbarossa; 1186 revolt and new kingd. of the Bulgars; commerc. rivalry, leading to war, betw. B. and Venice; 1204 foundation of *Latin Empire* of East under suzerainty of Venice. Civil war. In 13th to 14th cents. Turk. Osmans invaded E. and Serbs the W.; 1453 capture of Constantinople by Turks and end of Byzantine Empire.

**Byzantium**, ancient name of Constantinople (*q.v.*); Gr. city on Bosphorus, colonised c. 657 B.C. by Megara. Centre Euxine (Black Sea) grain trade; renowned fisheries. Destroyed, A.D. 196, by Severus, gradually rebuilt; destroyed again by Gallienus, again rebuilt. Constantine the Great made it cap. of Rom. Empire, A.D. 330; on division of Rom. Empire became cap. of Empire of the East.



Lord Byron



# C

**C.**, 1) Chem. symbol of carbon. Abbr., 2) Caesar; 3) centigrade (thermometer); 4) *centum* (Lat.), 1 hundred; 5) cent, centime, and centimetre; 6) *circa* (Lat.), about.

**Ca**, (chem.) sym. for calcium (*q.v.*).

**Cab**, (abbr. of *cabriolet*) vehicle holding up to 4 passengers, plying for hire. See also HANSOM.

**Cabal**, orig. denoting secret understanding binding a society and later the soc. itself. Espec. applied to Eng. Cabinet of 1667-73, initials of whose names (Clifford, Ashley, Buckingham, Arlington, Lauderdale) spell "cabal."

**Cabbage**, plant of order *Brassica*, leaves of wh. are tightly folded so as to form a large, hard head; cultivtd. as vegetable and for fodder. **Borecole**, or **Scotch kail** (*B. oleracea acephala*), has loosely formed head and is most nearly allied to wild C.; **Brussels sprouts** (*B. oleracea gemmifera*) has a number of miniature C. heads growing out of one stem; **Savoy c.** (*B. oleracea subanda*), hardy species with pale-green, wrinkled leaves; **Drumhead**, or **Common c.** (*B. oleracea capitata*), with large head of darker green leaves; **Kohl-rabi** (*B. oleracea caulorapa*), variety with thick, fleshy stem, used princ. as fodder; **Red c.**, with purplish leaves, used for pickling. See also BROCCOLI; CAULIFLOWER. **C. caterpillar**, larvae of either C. butterfly (white butterfly) or C. moth, former destructive to leaves, latter to root of cabbage. **C. fly** (*Anthomyia brassicae*), grey fly, larvae of wh. infest cabbage-plants.

**Cabbala**, (Hebr., Received or Tradition) system of Jew. esoteric philos., mainly dealing with the nature of God and His relation to man and the origin of the universe; largely mystical. Chief among much lit. on the subject is the *Zohar* (*q.v.*). **Cabbalist**, one learned in the Cabbala.

**Cabell**, (James) Branch (1879- ), Amer. novelist: *Jurgen*.

**Caber tossing**, Scot. athletic sport; C. is a section of tree trunk 16-20 ft. long.

**Cabes**, seapt. tn. on Gulf of C., Tunis; sea-bathing; pop., 55,000.

**Cabet**, Etienne (1788-1856), Fr. lawyer and communist; est. communal settlements in U.S.A.

**Cabinet**, 1) a piece of furniture with drawers or shelves, in wh. to keep curiosities

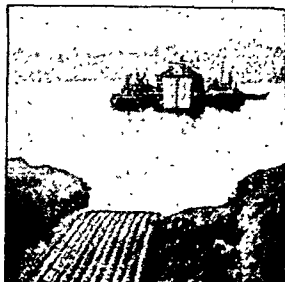
or other articles of value. 2) A deliberative committee of the executive of a govt.; in Eng., orig. as a secret inner committee of the Privy Council (*q.v.*), having no recognised place in the constitution. **C. council**, a meeting of the Cabinet for consultation.

**Cable**, Geo. Washington (1844-1925), Amer. novelist; *Old Creole Days*, 1877; *John March, Southerner*, 1894, etc.

**Cable**, 1) strong rope of hemp or wire; 2) an elec. conductor, protected agst. damage by insulation and protective materials.

## Low-tension

**c.** consists of up to 100 single conductors, braided together, insulated with paper and covered with a lead coating; **high-tension c.** usu. as 3-phase conductors (*q.v.*); **submarine c.** with outer protection against strains (dragging anchors, damage caused by marine animals, etc.). **C. messages**, see TELEGRAM.



Cable-laying

**Cable's length**, *cable*, linear meas., 100 fathoms (200 yds.; 182.88 metres), one-tenth nautical mile.

**Cabocho**n, a gem-stone, e.g., ruby, cut with a round, uncut top.

**Caboose**, 1) (naut.), galley or cook's house, on certain small types of ship. 2) (Rly.) Guard's van of an Amer. freight train.

**Cabot**, Giovanni (1425-99), Italian navigator; sailing from Bristol, 1492, disc. Nova Scotia and mainland of N. America. Son **Sebastian** (1472-1557) disc. Hudson Bay 1517, and E. coast of S. America, 1526-30.

**Cabotage**, coasting trade; pilotage.

**Cabral**, Pedro Alvarez (1460-1526), Port. navigator; disc. Brazil, 1500; negot. 1st commercial treaty betw. Portugal and India.

**Cabrera**, islet, Balearic Isls. (*q.v.*).

**Cabrillo**, small nat. park (1913) in California, U.S.A., named after Juan Rodriguez Cabrillo, 16th-cent. explorer who discovered California, 1542.

**Cabriole**, (furniture) term applied to kind

of curved leg characteristic of (but not exclusive to) Queen Anne period; usu. having foot in form of claw.

**Cabriolet**, light, two-wheeled, one-horse carriage with adjustable hood; also applied to two- or four-seater car with similar hood.

**Cacao**: see COCOA TREE.

**Cachalot**, the sperm whale (*q.v.*).

**Cachets**, biconvex, hollow wafers, containing medicine in powder form; dipped in water and swallowed.

**Cachexia**, (med.) marked wasting and weakness of body in disease; often occurring in cancer.

**Cachou**, small pastille or lozenge of sugar, strongly perfumed and used by smokers and others to sweeten the breath.

**Cachucha**, Sp. solo-dance in 3-time.

**Cacique**, desig. of Indian chieftain in Cuba, Haiti, Mexico, and S. America.

**Cacoethes loquendi** (Lat.), uncontrollable desire or habit of speaking; **c. scribendi**, ditto of writing.

**Cacophony**, harsh, unmusical sounds.

**Cactus**, name of a group of plants with

fleshy succulent stems and branches, bearing spikes, thorns or hairs in place of leaves. About 1,000 species, varying greatly in size and form; native of dry regions of trop. Amer.; some varieties also found on Medit.

coast; ornamental kinds often cultivated. Mescal (*q.v.*), is a drug derived from a C. by the Mexican Indians.

**Cad.**, (mus.) abbr., *cadenza*, (*q.v.*).

**Cadbury**, name of Quaker family; cocoa manufacturers; business fndd. by John Cadbury, at Birmingham, in early 19th cent.; succ. by his two sons, **Richard** (1835-99) and **George** (1839-1922) in 1861; tn. of Bourneville fndd. for employees, 1879; amalgamation with J. S. Fry and Sons, Bristol, 1919. Geo. Cadbury became chf. proprietor of *Daily News*, 1901.

**Caddie**, (golf) one employed to carry a player's clubs.

**Caddis-fly**, four-winged insect with aquatic larvae, the majority of which con-



Cabriolet



Cacti

struct movable cases for themselves of sand-grains, stones, twigs, leaves, etc.

**Cadence**, a close or ending; in mus., a progression of notes or chords indicating a point of rest, complete or incomplete.

**Cadency**: see HERALDRY.

**Cadenza**, (mus.) brilliant passage for solo instr. introduced towards end of a movement in a concerto.

**Cader Idris**, Mtn., Merionethsh., N. Wales; 2,927 ft.

**Cade's Rebellion**, a rising, chiefly of Kentish men under Jack Cade in 1450 to protest agst. heavy taxation and other causes of discontent. The rebels for some days commanded London, but were finally put to rout, and Cade himself killed.

**Cadet**, 1) younger son; 2) student at a naval or milit. college; 3) a member of the Constitutional-Democratic party in Russ. bef. 1917, the name being derived from the initials of the title.

**Cadi**, Arab. and Turk. desig. of minor judge or magistrate, usually of small town or village.

**Cadit quaestio** (Lat.), the question falls to the ground; the case collapses.

**Cadiz**, 1) prov. of S. Spain; 2,830 sq.m.; pop., 548,000; flat in E., mountainous (up to 5,600 ft.) in W.; vine culture, fruit, and olive growing; exports sherry and salt. 2) Cap. of prov., pop., 79,000; fortified port. Founded by Phoenicians, c. 1000 B.C. See of bishop; seat of medical school attached univ. of Seville.

**Cadmium**, (chem.) a metallic element, symbol Cd, at. wt. 112.41; sp.gr. 8.65; m.p. 321°C.; associated as carbonate or sulphide with certain zinc ores. Cert. salts are used as pigments; has property of lowering melting point of alloys; used in manuf. of fusible plugs; replaces tin in solder.

**Cadmus**, mythical fndr. of Thebes.

**Cadorna, Raffaele**, Ct. (1815-97), It. general. Son **Luigi** (1850-1928), Chf. of It. Gen. Staff, 1914-17.

**Cadre** (Fr.), a perm. nucleus establmnt. of officers and other ranks of a milit. formation; capable of expansion to full strength in time of war.

**Caduceus**, wand of Mercury (*q.v.*).

**Caecum**, (anat.) sac-like commencement of the large intestine, situated in lower rt. abdominal region; at the lower end of C. is a worm-like process, the appendix (*q.v.*).

**Caedmon** (fl. c. 670), Northumbrian poet and saint; "Father of Eng. Song."

**Caelian**, one of the Seven Hills of ancient Rome.

**Caen**, cap. dépt. Calvados, France; pop., 54,100; connected with sea by **Caen Canal** (8½ m. long.); univ.; iron mines; exports butter, eggs, fruit. Wm. the Conqueror bur. here.

**Caerleon**, vill., Monmouthsh., on Riv. Usk; pop., 2,300. Anc. Roman garrison, well preserved, recently excavated. Formerly the seat of an archbpric. removed in 577 to St. David's. Legendary assoc. with Kg. Arthur.

**Caernarvonshire**, marit. co., N. Wales; area 572 sq.m.; pop., 120,800; contains *Snowdon* group of mts., highest in England and Wales, 3,560 ft.; watered by Riv. Conway; sheep - breeding; slate quarries; tourist centre.



Carnarvon Castle

Co. tn., **Caernarvon**, on Menai Straits; pop., 8,500; castle (1285), birthplace Edward II.

**Caerphilly**, urb. dist., Glam., S. Wales, 7 m. N. Cardiff; concentric castle (13th cent.; largest in Wales); coal-mines; pop., 36,000.

**Caesar**, Caius Julius (100-44 B.C.), Rom.

gen. and statesman; formed 1st Triumvirate, 60, with Pompey and Crassus; subdued Gaul, 58-50; Britain, 55-54; deified. Pompey at *Pharsalia*, 48; sole ruler (Imperator) from 45; murdered by Republican conspirators (Brutus and Cassius), 44. Wrote *de Bello Civili*; *de Bello Gallico*. "Caesar" later became an Imperial title, then that of the heir to the throne; *Kaiser*, *Tsar* are derived from this.



Julius Caesar

**Caesarea**, **Kaisariyeh**, tn. on N.W. coast Palestine, anc. seat of Rom. pro-consul; scene of battles in Crusades (1101, etc.); name given to several tns. in Rom. times.

**Caesarean section**, (med.) operation in obstetrics; perfmd. for removal of child from uterus through an incision in middle of abdomen; resorted to when, through malformation or otherwise, natural delivery is impossible.

**Caesarea Philippi**, (N.T.) tn. built by Philip the Tetrarch, at foot of Mt. Hermon, nr. L. of Galilee; northernmost point of journeyings of Jesus.

**Cæsium**, (chem.) rare alkali metal; symbol Cs; at. wt. 132.81, sp. gr. 1.87; used in making photo-electric cells. Cert. salts also used in ceramics.

**Caesura**, (lit.) pause in middle of verse; in class. poetry, break within foot.

**Caffeine**, **theine**, (chem.)  $C_8H_{10}O_2N_4$  an alkaloid; active princ. of coffee, tea, and kola nuts; nerve stimulant; admin. in neuralgia, nervous headache, etc.

**Caftan**, long Turk. coat with a sash, worn in Near East and by Russ. peasants.

**Cagliari**, cap., Sardinia, and of prov. same name (3,590 sq.m., pop., 475,680) on Gulf of C.; pop., 95,000.

**Cagliostro**, Ct. Alessandro di (1743-95). It. adventurer, impostor and pretended magician.

**Cagots**, a people of unascertained origin, perhaps descended from Goths, living in Fr. and Span. Pyrenees. Treated as social and political outcasts until latter half of 18th century.

**Cahors**, cap., dépt. Lot, France; pop., 11,780; cathedral.

**Caiphass**, (N.T.) son-in-law of Annas, high priest; one of chief judges of Christ (Matt. xxvi, etc.).

**Caicos Islands**: see **TURKS ISLANDS**.

**Caillaux**, Joseph (1863- ), Fr. politician; Pr. Min., 1911-12; sev. times Min. of Fin.; introd. Income Tax; condemned (1920) for high treason during the World War; rehabilitated 1924.

**Caiman**, broad and short-snouted crocodilian inhabiting the rivers of tropical America; several species; to be seen in thousands in the Orinoco and Amazon rivers. Brazilian species attains 18 to 20 ft. in length, and is capable of pulling down and drowning a full-grown ox.

**Cain**, (O.T.) eldest son of Adam and Eve; slew his brother Abel (Gen. iv).

**Caine**, Sir Thos. Hy. Hall (1853-1931), Manx novelist; principal works: *The Deemster*; *The Bondman*; *The Christain*; *The Eternal City*.



Cain and Abel, after Dürer

**Cainozoic**, term applied to the geol. period following the Mesozoic and including the Tertiary and Quaternary periods. See **GEOLOGICAL FORMATIONS**.

**Caïque**, light boat or skiff plying in the Bosphorus; large Levantine sailing boat.

**Ca ira** (Fr.), it will go (i.e., succeed); Fr. revolutionary song (1790).

**Cairn**, 1) mound of stones, erected as memorial or landmark, or to mark burial place or boundary, in Mid. Ages, esp. in Scot. and Ireland. Custom to some extent still continued; mem. cairn to Pr. Albert, consort of Qn. Victoria, is at Balmoral, Scot. 2) See **SCOTCH TERRIER**.

**Cairngorm**, a smoky yellow or brown variety of quartz (*q.v.*), either transparent or nearly opaque; much used for brooches and other ornaments by the Scots; named from the district in which it is chiefly found.

**Cairngorms**, range granite mtns., Inverness-sh., Banffsh., and Aberdeensh.;

*Ben Macdhui*, 4,926 ft.; *Cairngorm*, 4,084 ft.

**Cairo**, cap. of Egypt, on Nile; pop. 1,100,000; residence of the Kg. (Sultan), and seat of govt., of Gr. Orthodox and Coptic patriarchs, and of the El-Azhar Univ., leading Moslem theol. training centre (fndd. c. 980).



Cairo

**Caisson**, (naut.) submersible or semi-submersible box-shaped body, sometimes open below, into wh. compressed air is pumped; for working under water and raising sunken vessels; also enclosure of docks and locks. **C. disease**, morbid condition produced by exposure to high air-pressure, affecting workers in tunnels, divers, etc. Due to increased amount of nitrogen taken up by blood, and resulting in pains in the joints, deafness, vomiting, fainting, paralysis, etc. If pressure is released slowly, these symptoms are less likely to occur.

**Caithness**, marit. co., extreme N. Scot.; area 701 sq.m.; pop., 25,700; mountainous in S. (2,313 ft.), lowland in N.; barren moors (one-third bog); agric. near coast, horses and cattle, distilling, fisheries. Contains John o' Groat's House; tns. *Wick* (co. tn.), *Thurso*.

**Calus**, John; see GONVILLE and CAIUS.

**Cajeput**, tree found in Malay Penins., E. Indian Archipelago, and N. Australia; from the leaves **C. oil**, used as a stimulant, is distilled.

**Cajetan** (1469-1534), It. Card. and Papal Legate; summoned Luther (*q.v.*) before his tribunal at Augsburg, 1518.

**Cake-walk**, dance originating in Negro contest in graceful walking, with cake as prize.

**Cal**, abbr., 1) California; 2) kilogramme calorie (large heat unit): see CALORIE.

**Calabar**, 1) dist., Guinea Coast, W. Africa, now E. prov. S. Nigeria. 2) Cap. of dist., on Calabar Riv., 5 m. above Calabar Estuary, pop., c. 40,000; seapt. 3) **New C.**, port, S. Nigeria, on the New C. branch of the Niger delta.

**Calabash**, 1) fruit or gourd of a trop. S. Amer. tree, also the tree itself. 2) Vessel made from any dried, cleaned gourd (*q.v.*) and used as bottle or drinking-cup.

**Calabria**, regional divsn. comprising S. peninsula Italy, with *Calabrian Mtns.* (Montalto, 6,420 ft.); 5,820 sq.m.; pop., 1,618,250; fertile valleys (wine, oranges); frequent earthquakes.

**Caladium**, trop. plant with decorative leaves; tubers edible. The *taro* (*q.v.*) of the

Pacific isles is obtained from a variety of this plant.

**Calais**, seapt., dépt. Pas de Calais, France; on narrowest part English Channel (75 min. crossing to Dover); pop., 72,000; English possession 1347-1558.

**Calamine**, native zinc carbonate,  $ZnCO_3$ ; when purified, used in prep. of soothing lotions.



Caladium

**Calamint**, (bot.) a herb of the *Labiatae* order, native of Britain; rel. to mint, which it resembles in smell.

**Calamus**, 1) Asiatic palms or canes, furnish *Rattan* (*q.v.*). 2) Sweet flag, *C. aromaticus*, grows in marshy places; root used as a carminative. 3) *C. draco*, from Malaya and Sumatra; resin known as Dragon's Blood (*q.v.*), used as a dye and wood stain.

**Calash**, a light, four-seated carriage with folding hood.

**Calatrava**, Order of, Span. milit. order founded 1156; changed into O. of Merit, 1808.

**Calceolaria**, variety of genus *Fagelia*; ornamental garden plant, having pouch-shaped flowers mottled with red or yellow.

**Calchas**, priest of the Greeks in Homer's *Iliad*.

**Calcination**, heating of substance at furnace temperature insufficient to fuse residue after volatile and combustible constituents have been eliminated, e.g., chalk and limestone are made into lime (*q.v.*) by calcination.

**Calcite**, one of the two mineral forms of calcium carbonate,  $CaCO_3$  (the other being aragonite). C. forms rhombohedral crystals; also called *Calc-spar*, and when pure and clear, *Iceland spar*; latter is famous as having led to discovery of double-refraction (*q.v.*) of light.

**Calcium**, (chem.) metallic element; sym. Ca, at. wt. 40.08, sp. gr. 1.55; occurs widely in nature as carbonate, e.g., chalk, marble, limestone. **C. carbide**, compound of carbon and calcium ( $CaC_2$ ), produced by heating chalk with coke in electric furnace. On contact with water forms acetylene (*q.v.*).

**Calc-spar**, hexagonal crystals of carbonate of lime; produces double refraction of light and polarisation (*qq.v.*).

**Calculate**, to compute or estimate. **Calculation**, computation, reckoning; used esp. in accountancy in respect of costing, also frequently to denote the making of an



Calceolaria

estimate of cost. **Calculator**, one who, or that which (slide-rule, C-machine, etc.) calculates, estimates, or reckons. **Calculating machine**, apparatus for mechanical production of results of multiplication, subtraction, and division, usu. with mechanism for recording this. Worked by hand or electricity, and used in connection with book-keeping machines as well as for purely calculating and statistical purposes.

**Calculus**, 1) (math.) orig. small stone used for reckoning; hence, mode of calculation. When unqualified, refers to **infinitesimal c.**, including both **differential** and **integral c.**, former being concerned with rates of change and the latter with summation. 2) (Med.) Limy deposit forming stone in some part of the body, e.g., kidney or bladder.

**Calcutta**, cap. of Bengal, India (cap. of India until 1912; see DELHI), on Riv. Hugli, 80 m. from the sea.

Largest city in India; pop. (incl. Howrah and suburbs), 1,419,730. Maidan (park 2 sq.m.) includes Fort William and race-course; cathed., Victoria Memorial, univ. (1857), Govt. House, public buildings, observatory, botanical gardens; chf. thoroughfare, Chowringhee; post-office occupies site of Black Hole (see below); to N. is crowded native city; indust. suburb of *Howrah* across Riv. Hugli (bridges). Chf. Indian port; docks; rly. terminus; exports tea, jute, corn, oils, hides, and skins. Fndd. 1690; Fort William built 1696; captured, June, 1756, by Surajah Dowlah, Nawab of Bengal; the 146 Brit. prisoners were shut up in a small guard-room, since known as "The Black Hole of Calcutta"; only 23 survived the night (20 June, 1756).



Calcutta, from the Air

**Caldera**, (Span.) cauldron-shaped volcano crater enlarged by landslide or explosion. **Calderón de la Barca**, Pedro (1600-81), Span. dram. and poet; 72 sacred plays and 118 regular dramas extant; e.g., *El Mágico Prodigioso* (The Wonder-working Magician). **Caldey Island**, 2½ m. S. of Tenby, Pembrokesh., S. Wales; 470 ac.; 12th-cent. priory; anc. monastery dissolved, 1534; home of Anglican monks, 1906, of Cistercian monks, 1928.

**Caleb**, (O.T.) one of spies sent by Moses to inspect Canaan.

**Caledonia**, anc. name of N. Scot. **Caledonia**, (1805-47), in Inverness-sh.

and Argyllsh., connects Moray Firth (N. Sea) with Loch Linnhe (Atlantic), 60½ m. long, now little used. Formed by uniting lochs Lochy, Oich, and Ness by a navigable channel (c. 22 m. artificial). Fine scenery. **Caledonian Market**, colloquial name for Metropol. cattle market, in bor. of Islington, London, removed from Smithfield, 1855; formerly known as Copenhagen Fields. Cattle market, Mondays and Thursdays; general market for antiques, old china, glass, pewter, books, clothes, etc., Tuesdays and Fridays.

**Calembour**, (Fr.) pun.

**Calendar**, 1) a system of measuring and dividing time, depending upon astronomical observations of the length of the year, month, and day. Most systems are based upon the length of the tropical or solar year and the number of days which this contains; hence no entirely satisfactory system has yet been evolved, for since the year contains 365.2422 days, an extra (or *intercalary*) day must be introduced about every fourth year (see LEAP YEAR). Another source of confusion is the traditional basis of the subdivisions of the year; a *month* is properly an interval dependent upon the periods of the moon, bearing no relation to the solar year; hence the discrepancy betw. a lunar month and a calendar month, the latter being the nearest practicable approximation to a twelfth part of the year; the *week*, probably through association with the seven planets known to the ancients, is almost universally fixed at seven days; but this period is exactly divisible neither into the month (exc. the common February) nor into the year, and this also militates against simplicity of the calendar. Various proposals for reform have been put forward, notably by the League of Nations Committee 1923; these involve division of the year into either 12 or 13 months, with an intercalary day falling outside any month, so that each year shall always start on the same day of the week. See JULIAN C.; GREGORIAN C.; JEWISH C.; REPUBLICAN C. 2) an almanack (q.v.); special list of important days throughout the year adapted to certain classes or interests, e.g., **University c.**, **Racing c.** **C. of cases**, list of persons for trial, esp. in superior criminal courts.

**Calender**, machine with rollers (often heated and/or adjustable), thr. which materials (cloth, paper, etc.), are passed for purpose of giving them smooth and glossy surface and closeness of texture.

**Calends, kalends**, 1st day of Rom. month, wh. was publicly proclaimed; see ROMAN CALENDAR. **Greek c.** used figuratively of a date or event wh. will never occur (for there were no Gr. calends).

**Calf**, 1) (anat.) mass of muscles behind shin. 2) Young of bovine animals.

**Calgary**, city, S. Alberta, Canada, at conflu. Bow and Elbow rivs., largest in prov.; pop., 83,400; centre stock-raising and wheat-growing dist.; rly. jn.; lumber mills.

**Calibre**, internal diameter of a circular opening (gun-barrel, etc.), also of ball or shot.

**Caliche**, Chilean nitrate-bearing earth consisting of sand, clay, and stones cemented by soluble salts, mostly sodium nitrate and chloride.

**Calico**, plain cotton cloth, bleached or unbleached, usu. heavily dressed; name derivd. from Calicut.

**Calicut**, seaport town in the province of Madras, on the Malabar Coast, India; pop., 32,335. Vasco da Gama landed here in 1498.

**California** ("Golden," "El Dorado"), State, U.S.A., on Pacific Ocean; 158,297 sq.m.; pop., 5,575,000; comprises central basin (length 450 m.; av. breadth 40 m.) bordered on W. by Coast Range; on E. by the Sierras; watered by Sacramento Riv., on N.; San Joaquin Riv. on S.; volcanic; subject to earthquakes; gold, mercury, copper, petroleum; wheat, fruit, wine (artificial irrigation); cap. *Sacramento*; largest tn., San Francisco. Discovd. by Cortez 1532; Span. 1768-1823; U.S.A. since 1848. **Lower C.**, see MEXICO. **Gulf of C.**, betw. Lower Californian penins. and Mexican mainland, on Pacific Ocean; up to 9,850 ft. deep; 700 m. long; pearl fishing.

**Caligula** (12-41), 3rd Rom. emperor; expressed wish that whole Rom. people had but one neck, that he might strike off all their heads at one blow; declared himself a god.

**Caliper**, tool for measuring and transferring measurements of outside or inside diameters, consisting of two cheeks or points, which slide along a bar or are attached to legs hinged like a compass (*q.v.*).

**Caliph**, (Arab. "Representative") spiritual and temporal chief of Islam as successor of Mahomet. The **Caliphate**, hered. since A.D. 670, first in Medina, then under Omayyads in Damascus, and under Abbassides (750-1258) in Bagdad; later in Cairo. After Turk. conquest of Egy., title was adopted by the Sultan in Constantinople; abol. in 1924. There have been sev. claimants, and the Sherif of Morocco is recog. as Caliph by his subjects.

**Calixtines**, a 15th-cent. sect of Hussites (*q.v.*); Ultraquists.

**Calixtus**, name of 3 popes, of whom the most imp., historically, are: **C. II** (1119-24), conclld. quarrel over investitures by Concordat of Worms, 1122. **C. III** (1168-1178), *antipope*.

**Calla**, genus of araceous plants: 1) **Water arum** (*C. palustris*), grows in marshy places; white spathe or flower. 2) **C. lily** (*Aroides*

*athropicum*), white spathes and yellow spadices; favourite decorative plant.

**Callander**, police burgh, Perthsh., Scot.; tourist resort; pop., 1,600.

**Callao**, fortified seapt., Peru, on Bay of C.; pop., 66,000; 7½ m. W. of Lima; sea-bathing.

**Callernish**, vil., isl. of Lewis, Scotland; **Standing Stones of C.**, stone circle, nr. head Loch Roag, on W. coast.

**Calleva Atrebatum**: see SILCHESTER.

**Callicrates** (fl. c. 600 B.C.), Athen. architect; designed Parthenon.

**Calligraphy**, handwriting regarded as an art; also applied to drawing displaying special virtuosity of line.

**Callimachus**, a Gr. poet (c. 310-238 B.C.), earliest historian of Gr. literature.

**Calliope**, Muse of Epic Poetry.

**Callipygos** (Gr., "With the beautiful buttocks"); name given to a statue of Aphrodite (Venus) found on site of Nero's Golden House at Rome, and now in the Museo Nazionale, Naples.

**Callisto**, (Gr. myth.) a nymph beloved by Zeus.

**Call money**, (finan.) loans made by banks wh. they may recall at will; see DAY-TO-DAY MONEY. **Calls**, (Stk. Exch.) claims for unpaid portion of subscribed shares; see CAPITAL.

**Callot**, Jacques (1592-1635), Fr. engraver and painter.

**Callus**, 1) new bony tissue formed at ends of fractured bones; 2) thick, hardened skin.

**Calmar**: see KALMAR.

**Calmette**, Albert Léon Charles (1863-), Fr. bacteriologist; **C. process**, preventive treatm. for tuberculosis in children.

**Calomel**: see MERCURY.

**Calorescence**, name given to phenomenon by which body (e.g., carbon, platinum) exposed to concentrated invisible infra-red rays (*q.v.*) may be heated so as to emit visible light.

**Calorie**, unit of heat; amt. of heat neces. to raise 1 gram of water (gram-c., gcal.), or 1 kilogr. (kilogr.-c., kcal.), 1° from 14.5°C.; unit of *calorific value*; also the scale for calculation of nutritive value. Cf. **British thermal unit**.

**Calorific value**, amt. of heat generated by complete combustion of unit wt. (1 kg.) of a fuel. **Calories** (*q.v.*) per kg. of fuel are as follows: wood 5,000, peat 3,600, brown coal 4,800, coal 8,000.

**Calorimeter**, instr. for measuring a quant. of heat. Used to measure *specific heat* (*q.v.*), *calorific values* (*q.v.*), etc.

**Caloyers**, monks of Gr. Ch. of order of St. Basil; chf. monasteries: Mt. Sinai in Asia and Mt. Athos in Europe.



Calla Lily

**Calpak**, lambskin cap worn by Armenians, Turkomans, etc.

**Calshot**, hamlet, S. Hants, on tongue of land at W. entrance to Southampton Water; Tudor castle (coastguard sta.); R.A.F. sea-plane station.

**Calton Hill**, hill (350 ft.), E. Edinburgh, Scotland, rising above the disused Calton Jail; unfinished *Nat. Monument* (1822) to fallen in Napoleonic Wars; Nelson Monument, with time-ball, etc.

**Calumet**, N. American Indian *Pipe of Peace*, smoked on ceremonial occasions, in particular on conclusion of peace, by leader and then passed round to members of conference.

**Calvados**, dépt., N. France, on Engl. Channel; 2,197 sq.m.; pop., 401,356; agric., cider, cattle-breeding; cap., Caen.

**Calvados**, liqueur made of apple juice distilled in spirit.

**Calvary**, Mount, (N.T.) (Golgotha) hill outside Jerusalem; place of the Crucifixion; also, representation of Crucifixion in or near a church.

**Calverley**, Chas. Stuart (1831-84), Eng. barrister, poet and wit; translation of Theocritus, 1869; *Fly Leaves*, 1872.

**Calvin**, John (1509-64), Swiss Prot. reformer; *Institutes of the Christian Religion*.

**Calvinism**, distinctive characteristic of many Protestant bodies, founded on Calvin's writings and doctrine; fundam. tenet, Predestination (*q.v.*); wide influence, esp. upon Scottish Presbyterianism.



Calvin

**Calydonian Boar**, The, (Gr. myth.) savage boar sent by Artemis to ravage country of Oeneus, Kg. of Calydon in Aetolia, because he had omitted to sacrifice to her; hunted by band of heroes and slain by Meleager after Atalanta (*q.v.*) had first wounded it.

**Calypso**, (myth.) nymph in the *Odyssey*.

**Calyx**, (bot.) outer series of leaves from wh. the petals of a flower spring. See FLOWER.

**Cam**, plate of metal having an edge of peculiar shape, agst. wh. a "follower" presses, and is thus made to move in any desired manner when C. is moved (gen. revolved). Used for opening and closing

valves, and in all kinds of autom. machines.

**C. shaft**, shaft on wh. a number of cams are mounted, e.g., operating valves in motor-engine.

**Camaldulians**, relig. order founded by Romualdus of Ravenna (950-1027) and establd. in Apennines; spread over Italy, Austria, France; abolished in Austria (1782) and afterwards in France and Italy; restored in Naples, 1822.

**Camalodunum**, Rom. name of Colchester, Essex.

**Camargo**, Marie Anne de Cupis de (1710-70), celebr. Fr. dancer; portrait by Lancret in the Wallace Collection (*q.v.*); **C. Society**, fndd. in London 1930 for product. of ballet.

**Camarilla** (Span.), clique at a royal court, or elsewhere; political caucus, cabal.

**Cambaluc**, Mongolian name for Peking (*q.v.*), meaning "City of the Khan" (*i.e.*, Kublai Khan).

**Camber**, amount of maximum deviation of a curved surface (e.g., aeroplane wing, road, etc.) from a straight line, over a given length.

**Camberley**, residential dist., Surrey, par. of Ash, 7 m. S.W. Ascot; Staff College of Brit. Army; pop., 17,000.

**Camberwell**, met. bor., London, Eng., S. of Riv. Thames; pop., 251,400. **C. beauty**, a butterfly with yellow-bordered black-brown wings; larvae feed on willow, and birch.

**Cambio**, (finan.) exchange or barter; **Cambist**, dealer in foreign moneys, notes and bills of exchange, or one skilled in their value.

**Cambium rings**, the rings in wood observable in cross-sections of the trunk, which indicate the yearly growth.

**Cambodia**, kngdm. in S.W. Indo-China, under Fr. protection since 1863; 67,550 sq.m.; pop., 2,535,000 (Annamites and Malayo-Chinese; 2,311 Europeans); only a quarter of the country cultivated, remainder malarial swamp; spices, rice, cotton; cap., Pnom Penh. **Cambodian Language**: see LANGUAGE SURVEY, *Mon-khmer Languages*.

**Camborne**, mkt. tn., Cornwall, largest in co.; pop., 14,200; copper and tin mines; School of Metalliferous Mining. Richd. Trevithick (1771-1833), Eng. engineer, was born near by.

**Cambrai**, fortfd. tn. on Riv. Scheldt, dépt. Nord, France, pop., 29,200; cambric ("batiste") factories. 1508, *League of C.* betw. Maximilian I and Louis XII (coalition agst. Venice); **Peace of C.** ("Ladies' Peace") betw. Spain and France, 1529; battles in World War, Nov.-Dec., 1917, and March and Oct., 1918. Brit. nat. memorial to 7,058 missing (World War).

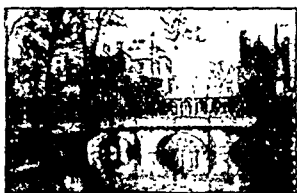
**Cambrian system**, the oldest system of sedimentary rocks (*q.v.*) in which organic

remains are found; composed chiefly of quartz, sandstone, shales, and slates; found in Wales, Malvern Hills, and N.W. Highlands of Scotland. *See* GEOLOGICAL FORMATIONS.

**Cambric**, *cotton taffeta*, fine, closely woven cotton or linen matl. used for handkerchiefs, underclothes, and baby-linen; **embroidery c.**, extra fine quality used for embroidery.

**Cambridge**, Dukes and Marquesses of, titles in peerage of U.K. **Dukes: Adolphus Fredk.** (1774-1850), 7th s. of George III, cr. D. 1801; Viceroy of Hanover, 1815 to sep. from Gt. Brit., 1837; succ. by his s. **George Wm. Fredk. Chas.** (1819-1904), c.-in-c. of Brit. Army, 1887-95. **Marquesses: Adolphus Charles**, 1st Marq. (1868-1927) s. of D. of Teck (bro. of Qn. Mary of Eng.) to whose title he succ., 1900; cr. Marq. of C. on abolition of Germ. title, 1917; servd. in S. Afr. War (1899-1902) and as milit. sec. to c.-in-c. in France, in World War; succ. by his s., **George Francis**, 2nd Marq. (1895-).

**Cambridge**, 1) co. tn. of Cambs., Eng.; pop., 66,800; famous univ., dating from 12th cent.; 17 colleges and 2 women's colleges. 2) N. Amer. city in Mass., opp. Boston, pop., 114,000. **Harvard Univ.**, fndd. 1631.



By courtesy of the Town Clerk, Cambridge

**C a m - bridgeshire**, 1) inland co.,

Eng.; flat; area 864 sq.m.; pop., 140,000; corn-growing; fenland, incl. *Isle of Ely*, in N.; co. tn.; **Cambridge**. 2) (Horse-racing) Handicap race (1 m. 1 fur.) held at Newmarket since 1839.

**Cambs.**, abbr. Cambridgeshire.

**Cambuskenneth**, nr. Stirling, Scotland. Scene of defeat of Eng. by Wallace, 1297. **C. Abbey**, fndd. by David I in 1147 and very wealthy; almost destroyed by reformers, 1559.

**Cambyzes III**, Pers. Kg., (529-22 B.C.), s. of Cyrus (q.v.); conq. Egypt.

**Camden**, tn., New Jersey, U.S.A.; pop., 118,700, on Delaware Riv.; 6 m. water-front; shipbdg.; manuf. steel pens: chemicals, oilcloth, etc.; home of Walt Whitman from 1873. **C. Town**, dist. of N. London in bor. of St. Pancras; name derived, in 18th cent., from that of Marquess Camden, lord of manor of Cantelows, wh. is in the district.

**Camel**, large ruminating ungulate, having one or two fatty humps on back, long neck with large head, relatively small ears, broad padded feet with toes slightly separated.

**Arabian c.** or *Dromedary* has only one hump, and is domesticated from Africa to India. **Bactrian c.** has two humps, and is found from Crimea to Turkestan and Peking;

both are most valuable transport animals in desert regions. Related to the S. Amer. llama (q.v.). **C. Corps**, orig. a force of 1,000 Egyptians and Sudanese, mounted on camels, and controlled by Brit. cavalry and marines, during Sudan campaigns of 1884-85; became permanent corps; fought agst. Khalifa, 1896-98. Brit., Australian, and New Zealand C.C. served in Palestine during World War. *See also* BIKANIR.



Camel

**Day (or Battle) of the C.**, battle fought 4 Nov., 636, at which Mahomet's widow, Ayesha, mounted on a camel, witnessed the defeat and death, at the hands of Caliph Ali, of her friends, the rebel Arab chfs., Zobeir and Talha.

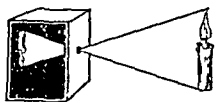
**Camellia**, evergreen Asiatic shrub with handsome white or red flowers. There are many cultivated varieties. The tea plant is *C. theifera*.

**Camelot** (Fr.), street- (newspaper-) hawk. **Cs. du Roi**, Fr. nationalist Royalist party.

**Camelot**, in Arthurian legend, seat of King Arthur's court (Round Table); has been identified with Camelford, Cornwall; Caerleon, Monmouthsh.; and Queen's Camel, Somerset (England).

**Camco**, semi-precious stone, shell, etc., so carved that the figure is in relief in one layer, the next—usu. of a different colour—serving as background.

**Camera**, optical apparatus in wh. images of objects are projected by means of lens (objective) or pinhole upon sensitive photographic plate or film. Consists of light-tight chamber with lens and plate at opp. sides; focussing effected by adjusting distance betw. them, chamber being usu. flexible (bellows) to allow of this. *See also* PHOTOGRAPHY.



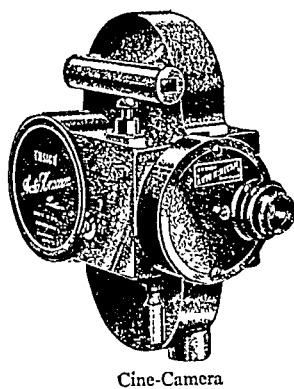
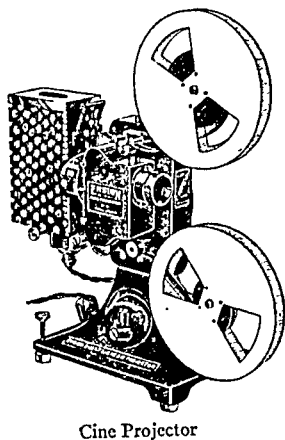
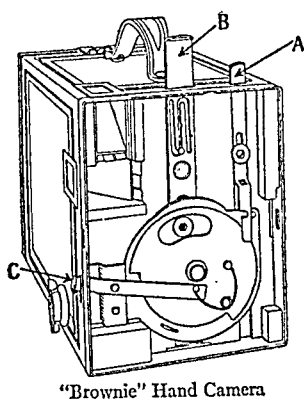
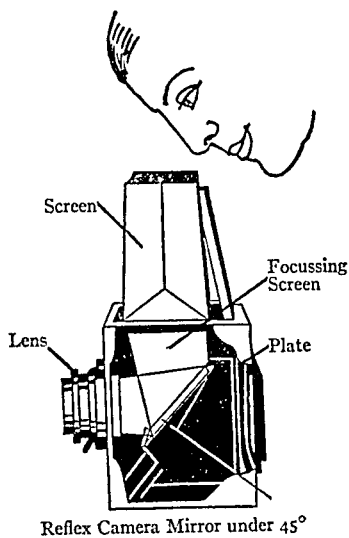
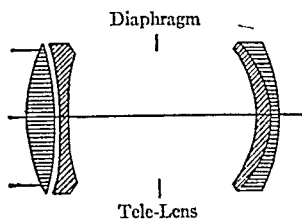
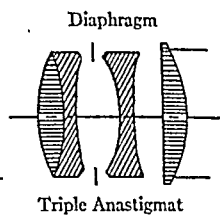
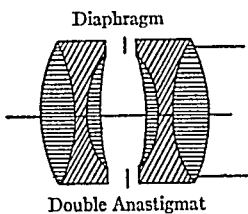
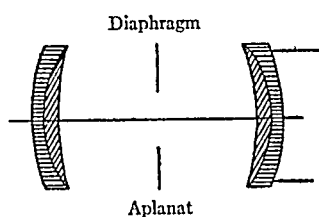
Camera Obscura

**Camera obscura**, dark box or chamber fitted with lens by means of wh. the image of exterior objects is thrown upon a screen or table, etc.; the forerunner of the photographic camera.

**Cameron**, Sir David Young (1865- ), R.A., R.S.A., Scot. painter and etcher, member of the Glasgow Sch.; Painter and Limner in Scot. to H.M. the King, 1933.

**Cameron Highlanders** (Queen's Own Cameron Highlanders), Highland infantry





- A Time slide (when up, shutter opens but does not close)  
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plain surrounding Rome; reclamation in progress.

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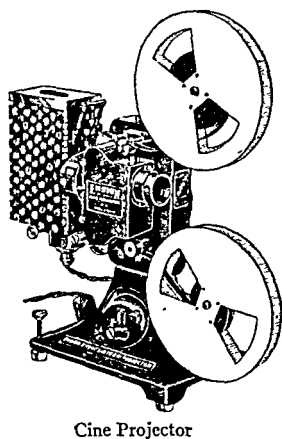
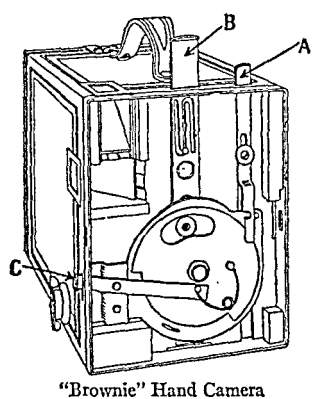
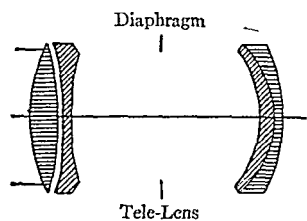
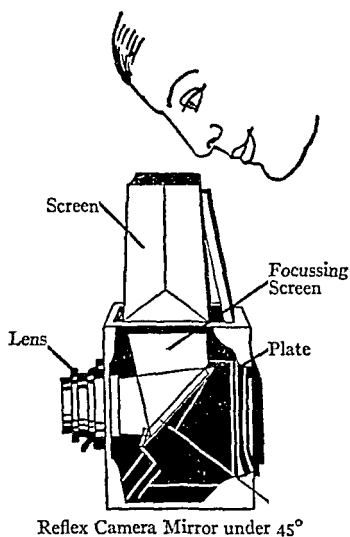
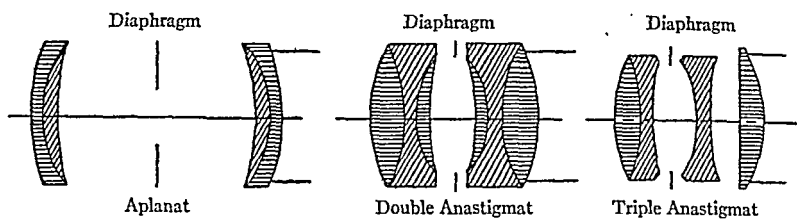
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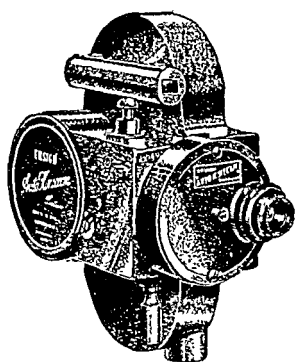
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Campanile



Camomile

under Duncan, who was created Viscount Duncan of C. and is the ancestor of the present Earl of Camperdown.

**Camphor**, obtained by distillation of wood of the C. tree, *Cinnamomum camphora*, growing in Japan and China; also prepared synthetically; used in medicine, externally, as a rubefacient and counter-irritant and, internally, as a carminative or antiseptic for alimentary canal. A popular remedy for colds in the head. Used in manufacture of celluloid (which may contain up to 20% C.), as a dusting powder, and in form of balls to keep moths away from clothes.

**Campignian Culture**, phase of Mesolithic Period (*q.v.*), named after Campigny, Seine-Inférieure, France; pit-dwellings.

**Campinas**, seapt. in State of São Paulo, Brazil; pop., 116,000; coffee plantations.

**Campion, Edmund** (1540-81), Eng. Jesuit, executd. for high treason. **C., Thos.**

(c. 1567-1620), Eng. physician, poet, musician, and writer: *Two Books of Ayres*; *Masques*, etc.; MSS. in Brit. Museum.

**Campion**, *Lychnis diurna*, wild plant; grows in hedges; 2 ft. high; pink flowers.



Campion

**Campion Hall**, Oxford Univ., private hall for Jesuit students, fndd. 1896; recd. permanent status, 1918.

**Campo Formio**, vill., nr. Udine, Italy; pop., 3,300; **Treaty of C. F.** betw. Austria and France, 1797.

**Campos**, tn. in Brazil, State of Rio de Janeiro; pop., 175,800; sugar trade.

**Campo Santo**, (It.) cemetery.

**Campus Martius**, in anc. Rome, place for meeting and mil. exercises; *Champ-de-Mars* in Paris named after it.

**Camrose**, Wm. Ewert Berry, 1st bn. (1879- ), Brit. newspaper owner; controlling interest in *Sunday Times*; fndd. *Advertising World*, 1901; joint-owner of *Daily Telegraph*; chairman of Allied Newspapers, Ltd.

**Caná**, (N.T.) tn. in Galilee, scene of Christ's 1st miracle, changing of water into wine (John ii).

**Canaan**, (O.T.) 4th son of Ham; progenitor of Phoenicians and of inhabs. of

Palestine before Israelit. conquest. **Land of C.**, "Promised Land" of the Jews; orig., coastal region of Palestine and Syria betw. Lebanon and Mediterr.; later extended to tract betw. Jordan and Dead Sea and Mediterranean.

**Canada**, Brit. dominion, N. America, stretching from N. frontier of U.S.A. to the Arctic and including all N. American continent N. of U.S.A.; except Alaska, Newfoundland, and Labrador, as well as Arctic Isls. W. of Greenland. Width from Atlantic to Pacific, c. 3,000 m.; area, 3,700,000 sq.m. (180,000 sq.m. of water); pop., 9,940,000 (one-quarter Fr. Canadians, 100,000 Indians, 6,000 Eskimos).



Canada

Coast is much broken on all sides; many natural harbours (some ice-bound in winter); islands include Nova Scotia, Cape Breton Isl., Pr. Edward Isl., and Anticosti on E.; Vancouver and Q. Charlotte Isl. on W.; and many almost uninhabited and commercially negligible isls. on the N. (Baffin Isl. largest).

Hudson Bay, connected with Atlantic by Hudson Strait, is a great land-locked sea (ice-bound in winter) almost cutting C. into halves, with an area of 450,000 sq.m. In the W. the *Rocky Mts.* and parallel ranges extend S.S.E. from the Alaska frontier through Yukon and Brit. Columbia to U.S.A. (*Mt. Logan*, 19,539 ft.; *Mt. St. Elias*, 17,975 ft.); in S.E. is the *Laurentian Range* (up to 3,000 ft.). St. Lawrence Riv., together with chain of the five *Great Lakes* (Superior, Michigan, Huron, Erie, Ontario; last three partly in U.S.A.), drains an area in Canada of 300,000 sq.m. (largest fresh-water system in the world). Farther W., Lake Winnipeg is fed by rivs. Saskatchewan and Winnipeg, and drained by Nelson Riv. Lake Athabaska, in N.W., receives Peace and Athabaska rivs. and is joined by Slave Riv. to Great Slave Lake. Hence Mackenzie Riv., fed also by Great Bear Lake (through Bear Riv.), flows into the Arctic. In far W., the Yukon, rising in Yukon prov., flows through Alaska into Behring Sea, and the Fraser discharges into the Pacific.

Climate varied; winters generally cold, with much snow and ice (many ports ice-bound); summers very hot; rainfall abundant. From *Rocky Mtns.* vast prairies extend E. to the shores of Hudson Bay, forming one of the most important agric. districts in the world, with great wheat cultivation, particularly in Saskatchewan and Manitoba. Cattle-breeding, dairy-farming, and fruit-growing are all important. Enormous forests extend along the Rockies, Mackenzie Riv., and St. Lawrence, timber industry being a great source of wealth. Fisheries among the largest in the world. Fur-trapping in the

N. Minerals include nickel, coal, copper, gold, asbestos, silver, lead.

**Railways:** The larger part of the rly. system (56,600 m. in all), incl. 2 trans-continental routes, is owned by the govt. (Canad. Nat. Rlys.); in addn. the Canadian Pacific (20,330 m.) has a main line from St. John, N. B., to Vancouver, B.C. (3,367 m.).



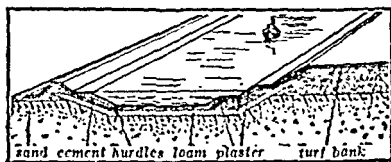
Trestle Bridge: Canadian Pacific Railway

**Politically,** C. is a self-governing federal dominion, divided into provs. of Brit. Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia, Pr. Edward Isl., Yukon, and N.W. Territories. Cap., *Ottawa*; other large tns.: Montreal (largest), Toronto, Winnipeg, Hamilton, Vancouver. **C. balsam** (*Canada turpentine*), balsam of fir, oleo-resin from *Abies balsamea*, indigenous to Canada and U.S.A. Used in medicine as a pill foundation; also as a mounting medium in preparation of microscope slides; has approximately the same refractive index as ordinary glass.

**Canadian River**, r. trib. of Arkansas Riv., flows thr. north Texas and Oklahoma, U.S.A.; 760 miles.

**Canaille**, (Fr.) rabble, scamp. To treat anyone **en c.**, to treat as a dog.

**Canal**, artificial waterway for drainage, irrigation, or navigation; may traverse different levels by means of locks (e.g., Panama); in porous ground, bottom and sides are lined with concrete or puddle clay; except in rock cuttings, banks are sloped, sometimes with a narrow level strip just below water-level, to lessen effect of wash. Construction of



Canal: Transverse Section

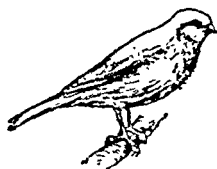
canals dates from earliest civilization; oldest C. in Eng. is *Foss Dyke* (Roman). **C. du Midi**, S. France; from Riv. Garonne to Mediterranean, 130 m. long; 6 ft. deep. **C. rays**, (phys.) occur in gas discharge tubes with pierced cathodes, simult. with cathode rays (q.v.), travelling in opp. direc. to these; consist of positively charged chem. atoms; their velocity depends on voltage.

**Canaletto**, pseudon. of It. landscape painter Antonio Canale (1697-1768).

**Canard**, (Fr.) duck; also false report or rumour.

**Canary**, 1) (ornith.) bird of finch family, native of Africa and Canary Isls.; colour

ranges from green to golden yellow; a favourite domestic singing bird. Many different breeds are reared, and they are sometimes crossed with other finches. 2) Pale brown Madeira wine from Canary Isls., much drunk in 16th and 17th centuries. **C. grass**, *Phalaris canariensis*; grass of S. Eur.; [used chfly. as bird-food, sometimes as cereal. **C. Isls.**, volcanic group, Atlantic, forming prov. of Spain, off Rio de



Norwich Canary

Oro (N.W. Africa); comprise Tenerife, Grand Canary, Palma, Fuerteventura, Lanzarote, Gomera, Hierro (Ferro), and six uninhab. islets; 2,807 sq. m.; pop., 555,000; surface mountainous (*Peak of Tenerife*, 12,182 ft.); climate dry and temperate; exports bananas, tomatoes, Canary wine, cochineal; cap., *Santa Cruz de Tenerife*; largest tn., Las Palmas, in Grand Canary. **C. wood**, timber from lauraceous trees (*Persea*) of the Canary Isls.; **C. nut**, fruit of trees of the genus *Canarium*, balsamaceous Asiatic trees.

**Canberra**, inland city, 75 m. from the coast and 150 m. S.W. of Sydney, N.S.W., federal cap. of the Commonwealth of Australia; federal capital territory, including strip of coast-land at its port, Jervis Bay (on Pacific), 940 sq.m.; pop., of territory, 8,500, of city, 7,300.

**Cancan**, unrestrained Fr. dance, variation of quadrille (q.v.), introd. into publ. balls in Paris c. 1830.

**Cancel**, (book-keeping) to rectify an erroneous entry by making a counter-entry.

**Cancer**, 1) (med.) malignant growth, usually a *carcinoma* or *sarcoma*; the former term is applied to growths occurring in epithelial tissues, e.g., the tongue or rectum, the latter to growths in mesodermal tissues, e.g., muscles. The growth destroys all surrounding tissue, being itself an undifferentiated mass. Portions travel along lymphatic channels or veins to other parts of the body and there form secondary growths or metastases. Early removal of cancer is necessary before secondary growths have had time to develop. Common sites in women, uterus and breast; in men, lip, tongue, stomach, rectum. Treatment by surgical removal or by radium. Research into causes and cure of C. is being carried on in laboratories all over the world; in Gt. Brit. the *Imperial Cancer Research Fund* was fndd. in 1902. 2) (Astron.) The Crab, zodiacal constell.; ☉ 4th of Signs of Zodiac; entered by sun at summer solstice; see Pl. ASTRONOMY, N.C.H., C.

**Candelabrum**, candle-stick or lampstand,

often branched and elaborately ornamented.

**Candia, Heraclion**, cap. and seapt., Crete, on N. coast; pop., 33,410; olives, shipping, fisheries.

**Candide**, philosophical novel by Voltaire (1759); satire on philos. optimism.

**Candied peel**: see CANDY.

**Candle**, cylinder of fatty substance with central wick; anc. artif. source of light made of animal fat (stearic acid), paraffin (ozocerite), or beeswax. **C.-power**: see STANDARD CANDLE. **C. tree** (candleberry, wax myrtle), N. Amer. shrub (*Myrica carolinensis*), berries of wh. are covered with a greenish white wax; used in parts of U.S.A. for making candles.

**Candlemas**, 2nd Feb., Feast commemorating Purification of the Blessed Virgin Mary (*q.v.*); 1st Quarter Day in Scotland.

**Candy** (Ceylon): see KANDY.

**Candy**, sugar-candy, sugar crystallized on string after being boiled in strong solution; **to c.**, to boil fruit or flowers in strong solution of sugar and allow them to dry. **Candied peel**, peel of unripe fruit esp. of E. India lemon tree (*Citrus medica*), preserved in sugar; flavouring for cakes and pastry.

**Candytuft** (*Iberis amara*), plant of family *Cruciferae*, bearing white or purple clusters of flowers. Fnd. in temperate regions. A species of S. Eur. (*I. sempervirens*) is an evergreen shrub, bearing white flowers.

**Canea**, 1) dept. of Crete; 709 sq.m.; pop., 111,520; 2) its cap.; pop., 26,610; seapt.; exports olives.

**Canis Major**, the Great Dog, constell. containing Sirius (the "Dog Star"); see PL. ASTRONOMY, S.C.H., *F. C. Minor*, the Little Dog, constell. containing star, Procyon; see PL. ASTRONOMY, N.C.H., *C.*

**Canker**, 1) (vet.) malignant ulcer occurring usu. in horses in foot, in cats and dogs in ear, in poultry in windpipe, mouth, or ear. 2) (Bot.) Disease in trees caused by parasitic fungi wh. causes bark and wood to rot. **C. worm**, grub of the cockchafer; lives 3-5 years underground; damages roots.

**Canna**, trop. American shrub, sometimes cultivated as a decorative plant.

**Cannabis** (bot.): see HEMP.

**Cannae**, vill. Apulia, Italy; scene of Hannibal's victory over Romans (216 B.C.).

**Cannel coal** (also *Kennel* or *Candle* coal), Lancashire coal, very rich in hydrogen. Used in gas-making.

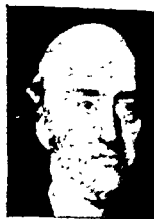
**Cannes**, tn. in dépt. Alpes-Maritimes, France, on Riviera; pop., 42,500; watering-place, sea-bathing.

**Cannibal**, an anthropophagite; one who

eats human flesh; there are now only a few C. races, in Australia, S. Seas, and Centr. Africa.

**Canning**, George (1770-1827), Eng. statesm.; Pr. Min., 1827; a power in Europ. politics.

**Cannock**, urb. dist., Staffs., Eng.; iron manuf.; pop., 34,600. **Cannock Chase**, anc. hunting-forest, now a coalfield.



George Canning

**Cannon**, 1) (mil.) piece of ordnance with a long barrel, for direct fire (flat trajectory).

2) (Billiards) Stroke by wh. player's ball strikes both object balls (= 2 pts.).

**Cannula**, (med.) a small, hollow tube for insertion into a vein or artery for introduction or extraction of liquids.

**Canoe**, 1) orig. primitive single-seated boat made of

Hollow trunk, pointed at both ends, propelled by



North American Canoe

Cannula double paddle;

2) light sporting boat. **Canadian c.**, long open boat for several persons using single-bladed paddles. **Rob Roy c.**, covered boat with well, for one pers. using single-bladed paddle.



South Sea Canoe

**Canon**, 1) a law, rule of guidance, precept, or standard of conduct, taste, or thought; 2) (theol.) the body of books of the Bible recognised by the Church as inspired and authentic; a list of Saints; 3) (eccles.), resident member of cathedral chapter (*q.v.*); 4) (mus.) form of composition in wh. instruments or voices, starting one after another, play or sing the same melody. 5) **C. of the Mass.**: see MASS. **C. Law**, former system of ch. law sanctioned by civil authorities and recognised, before the Reformation, as binding throughout Western Christendom; codified (1917) in *Codex Juris Canonici*, the official code of the R.C. Church.

**Cañon**, (Span.) a narrow gorge with steep and approx. parallel sides, formed by a river.

**Canonization**, enrolment in the calendar of saints of a person considered by the Pope to have been of eminent virtue; solemnly performed after exam. of claims by an eccles. court (Congregation of Rites). Conferment of title "Blessed" now precedes full canonization as "Saint," which may follow if there is proof that at least two miracles have been wrought through intercession of the "Blessed" after *beatification* (*q.v.*).

**Canopic jars**, jars in wh. anc. Egyptians placed viscera of the dead.

**Canopus**, 1st magn. star,  $\alpha$  in constell. Argo (*q.v.*); brightest but one in heavens. See PL. ASTRONOMY, S.C.H., *F.*



Candelabrum, after Holbein

**Canopy**, (bldg.) hood over door, window, or hearth.

**Canossa**, vil. in N. Italy; ruined castle, scene of submission of Emp. Henry IV to Pope Gregory VII, 1077.

**Canova**, Antonio (1757-1822), It. sculptor: *Cupid and Psyche*.

**Canpacs**, (Stk. Exch.) abbr. stock of Canadian Pacific Railway.

**Canrobert**, François (1809-95), Marshal of France; fought in Crimean and Franco-Prussian wars.

**Canso**, **Strait of**, Canada, betw. Nova Scotia and Cape Breton Isl., 2-3 m. wide.

**Cantab.**, abbr. *Cantabrigiensis* (Lat.), of Cambridge.

**Cantabile**, (mus.) a flowing style in singing.

**Cantabrian Mountains**, wooded mtn. range (300 m. long) from Pyrenees to Bay of Biscay, N. Spain; coal and iron mines.

**Cantacuzene**, Ruman. family, descended from John, East Rom. Emp., 1341-54.

**C., Sherban** (1640-88), Pr. of Walachia, 1679; introd. maize into Rumania; fndd. first school in Bucharest. **C., Stepan**, Pr. of Walachia, 1714-16. **C., Gheorge** (1837-1913), Ruman. politician; pres. of senate, 1892; Pr. Min., 1905-07.

**Cantal**, dépt. cent. France (Auvergne); 2,230 sq.m.; pop., 193,505; mountainous and barren; minerals (lead, antimony, etc.); timber; cap., *Aurillac*.

**Cantaloupe**: see MELON.

**Cantata**, formerly a cycle of recitations and arias for solo voice; now, mus. comp. for chorus and solo voices with orches. accomp.; a short oratorio.

**Canteen**, restaur. or shop where food and articles of daily use are sold, gen. at reduced prices, to soldiers, sailors, factory workers, etc.

**Canter**, easy gallop (*q.v.*); shortened form of *Canterbury pace*, in allusion to slow rate at wh. pilgrims rode to Canterbury.

**Canterbury**, 1) anc. city in Kent, on Riv. Stour; pop., 24,500; seat of abp. (Primate of All Eng.); magnificent Gothic cath. (c. 1070); mediaeval pilgrim-shrine (St. Thos. à Becket). King's School, public sch. for boys, re-fndd. by Henry VIII, 1541; St. Edmund's School, fndd., 1749, for fatherless sons of Ch. of Eng. clergy. 2) Provl. dist., S. Island, New Zealand; 13,950 sq.m.; pop., 213,900; sheep-breeding (Canterbury lamb) and wheat cultivn. on Canterbury plains; cap., *Christchurch*. **C. bell**: see CAMPANULA.

**C. Tales**, collectn. of verse and prose tales by Chaucer (*q.v.*), told by pilgrims on their journey to the shrine of St. Thos. à Becket at Canterbury. See PILGRIMS' WAY.

**Cantharides**, Spanish fly; dried beetle, *Cantharis vesicans*, obt. from S. Eur.; used to prepare blistering and stimulating lotions and plasters. See ANTIDOTES.

**Canticles** 1) ("The Song of Songs which is Solomon's") (O.T.), collection of love songs ascribed to Solomon, prob. not earlier than 300 B.C.; recognized by Ch. as canonical, and given mystical interpretation. 2) Short hymns or chants; e.g., *Nunc Dimittis*, *Venite*, *Magnificat*, in Book of Common Prayer.

**Cantilena**, song-like composition; highest part of a madrigal, or that which has the chief melody; see CANTABLE.

**Cantilever**, (bldg.) horizontal member so fixed as to be capable of supporting a load on its projecting end, as in balconies, etc.

**Canto**, song or ballad; hence a division of song or poem. **C. fermo**, (mus.) theme to wh. vocal polyphony is added; usu. given to soprano or tenor voice.

**Canton**, William (1845-1926), Eng. poet and literary critic; pub. *The Invisible Playmate*, 1894; *W. V. Her Book*, 1896-97; *History of the British and Foreign Bible Society*, 1903-10; *Poems* (posthum.) 1926, etc.

**Canton**, 1) (Fr.) sub-division of an *arrondissement* (*q.v.*). 2) (Switz.) One of the 25 states forming the Confederation. 3) Cap. Chinese coastal prov. Kwang-tung, at head of **Canton Bay**, on delta of Sikiang; pop., c. 850,000; treaty port; most important industrial and commercial tn. in S. China; textiles, silk, paper, and glass. Chin. revol. of 1911, wh. resulted in deposition of emperor, broke out here. 4) Tn., Ohio, U.S.A.; pop., 104,900; manuf. centre: steel, vaults, bridges, furniture; china and stoneware; coal; home of President McKinley from 1867.

**Cantor**, Georg (1845-1918), Ger. mathematician: *Contributions to the founding of the theory of transfinite numbers*.

**Cantoris**: see CHOIR.

**Cantuar.**, abbr. *Cantuariensis* (Lat.), of Canterbury (signature of abp.).

**Cantus**, song, the part (voice) carrying the melody.

**Canute**: see KNUT.

**Canvas**, coarse cloth of flax, hemp, jute, tow, or cotton, used for tents, sails, etc.; varieties used as foundatn. for oil paintgs. and for embroidery.

**Canvey Island**, isl. (7 sq.m.), Essex, nr. mouth Riv. Thames, off Benfleet; summer resort; pop., 3,600.

**Canyon de Chelly**, nat. monument (1931) in Arizona, U.S.A.; prehistoric cliff-dwellings.

**Canzone**, It. verse-form, resembling sonnet (*q.v.*), but irreg. in number and length of lines.

**Cap.**, abbr. *capitulum* (Lat.), chapter.

**Capablanca**, José (1888- ), Cuban chess master; world champion, 1921-27.

**Capacity**, 1) (law) ability of one to give or acquire land or other property, or to do any legal act. 2) (Elec.) Quantity of electricity reqd. to raise a conductor to unit-



potential when neighbouring conductors are at zero-potential.

**Cape Breton Island**, isl. (3,115 sq.m.), N.E. of Nova Scotia (of wh. prov. it forms part), Canada; chf. tn., Sydney (pop., 22,550). **C. Clear**, most southerly point of Clear Isl., off S.W. coast of Co. Cork, Ireland. **C. Coast**, formerly *Cape Coast Castle*, seapt., Gold Coast, W. Africa; pop. 15,000 (100 whites); castle built by Swedes, 1650, taken by Eng., 1664; cap. of Gold Coast till 1876. **C. Cod**, promontory on E. coast of U.S.A., nr. Boston, Massachusetts. **C. Flattery**, promontory on Pacific coast of Washington, U.S.A. **C. Hatteras**, on H. isl., off coast of N. Carolina, U.S.A. **C. hunting dog**, sole living representative of genus, differing from true dog family in having but 4 toes on each foot. Large and carnivorous; combine in packs to hunt their prey. **C. of Good Hope**, 1) promontory, S. Africa, 30 m. S. of Cape Town, S. extremity *Table Mountain range*; discovered by Bartholomew Diaz 1488, doubled by Vasco da Gama 1497-98. 2) Province, Union of S. Africa (Cape Colony until 1910); area 276,530 sq.m.; pop., 2,880,000 (26% Europeans); from the coast, with the Table Mtn. near Cape Town, the land rises to the S. African plateau in three stages; the climate is mild at the coast, dry and hot in the interior, where the last of the Bushmen and Hottentots live. Indus.: cattle-breeding, corn-growing, mining (gold, diamonds, copper and coal). Cap., **C. Town**, port on S.W. coast of S. Africa, at the foot of

mustard, coffee, oranges, hides; area, 1,518 sq.m.; pop., 155,000 (c. 4,000 Europ.); cap., *Praia*. **C. Wrath**, headland, Sutherland, Scot.; N.W. point of Scot. mainland.

**Cape to Cairo Railway**, project of Cecil Rhodes for a Brit. rly. 5,900 m. long; sections from Cairo to Sennar (Anglo-Egy. Sudan) and from Cape Town to Bukama (Belg. Congo) are complete; middle section traversed by water, road, and rail.

**Capek**, Karel (1890- ), Czech author; play, *R.U.R.*, introd. word "robot."

**Capella**, the She-Goat, 1st magn. star,  $\alpha$  in constell. Auriga (*q.v.*); see Pl. ASTRONOMY, N.C.H., B.

**Caper**, unexpanded flower-heads of *Caparis spinosa*; grows in S. Eur; the true C. of cookery. C. plant, *Euphorbia lathyris*, is a spurge; its poisonous unripe berries resemble true C. and are sometimes pickled by mistake.

**Capercallie**, woodland grouse, ranks among largest of game birds, inhabitg. pineforests of Eur. and Asia; British species found in parts of Scotland; polygamous; in mating season males make display and fight one another.

**Capernaum**, (N.T.) tn. on Sea of Galilee, scene of many incidents in life of Christ.

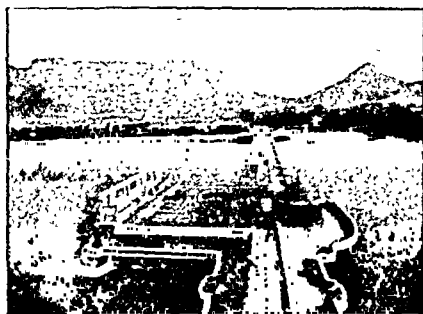
**Capetians**, Fr. roy. dynasty, 987-1328.

**Capillary**, one of a number of minute blood-vessels connecting arteries and veins and forming a close network all over the body. **C. attraction**, "attraction" of a liquid into narrow spaces or tubes, wh. causes, e.g., a porous solid to "soak up" a liquid; due to simult. operation of cohesion (molecular attrac. betw. fluid particles) and adhesion (attrac. betw. fluid particles and particles of C. wall). **C. rise or depression**, rise or depression of surface of a liquid in a fine tube partly immersed in it.

**Capistrano**, St. John of (1386-1456), It. Franciscan theologian, preached agst. Hussites (*q.v.*); led crusade to raise siege of Belgrade by Mohammed II, 1455.

**Capital**, (archit.) topmost portion of a column or pillar, usu. decorated and larger in diam. than its support.

**Capital**, (econ. and comm.) wealth used to prod. wealth, result of saving or of postponing consumption of wealth; money value of plant, equipment, land, bldgs., goodwill, etc., of a business (fixed C.); raw and semi-raw materials, stocks of products, etc. to be used in a business (working C.). **C. goods**, those used to prod. goods and services, e.g., stocks of consumers' goods in warehouses, shops, etc. **C. of Joint Stock Cos.** (U.S., Incorporated Cos.), sums subscribed by shareholders; max. provdd. by memor. of Assoc. of the Co., the *authorized C.* (*nominal*



Cape Town and Table Mountain, from the Sea

Table Mtn.; pop. (Europeans), 149,200; legislative cap., Union of S. Africa; univ.; export of wool, hides, and ostrich feathers; fndd. by the Dutch East Ind. Co. in 1652. Alternately Dutch and British in 18th. cent.; in Brit. possession since 1806 (formally ceded, 1814); merged in the Union of South Africa (*q.v.*), 1910. **C. Sable**, promontory at S. extremity of Florida, U.S.A. **C. Verde Islands**, Portug. colony in Atlantic, 350 m. W. of Cape Verde, most westerly point of Africa. Fourteen isls., mainly mountainous and unhealthy; exports sisal, castor-oil,



Capers

or *registd. C.*), only part of wh. may be issued; portions of *issued C.* (*subscribed C.*) may not be *fully paid up*; balance is *uncalled C.*, subj. to being *called up*, after wh. C. is fully paid; *loan C.* (*q.v.*) raised on Debentures (*q.v.*) is distinguished from *share C.*, subscribed by shareholders. **C. levy**, tax on value of capital; policy advocated by Brit. Labour Party. **C. market**, for long-term loans and investments, as opposed to *money market*, for dealing in short-term loans. **C. reorganization**, in case of unprofitable undertakings; usu. carried out by reduction of capital (writing-down of nominal C. values), and sometimes also by introduc. of new funds.

**Capitalism**, indus. system involving private ownership of means of production, and conduct of industry for private profit in free competition, by owners of capital or their representatives.

**Capitalization**, 1) calculation of present value (a) of property that returns rent or int., (b) of contracted periodical pymts. 2) Conversion of surplus profits into capital.

**Capital punishment**, legal and constitutional infliction of death as a punishment for crime; in Eng., as in other countries, formerly inflicted for almost all grave crimes, but now only for murder, high treason, and (nominally) piracy with violence, and destruction of public arsenals and dockyards; also, under martial law, for various offences, esp. in war time, e.g., cowardice in face of the enemy, desertion. Methods: *hanging* (U.K. and Brit. Emp., Albania, Egypt, Hungary, Japan, some states of the U.S.A.); *guillotine* (France); the *garrote* (Spain); *electrocution* (15 States of the U.S.A.). C.P. now abolished in Colombia, Latvia, Luxembourg, Netherlands, Panama, Portugal, Rumania, Sweden, Norway, some Swiss cantons, and many of the S. Amer. Republics.

**Capitol**, 1) part of Capitoline Hill (*q.v.*), Rome, containing Temple of Jupiter Optimus Maximus; 2) U.S.A., the Congress House, Washington; also house of any State legislature.

**Capitoline Hill**, one of the Seven Hills of Rome, forming the citadel. Contained the Capitol (*q.v.*). Relig. and polit. centre of anc. Rome.

**Capitularies**, the edicts of the Carolingian Kings.

**Capitulation**, the laying down of arms by troops; **Capitulations**, internat. agreements, espec. betw. Eur. Powers and the old régimes in Turkey and China, whereby Eur. nationals were partially relieved from payment of taxes and submission to native

laws. Turkey abol. C. during the World War.

**Capon**, castrated domestic fowl, fattened for table.

**Caporetto, Battle of**, defeat of Ital. armies by Austrians and Germans, Oct.-Nov., 1917; named after vil. in Venezia Giulia (then Austrian), on Riv. Isonzo, 22 m. N. of Gorizia.

**Cappadocia**, anc. Rom. prov. in Asia Minor; possessed large Jewish colony.

**Capri**, limestone isl. 17 m. S. of Naples; area c. 5½ sq.m., pop., c. 7,000; famous for *Blue Grotto* and *Mt. Solaro* (1,930 ft.).

**Capriccio**, (mus.) comp. that is irregular or capricious in form.

**Capricorn**, the Goat, zodiacal constell. ½, 10th of signs of zodiac (*q.v.*); entered by sun at winter solstice; see PL. ASTRONOMY, S.C.H., B. **C. beetle**, a long-horn beetle whose larvae bore into limbs of trees (oak, cherry, etc.).

**Capsian culture**, phase of prehistoric human activity introducing Upper (Later) Palaeolithic Period (*q.v.*); named after *Gafsa* (Capsa), in Tunis. Flint implements; rock-paintings.

**Capsicum**, genus of trop. plants known as *red peppers*, pods and seeds of wh. are hot and pungent; when powdered, known as *cayenne pepper*; used in med. for gastric affections and externally as plaster. See also CHILLI.

**Capstan**, (naut.) vertical or horizontal drum, worked by hand, electric, or steam power for hauling ropes or chains.

**Captain** (from Lat. *Caput* = a head), commander of a ship; naval rank: see OFFICERS; mil. offr. commanding a squadron or company.

**Capua**, fortifd. tn., prov. Caserta, Italy; pop., 14,000. Three m. S.E. is *Sta. Maria Capua Vetere*, with ruins of anc. Capua, celebrated for its luxury; destroyed by Saracens in 9th century.

**Capuchins**, order of R.N. Army friars (fndd. 1528), branch of the *Observantines* (*Cordeliers*), who in turn were a branch of the Franciscans; name



R.N.

Army Captain



Rome, the Capitol



Capuchin Monkey



Capybara

derived from their pointed cowl (*capuche*).

**C. monkey**, S. Amer. monkey (*Cebus*), with thick hair forming a sort of cowl over the head. **C. pigeon**, breed of pigeon with crested head.

**Capybara**, largest existing rodent; attains length of 4 ft.; resembles giant guinea-pig in

appearance; gregarious; frequents rivers of tropical S. America.

**Carabinieri**, It. gendarmerie; milit. police.

**Carabinieri**, Brit. cavalry regt. (see DRAGOON), formerly 6th Dragoon Guards; now amalgamated with 3rd D. G. under title 3rd Carabiniers (Prince of Wales's D. G.).

**Carabus**, genus of predatory ground-beetles.

**Caracal**, tall, slender cat with reddish-brown fur; native of Africa and Asia; trained and tamed by Persians and Arabs to hunt.

**Caracalla**, Marcus Aurelius Antoninus (A.D. 188-217), Rom. Emperor, at first in conjunct. with his bro. Geta (whom, with 20,000 of his supporters, he murdered).

**Caracas**, cap. of Venezuela 6 m. S. of its port, La Guaira; pop., 135,300; univ. founded 1567; earthquakes 1812 and 1900.

**Caractacus** (c. A.D. 50), Brit. Kg., resisted Roms. nine years; deport. to Rome.

**Caramel**, burnt sugar, used in cookery for colouring and as thin coat on custard; also a sweetmeat.

**Caran d'Ache** (Russ.: *karandash*, pencil), prof. name of Emmanuel Poiré (1858-1909), Fr. cartoonist and illustrator.

**Carat**, 1) weight used for prec. stones; **internat. c.** = 205 milligrams (3.168 grains).

2) Denominating propor. of pure gold in an alloy; 1 carat equals  $\frac{1}{24}$ ; e.g., 20 carat gold contains 20 pts. pure gold and 4 pts. alloy.

**Carausius**, Marcus Aurelius (d. A.D. 293), Rom. usurper in Britain; native of Belgic Gaul; gained rapid promotion in Rom. Army; sentenced to death by Emp. Maximian; escaped; proclaimed himself independent ruler, 286; compelled Maximian to acknowledge his rule; murdered by his prefect, 293.

**Caravaggio**, Michelangelo da (1569-1609), It. painter. *Entombment of Christ*, in Vatican.

**Caravan** 1) (orient.), co. of travellers and merchants joining forces for safety on journey thr. desert. 2) Large covered vehicle, usu. with sleeping accommodation.

**Caravanserai**, Eastern bldg. for shelter and refreshment of caravans; hence any inn.

**Caravel**, Span. sea-going sailing vessel of 14th-16th century.

**Caraway**, dried fruit of *Carum carvi*, a widely distribtd. umbelliferous plant; contains a volatile oil, used in medicine as a flavouring and carminative; an ingredient in the cordial kümmel (q.v.).

**Carbides**, compounds of carbon with metals and metalloids. Calcium carbide,  $\text{CaC}_2$ , made by heating coke and lime in electric furnace, yields acetylene (q.v.) when mixed with water. Carborundum, silicon

carbide,  $\text{SiC}$ , very important abrasive (q.v.). Iron carbide, cementite,  $\text{Fe}_3\text{C}$ , important constituent of steel (q.v.). Aluminium carbide gives methane with water. Explosive acetylides are formed when acetylene is passed into ammoniacal copper and silver salt solutions.

**Carbine**, a short-barrelled firearm, princ. for mounted troops. **Carbineers**, cavalry armed with carbines. See CARABINIERS.

**Carbohydrates**, imp. group of organic chem. compounds, containing carbon (q.v.), with hydrogen and oxygen in proportion in wh. they exist in water, i.e., 2:1; number of carbon atoms present usu. 6 or multiple of 6. Formed in veg. kingdom by action of light and chlorophyll on carbon dioxide and water. Cs. may be divided into mono-saccharides (e.g., arabinose, glucose, and fructose), di- and tri-saccharides (e.g., cane sugar) and polysaccharides (e.g., starches and celluloses); indispensable foods of man and animals.

**Carbohydrate diet**, farinaceous foods with little fat or protein; opposite of *diabetic diet*, in wh. carbohydrate is strictly curtailed.

**Carbolic acid**: see PHENOL.

**Carbon**, (chem.) element, symbol C; at. wt. 12.00; sp. gr., 3.52; non-metal; occurs pure as diamond and graphite; impure as anthracite coal. All organic-chem. compounds contain C and hydrogen. **C. disulphide**, (chem.)  $\text{CS}_2$ , compound of carbon and sulphur; sp. gr. 1.292; obtd. by passing sulphur-dioxide gas over heated charcoal; very inflammable; liquid used as solvent for oils and fats; vapour is a powerful insecticide. **C. monoxide**, (chem.)  $\text{CO}$ , colourless, odourless, inflammable gas produced by incomplete combustion of carbon (e.g., as coke, coal, or petrol); constituent of coal gas; produces gas and water gas (q.v.); very poisonous; see ANTIDOTES.

**C. process**, in photo-printing; pigment, gen. carbon, mixed with gelatine, gum, or albumen, sensitized by bichromate. *Carbon*, or *autotype tissue*, used for printing, film then transferred to paper. See BICHROMATES. **C. tetrachloride**, (chem.)  $\text{CCl}_4$ , compound of carbon and chlorine; colourless, heavy liquid; sp. gr. 1.5835; solvent of fats and oils; non-inflammable; used in "dry cleaning" and in fire extinguishers, and admin. internally for hookworm and liver fluke in sheep; vapour is very poisonous.

**Carbonari** (It. = colliers), a secret soc. wh. conspired agst. the Fr. rulers of Naples; after 1823 (as *Charbonnerie*) had headquarters in Paris; ceased to exist in 1841.

**Carbonates**, compounds of carbonic acid (q.v.); e.g., washing soda, chalk. Bicarbonates are acid carbonates, containing carbonic acid.

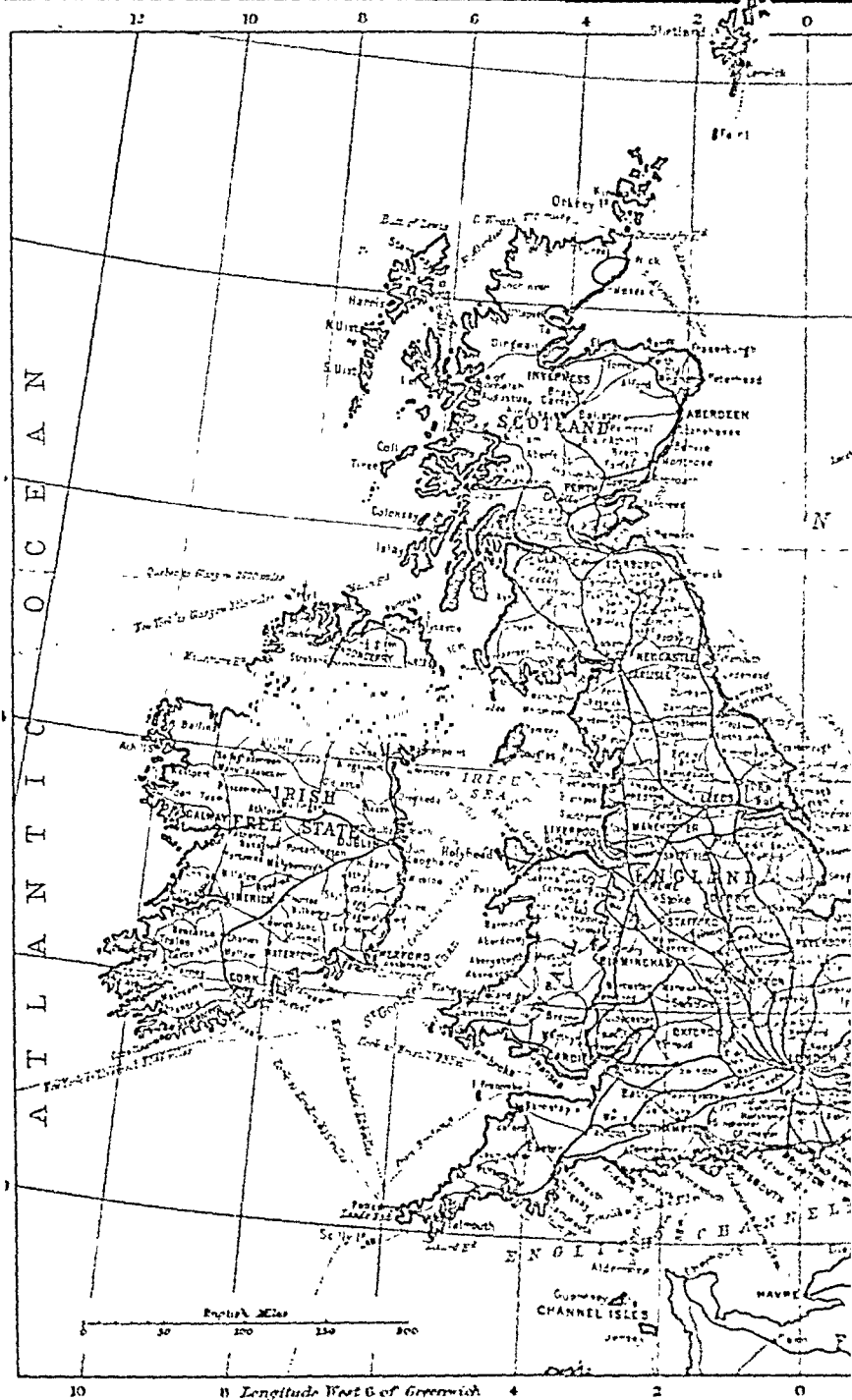
**Carbonic acid**, (chem.)  $\text{CO}_2$ ; *carbon dioxide*; formed by complete combustion of



Trailer Caravan



Caraway



AND N.-W. EUROPE



4 Longitude East of Greenwich

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carbon and action of acids on carbonates; also a product of respiration and fermentation; heavy, colourless, odourless, tasteless gas; soluble in water and occurs naturally in many min. springs; forms carbonates in combination with metals (chalk and marble are carbonate of calcium). Solid  $\text{CO}_2$  used as a refrigerant (dry ice).

**Carboniferous**, belonging to the geol. period between the Devonian and Permian; consisting of rock deposits, e.g., coal, formed in period of luxuriant land vegetation. See GEOLOGICAL FORMATIONS.

**Carbonization**, process of reducing organic matter to carbon by dry distillation, or by heating in chamber from wh. air is excluded; the volatile substances are thus driven off and only carbon remains.

**Carborundum**, *silicon carbide*, produced by heating silica-sand and coke in an elec. furnace; very hard; used as abrasive and for grinding metals.

**Carboxyl**, (chem.) sym.  $\text{COCH}$ , a radical, contained in all organic acids.

**Carbuncle**, hard, inflammatory swelling of skin; resembles a boil, but is larger, and discharges pus at several points.

**Carburettor**, appar. used in internal combustion engines burning light oil, for atomizing fuel nec. for generation of power and for produc. of mixture of vapour and air.

**Carcase weight**, of *bullocks*, without hide, head, legs and intestines; amts. to abt. 50 to 60% of live wt. In *pigs*, the disembowelled animal: abt. 70-90% of live weight.

**Carcassonne**, mediæval walled city (and cap.) of dépt., Aude, S. France; pop., 29,000; weaving; restored by Viollet-le-Duc, 1850-80.

**Carchemish**, anc. cap. of Hittites (*q.v.*); scene of extensive excavations during latter part of 19th century.

**Carcinoma**, cancer (*q.v.*).

**Card**, (tech.) machine for disentangling and rendering parallel textile fibres. **C. clothing**, leather with steel wire points, used to clothe cylinders of card. **C. index**, case of drawers containing loose leaves or cards on wh. addresses, catalogues, records of transactions, etc., can be system. kept and easily referred to.

**Cardamine**, bitter cress, plants of order Cruciferae; e.g., cuckoo flower, lady's smock, *C. pratensis*, with white and mauve blossoms.

**Cardamom**, dried, ripe seeds of *Elettaria cardamomum*, a plant growing wild in S. India and cultivated there and in Ceylon; *Mysore c.* most common. They contain a volatile oil, used in medicine as a carminative, also as an aromatic flavouring agent.

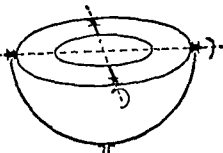
**Cardamoms**, mtn. range, Travancore, Madras, India; alt. up to 4,000 ft.; called after aromatic seeds (cardamoms) found on them.

**Cardan universal joint**, (mech.) device for connecting two rotating shafts so as to

allow the angle between them to alter in any direction; each shaft has a *fork*, the prongs of wh. pivot on opposite points of a rigid cross of metal, through which motion is transmitted.

**Cardano**, or (**Cardan**), Geronymo (1501-76), It. physic. and mathemat.; gained great medical reputation.

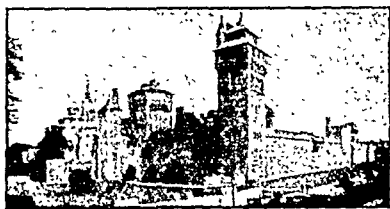
**Cardanic suspension** (*cardanic joint*), apparatus used on ships to keep compasses, lamps, clocks, etc., on horizontal plane when vessel is rolling; invented by Cardano; consists of 3 concentric rings, wh. can swing up to 90°.



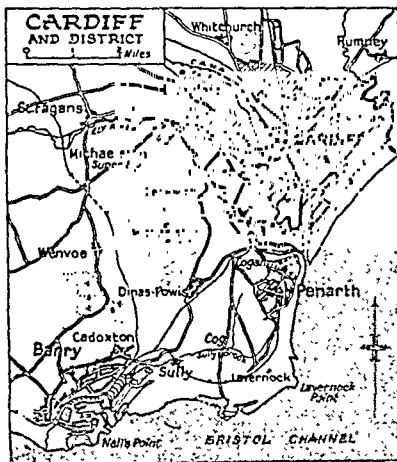
Cardanic Suspension

**Cardboard**, made by machinery from cheap raw matl. in sheets thicker than paper. In good qual. C., e.g., for playing cards, sev. thin sheets of paper are pressed and glued together until desired thickness is attained. *Tarred felt* is paper pulp sheets treated with tar and lime.

**Carded yarn**, spun from short, curly wool



By courtesy of Cardiff City Council  
Cardiff Castle



strands; gen. made into a felt-like material. See WEAVING.

**Cardiff**, city and co. bor., S. Wales, co. tn., Glam.; largest tn. in Wales; pop., 225,700:

docks; chief coal port in Brit. Isles; univ. college (part of Univ. of Wales); Llandaff Cath. 2 m. North.

**Cardiganshire**, marit. co., cent. Wales; area, 692 sq.m.; pop., 55,200 (Welsh-speaking); barren and mountainous in N. (*Plynlimon*, 2,468 ft.); undulating elsewhere; agric.; sheep and cattle; lead-mining; largest tn., Aberystwyth. **Cardigan**, co. tn., seapt. at mouth Riv. Teifi; ruined castle; pop., 3,300.

**Cardinal**, 1) in R. C. Ch., ecclesiastic appointed by the Pope as member of College of Cardinals, which may not number more than 70, composed of 6 Cardinal bps., 50 Cardinal priests (who may be, and usu. are, bps.), and 14 Cardinal deacons. The College of Cardinals elects the Pope, and its members serve on various Congregations (or committees) of the Roman *Curia* (q.v.). Cardinals wear scarlet robes and take precedence of all other clergy. 2) Woman's hooded cloak (cf. *MOZETTA*) of the 18th cent. **C.'s hat**, broad-brimmed scarlet hat with two strings, each terminating in 15 tassels (part of armorial bearings of Christ Church, Oxford, founded by Card. Wolsey and formerly called *Cardinal's College*). **C. numbers**, simple numbers, 1, 2, 3, etc. (cf. *ORDINAL*). **C. points** (of compass,) North, South, East, West. **C. virtues**: see *VIRTUE*.



Cardinal's Arms

**Cardington**, vil., Beds, 2½ m. S.E. Bedford; airship mooring-mast (200 ft.); memorial to victims of disaster to Rior.

**Cardiogram**, (med.) the record of the movements of the heart obtained by means of a **cardiograph**, i.e., an apparatus wh. traces the movements of the heart by utilizing the minute electric current generated by each of its beats.

**Cardoon**, *Cynara cardunculus*, thistle-like plant related to the artichoke (q.v.), used as a culinary vegetable.

**Cards, Playing**, paste-board cards used for var. games, e.g., bridge, whist, etc.; a full pack now consists of 52 cards, div. into 4 suits (q.v.) each bearing 1-10 "pips," or conventional figures (*court cards*) rep. "King,"

"Queen," and "Knave" or "Jack"; var. traditions as to origin, some attributing it to Chinese, Indian, or Arab sources; introd. into Eng. c. 14th cent., and subject to tax in Gr. Brit. since temp. James I.

**Carducci**, Giosuè (1836-1907), It. lyric poet; Nobel Prize (Lit.), 1906. *Hymn to Satan*; in *Odi Barbare* he successfully adapted Latin metrical forms to It. verse.

**Cardwell**, Edw. C., 1st. Visct. (1813-86), Brit. statesman; pres. of Board of Trade, 1852-55; sec. for Ireland, 1859-61; colonial sec., 1864-66; sec. for War, 1868-74; carried out many reforms in War Office; laid fndtns. of mod. Brit. Army.

**Carew**, Thomas (c. 1589-1639), Eng. lyric poet: *The Rapture*.

**Carey**, Henry (1696-1743), Eng. poet and composer: *Sally in Our Alley*. **C., Henry** (1793-1879), Amer. polit. economist.

**Carfax** (Lat., *quattuor furcas*), cross-roads at centre of a tn., as at Oxford and Horsham, England.

**Carib**, an Amer.-Ind. race in Centr. and N. of S. America; at one time warlike and cannibalistic.

**Caribbean**: see *LANGUAGE SURVEY, Amer. Languages*. **C. Sea**, portion of the Atlantic lying betw. Centr. and S. Amer., bounded E. by the Lesser Antilles and N. by Cuba, Haiti, and Puerto Rico, and connecting with the G. of Mexico by the Yucatan Channel; c. 7,500 sq.m.; max. depth, c. 17,000 feet. See map, ANTILLES.

**Caribee Islands**, former name of the Lesser Antilles, see ANTILLES.

**Caribou**: see REINDEER.

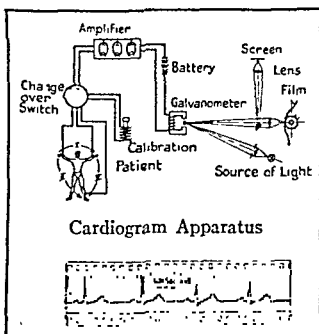
**Caricature**, grotesque or satirical representation of a person, style, movement, etc., exaggerating some characteristic feature or mannerism.

**Caries**, decay or decomposition of bones or teeth. Dental C. may cause rheumatism or neuralgia.

**Carillon**, peal or chime of bells so arranged that a tune can be played on them by one person (*carillonneur*); also, the melody so played. On Continent of Eur., notably Belgium, C.-playing



Mediaeval Playing Card



Siemens Electrocardiograph



Caribou



Caricature: The Orator, by Doré

has been practised since 12th cent., most famous set of bells being those at Bruges (q.v.). Modern C. is worked by a keyboard, sometimes also by pedals.

**Carinthia**, prov. of S. Austria; Alpine country; in N., *Hohe Tauern* (*Grossglockner* 12,420 ft.) and *Noric Alps*, in the S. the *Carnic Alps*; 3,610 sq.m.; pop., 380,000; thickly wooded (saw-mills, paper and cellulose factories); iron and lead mines; cap. *Klagenfurt*. A Roman prov. B.C.; from 1335-1918, Austrian; now partly Jugoslavian.

**Carisbrooke**, vill., 1 m. S.W. Newport, Isle of Wight, Eng., with anc. castle (prison of Chas. I, 1647-48).

**Carlisle**, Wilson (1847- ), Eng. clergym., Prebendary of St. Paul's; fndd. Church Army (q.v.).

**Carline thistle**, thistle-like Medit. plant, *Carlina vulgaris*; popularly used to tell the weather, as the large white flower closes when atmosphere is moisture-laden.

**Carlingford**, seapt. and mkt. tn., Co. Louth, I.F.S., on **C. Lough** (10 m. by 2; separating Co. Louth in I.F.S. from Co. Down in N. Ire.); oyster fisheries; pop., 550.

**Carloli.**, abbr. *Carloliensis* (Lat.), of Carlisle (signature of bp.).

**Carlisle**, city and co. tn., Cumb., Eng., Rom. *Luguvallium*, on Riv. Eden, just S. of Rom. Wall; famous border tn.; rly. junction; 12th-cent. castle and cath.; pop., 57,100; scene of **C. experiment** (State ownership of licensed houses), 1916 and onwards.

**Carlists**, supporters successively of Don Carlos, his son and grandson, pretenders to the throne of Sp. on the death of Ferd. VII, 1833. **Carlism Wars**: 1833-40; 1860; 1873-76.

**Carlos, Don**, 1) Infante of Spain (1545-68), s. of Philip II. Died insane, in prison. 2) (1788-1855), s. of Charles IV; claimed Sp. crown as Charles V; deprived of rights, 1834.

**Carlow**, 1) inland co., Leinster, I.F.S.; area, 346 sq.m.; pop., 34,500; mountainous in S.E. rivs.: Barrow, Slaney; agric.; dairy farming. 2) Co. tn., Carlow, on Riv. Barrow; pop., 7,100.

**Carlsbad**, 1) (*Karlovy Vary*), tn., N.W. Bohemia, on Riv. Tepl; pop., 19,480; health resort; 16 mineral springs (alkaline thermal waters contg. Glauber salt), among others the "Sprudel," fountain of hot mineral water (162°F.), up to 880,000 gals. a day. 2) Tn. in N. Mex., U.S.A., on the Pecos Riv.; pop., 3,700; shipping centre for cotton, wool, and cattle; in *Guadalupe Mtns.*, 30 m. to S.W., is *C. Cave National Monument*, a cavern of vast size: one chamber 350 ft. high, 400 ft. wide, 850 yds. long. **C. Decrees**, passed in 1819 at Congress of C. under presid. of Metternich; aimed agst. freedom of instruc. in universities, freedom

of press, students' associations, gymnastic clubs; repealed in 1848.

**Carlsruhe**, cap. of Baden, on the rt. bank of Rhine (harbour), in Hardt Forest, pop., 156,200; tech. coll. fndd. 1825; institute for research in connection with textiles and rational methods of production in handicrafts; nat. art schools; machinery manufacture.

**Carlyle**, Thomas (1795-1881), Brit. philos. and author: *History of French Revolution*, *Frederick the Great*, *Heroes and Hero-Worship*.

**Carmagnole**, dance and song pop. in Fr. Revolution.

**Carman**, Wm. Bliss

(1861-1920), Canadian poet and journalist; *Low Tide on Grande Pré*, 1893; *Pipes of Pan*, 1903-05; *Kinship of Nature*, 1904; *April Airs*, 1916.

**Carmarthenshire**, marit. co., S. Wales; area 920 sq.m.; pop., 179,100; surface mainly undulating (open valleys), Carmarthen Van (2,600 ft.), in E.; chief riv., Towy; agric., dairy-farming, cattle- and sheep-raising; coalfield near Llanelli (largest tn.). **Carmarthen**, county tn. on Riv. Towy; pop., 10,300.

**Carmel, Mount**, ridge (1,742 ft.), N.W. Palestine, extending from mtns. of Samaria to Bay of Acre (Mediterranean); one of the holy places of Palestine, assoc. with Elijah and Elisha; community of Christian hermits on mtn. said to be origin of the Carmelites.

**Carmelites**, order of monks founded on Mt. Carmel, c. 1156; reconstituted in 1209; later became mendicant order, known in Eng. as the *White Friars*.

**Carmen**, tale by Prosper Mérimée (1847); source of opera by Bizet (words by Meilhac and Halévy), 1st produced at Opéra Comique, 1875.

**Carmen Sylva**, pen-name of Qn. Elizabeth of Rumania (1843-1916). Poem: *Pilgrim Sorrows*, 1882.

**Carminative**, drug wh. relieves flatulence.

**Carmine**, brilliant red pigment, obtd. from the cochineal insect.

**Carnac**, vil., Morbihan, N.W. France, on Bay of Quiberon; prehist. menhirs, dolmens, barrows; avenues of megaliths; museum of antiquities.

**Carnallite**, (chem.) potassium magnesium chloride,  $KCl.MgCl.6H_2O$ ; the salts found in the deposits at Stassfurt, Ger., from wh. potassium is produced; also used as a fertilizer.

**Carnarvon**, 1) see CAERNARVON. 2) Port, W. Australia, on Shark's Bay.

**Carnatic**, region S. India, betw. E. Ghats and Coromandel Coast.



Carlyle



**Carnation:** *see* CLOVE.

**Carnavalet, Hôtel,** museum in Paris; built in 16th cent.; name derived from the orig. owner, François de Kernevenoy; residence of Mme. de Sévigné (1677-96); purchased by city of Paris, 1866, and establ. as municipal museum for preservation of antiquities relating to history of Paris.

**Carnegie,** Andrew (1835-1919), Amer. industrialist and philanthropist. **C. trusts,** group of funds establ. by Andrew C. for philanthropic and educational purposes. Princ. C. T. funds in U.K. are: Universities of Scotland; Dunfermline; Hero Fund; U.K. Trust (for establmt. of public libraries). In U.S.A.: Institute of Pittsburgh; Inst. of Washington; Endowment for Internat. Peace; Corporation of New York.

**Carnelian, Cornelian,** red and yellow varieties of the semi-precious stone chalcedony (*q.v.*).

**Carnic Alps,** E. part of the S. Alps betw. Austria in N. and Yugoslavia and Italy in S.; *Hohe Warte* 9,450 ft.

**Carniola, Krain,** mountainous country on frontier of Italy and Yugoslavia; *Julian* and *Steiner Alps*; *Karawanken Alps*, boundary betw. Carniola and Carinthia; Karst (*q.v.*) in S. In neighbourhood of Idria and Adelsberg are large caves with disappearing and reappearing lakes and rivers; bleak climate; wooded hills, in the valleys corn, fruit (figs, olives, chestnuts), and vineyards; mercury, lignite, iron, lead, and zinc. Austr., 1335-1919.

**Carnival** ("Putting away of flesh"), week just before Lent; festivities and frolics held at this season in R.C. countries; generally, revelry, verging on riotousness.

**Carnivora,** large and important order of mammals which includes all terrestrial beasts of prey: *see*

BADGER, CAT, HYENA, JACKAL, LEOPARD, LION, etc.

**Carnot, Lazare**

(1753-1823), Fr. statesman; organzd. revol. armies. His son **Nicolas L. Sadi C.**

(1796-1832), physicist., fndd. science of thermo-dynamics, (*q.v.*). His grandson **Marie François Sadi C.** (1837-94), Pres. 3rd Fr. Repub. 1887; assassinated.

**Carob,** the locust-tree, *Ceratonia siliqua*; plant cultivated in S. Eur.; the pods contain a sweet-tasting edible pulp; seeds were formerly used as weights (*carats*).

**Carol:** *see* CHARLES, KING OF RUMANIA.

**Carol,** song or hymn of joy, usu. in celebratn. of the Nativity.

**Carolina, North and South:** *see* NORTH CAROLINA, SOUTH CAROLINA.

**Caroline Islands,** about 700 flat coral

isls. and atolls in Pacific; part of Micronesia; c. 517 sq.m.; pop., c. 36,550; largest isls. Yap and Ponape. Mountainous and volcanic; jungles and coconut groves; exports: copra and sugar; discovered by Diego da Rocha 1527; Span. until 1899; German by purchase, 1899-1919; now mandated to Japan.

**Caroline of Anspach** (1683-1737), Qn.-Consort of George II of England; supported Walpole; regent during kg.'s absence. **C. of Brunswick** (1768-1821), Qn.-Consort of George IV of England; formally separated from her husband, 1796; tried for adultery before House of Lords, 1820.

**Carolingians, Carolingians,** Frankish dyn., ruled in Ger. 752-911, in Fr. 751-987, in It. 774-961; named after its most famous member, Charlemagne (*q.v.*). **Carolingian Cycle,** epic songs and romances abt. Charlemagne and his "paladins," Roland, Olivier, Turpin, etc., and the traitor Ganelon.

**Carolus,** Eng. gold coin, current in 17th cent., worth 20s. **C. dollar,** peso issued by Charles IV and V of Spain.

**Carolus-Duran,** Émile Aug. (1838-1917), name adopted by Charles Auguste Émile Durand, Fr. painter; director of Fr. Academy, 1905; *The Assassination*, 1866; *Lady with the Glove*, 1869, etc.

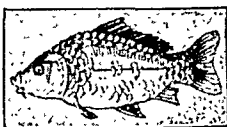
**Carossa,** Hans (1878- ) Ger. poet and physician; *Poems*; *Rumanian Diary*; *Boyhood and Youth*, etc.

**Carp,** bony fresh-water fish, typical of the large family *Cyprinidae*. Body covered with

large scales, head naked; wide, thick-lipped mouth: small barbule on upper jaw, large one at corner of mouth; dorsal fin long; back, dark grey or brown; sides yellowish brown; belly, yellow. Average 1 or 2 ft. in length, large forms 5 ft. Sluggish in habit, feeding on water plants, water insects and worms. Frequent quiet rivers and ponds; lives to great age; hibernates in mud during winter. C. orig. native to Centr. Asia, but artificially spread throughout Europe, British Isles, N. America.

**Carpaccio,** Vittore (c. 1450-1522), Venetian painter; pupil of Lazzaro Bastiani; *St. Ursula*, 1490; *Death and Assumption of the Virgin*.

**Carpathians,** wooded mtn. range in Centr. and S.E. Europe; divided into the *Little C.* and *White C.*, running N.W. from Bratislava, the *E.* and *W. Beskids* and *Tatra Mtns.*, E. to S., with the *Transylvanian Alps* turning W., the whole forming a semicircular watershed (c. 900 m. in length) betw. the Baltic and Black Sea. Precipitous crags in E. (Tatra Mtns. to 8,700 ft.); few passes:



Mirror-Carp



Dentition of Carnivora (Cat)

Czechoslovakia-Poland, Jablunka (1,970 ft.), Poprad Gorge (2,630 ft.), Dukla (1,645 ft.), and Vereczke (2,760 ft.), and in Rumania, Predeal (5,370 ft.), Rote Turm (1,115 ft.), and Teregora Pass (1,690 ft.); crossed by 9 rly. lines. Pop.: Slovaks in Little and White C.; Magyars, Rumanians, and Ruthenians in the Centr. C. Silver, lead, salt and petroleum.

**Carpathos, Scarpanto**, isl. in the Aegean Sea; 107 sq.m.; pop., 7,500 (mainly Gr. Orth.); one of the It. Dodecanese (*q.v.*).

**Carpe diem!** (Lat.), enjoy the day; take your opportunity.

**Carpentaria, Gulf of**, N. Australia, c. 350 m. broad by the same length; many islands and mud-banks.

**Carpenter, Edw.** (1844-1929), Eng. author and social reformer; *England's Ideal*, 1887; *Towards Democracy*, 1887; *My Days and Dreams*, 1916. **C., Jesse** (1853-1901), Amer. engineer; inv. C. brake for rly. trains. **C., John Alden** (1876- ), Amer. composer; orchest. work, *Adventures in a Perambulator*; ballet, *The Birthday of the Infanta*.

**Carpentier, Georges** (1894- ), Fr. hvy.-wt. pugilist; deftd. Bombardier Wells 1913; J. Beckett, 1919; deftd. by Dempsey (*q.v.*) in world championship fight, 1921.

**Carracci**, 3 It. painters, **Lodovico** (1555-1610) fndd. Academy in Bologna; *Madonna and Child*; nephews, **Agostino** (1557-1602) a great engraver on copper, **Annibale** (1560-1609); *Three Maries* at Castle Howard.

**Carrageen, Irish moss**, dark purple seaweed; fnd. on rocky coasts of Eur. and N. Amer.; when dried and bleached, used to make an edible jelly.

**Carrara**, tn. in Italy, on S. slope of N. Apennines; pop., 50,000; marble quarries; many marble buildings; acad. of art.

**Carrel, Alexis** (1873- ), Fr. surgeon and physiologist, member Rockefeller Instit. for Med. Research, New York, 1912; Nobel Prize (Med.), 1912; co-inventor of Carrel-Dakin treatment for wounds.

**Carriage**, 1) any of several varieties of wheeled vehicles, esp. a privately owned one drawn by horse, mule, or donkey. See BROUGHAM; HANSON CAB; LANDAU, etc. 2) (Rly.) Compartment of a coach reserved for passengers and light luggage. 3) (Mechan.) Various devices for bearing and moving heavy parts of machinery, etc.; device for shifting the part of a typewriter in wh. paper is held from one position to another. 4) (Milit.) Heavy frame on wheels on which guns are transported. 5) Act or process of conveying goods by rail, ship, etc.; also charge made for such conveyance. **C. forward**, arrangement by wh. payment for conveyance is made on arrival of goods at destination.

**Carrick**, 1) anc. S. div. of Ayresh., Scot-

land, bounded by Riv. Doon; gives title of earl to Pr. of Wales. 2) Or *Carrick-on-Suir*, mkt. tn., Co. Tipperary, I.F.S.; pop., 4,800; slate quarries.

**Carrickfergus**, seapt., Co. Antrim, N. Ire., on N. shore Belfast Lough: castle; flax-spinning, linen-bleaching, oyster fisheries; landing-place William III in 1690; pop., 4,600.

**Carrick-on-Shannon**, cap. Co. Leitrim, Munster, I.F.S.; pop., 1,000. **C.-on-Suir**: see CARRICK.

**Carrière**, Eugène (1849-1906), Fr. portr. painter, noted for family groups; portraits of *Alphonse Daudet*, *Anatole France*, *Paul Verlaine*, etc.

**Carrier pigeons**, species of domestic pigeon (*q.v.*) with highly developed sense of direction, enabling them to find their way back to their home lofts over long distances. Used in World War to carry messages when other communication had been cut.

**Carrión crow**: see CROW. **C. flowers**, plants having foul-smelling flowers, esp. the African *Stapelia*.

**Carroll, Lewis**: see DODGSON.

**Carrot**, wild carrot, *Daucus carota*, umbelliferous plant; white flowers and a tap root; cultivated carrot (many varieties) is derived from this.

**Carry over** (Stk. Exch.): see CONTANGO.

**Carse**, low-lying, fertile plain in Scotland; e.g., C. of Stirling. **C. of Gowrie**, fertile dist., Perthsh. and Angus, Scotland, extending 15 m. betw. Firth of Tay and Sidlaw Hills.

**Carshalton**, urb. dist., Surrey, Eng., W. of Croydon; pop., 28,800.

**Carso**, limestone plateau (up to 1,500 ft.), N. Italy, betw. Riv. Isonzo and Gulf of Fiume; scene of prolonged fighting (nr. Gorizia) in World War.

**Carson**, of Duncairn, Edw. Henry, Bn. (1854- ), Brit. lawyer and politician; organized Ulster rebell. (1912-14) agst. union with rest of Ireland and sep. from U.K.; Ld. of Appeal, 1921.

**Carson City**, cap. Nevada, U.S.A.; pop., 1,600; museum; branch of U.S. mint; school for Indians. Named after Christopher (Kit) Carson, hunter and scout.

**Cartagena**, 1) fortress, naval port, best harbour in Spain; prov. Murcia; pop., 97,000; anc. Carthago Nova; founded 225 B.C.; conquered by Scipio, 210 B.C. 2) Seapt., N. Colombia, S. America, cap. dept. Bolivar; pop., 92,500.

**Carte**, Richd. D'Oyly (1844-1901), Brit. theatrical manager; built Savoy Theatre, and Eng. Opera House (afterwards Palace



Carson

Theatre) for prod. of grand opera; prod. plays of Gilbert and Sullivan.

**Carte blanche** (Fr.), white paper; full power to act.

**Cartel**, (commer.) alliance of business undertakings formed for purpose of influencing markets and reducing competition; apart from terms of special contracts for this purpose, the concerns retain their independence; certain limitations and prohibitions in force in var. countries regarding econ. predominance of Cs., e.g., Sherman Anti-Trust Law of U.S.A.

**Carteret**, John: see GRANVILLE.

**Carthage**, ruined city of N. Africa, nr. Tunis; fndd. by Phoenicians in 9th cent. B.C.; three wars with Rome: 1) 268-241 B.C.; 2) 218-201 B.C. (Hannibal); 3) 149-146 B.C., destroyed by Scipio (the Younger). Rebuilt c. A.D. 1; finally destroyed A.D. 697.

**Carthusians**, order of monks founded at La Chartreuse by St. Bruno (1086); see also CHARTERHOUSE.

**Cartier**, Jacques (1494-1557), Fr. navigator; three voyages to Canada; 1) explored Gulf of St. Lawrence, 1534; 2) made his way up the St. Lawrence to Montreal, 1535; 3) unsuccess. attempt to colonize Canada, 1541-42.

**Cartilage**, (anat.) gristle; smooth coating of joint-ends of bones.

**Cartography**, science or practice of map-making; includes drawing of maps, use of symbols and lettering, and projection.

**Cartoon**, 1) prelim. design for painting, tapestry, etc.; 2) picture (usu. in caricature and of a topical character) pubd. in press to influence pub. opinion. **C. film**, film in wh. each picture (frame) is a still photograph of drawing, model, etc.; effect of movement prod. by succession of slightly diff. positions; 16

tural ornament; 2) an ornamental tablet for an inscription; 3) in *Egyptol.*, an oblong frame enclosing name, title, etc. of a king or queen on a tomb or monument.

**Cartridge**, a case of paper or metal charged with powder to propel a projectile.

**Metallic c.**, discharged by impact of a striker on a percussion-cap.

**Blank c.**, charged with wads in the place of a projectile.

**Caruso**, Enrico (1874-1921), greatest It. operatic tenor of his day.

**Carvacrol**: see PHE-NOL.

**Caryatides**, (archit.) female figures used as columns for support of an entablature (*q.v.*); first used in Gr. temples (Erechtheum, Athens).

**Caryota**, East Indian palm, with leaves somewhat resembling a fish's tail, and nut-like fruit. From *C. urens*, the jaggery palm, sago and a palm-wine are obtained.

**Casablanca**, **Dar-el-Baida**, seapt., Morocco, on Atlantic; chf. port and trading centre of Fr. Morocco: carpets; pop., 161,100 (56,000 Europeans).

**Casanova** de Seingalt, Giov. Jacopo (1725-98), It. adventurer; *Memoirs*.

**Casaubon**, Isaac (1559-1614), Fr. Protestant theologian and classical scholar; prof. of Grk. at Geneva, 1582-96; prof. of Languages at Montpellier, 1596-1600; prebendary of Canterbury, 1610-14; *Commentaries* on Athenaeus, Theophrastus, and Suetonius.

**Casca**, Publius Servilius (d. c. 42 B.C.), Rom. tribune; one of the assassins of Julius Caesar, 44 B.C., and tradit. the 1st to strike him; present at battle of Philippi and prob. died soon afterwards.

**Cascade**, small waterfall, often artificial.

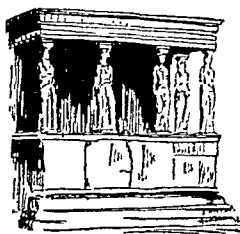
**C. Mountains**, part of *Rocky Mts.*, N. of Sierra Nevada, in W. of U.S.A., up to 14,400 ft.; pierced by Columbia Riv., which flows in series of terrace-like cascades; vast forests ("Oregon pine").

**Cascara sagrada**, the "sacred bark"; bark of a tree (*Rhamnus purshiana*) growing in Canada and parts of the U.S.A.; preparatn. from this widely used as a mild and safe laxative.

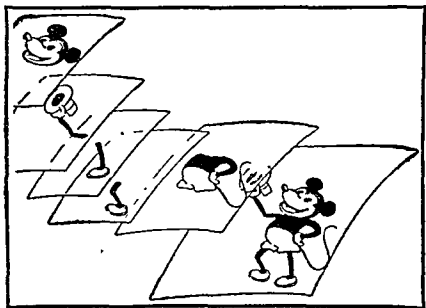
**Case**, 1) (gram.) diff. forms assumed by a noun, adj., or pronoun in inflected langs.,



Caruso



Caryatides



Construction of Mickey Mouse Film

photographs per sec. are necessary, 24 stand-ard. Hence movement lasting one sec. requires 24 exposures, each diff. Drawings are made of parts to be moved, e.g., legs, arms, etc., cut out or on transparent material. *Mickey Mouse* series, by Walter Disney, most famous.

**Cartouche**, 1) a scroll-shaped architec-

expressing relation to some other word; in un-inflected langs. this relation itself. 2) (Bookbinding) To cover a book in a ready-made cover, as distinct from binding it. 3) (Printing) Shallow wooden tray divided into compartments in wh. type is placed for composing. For ordinary composing, two cases are used, one above the other, on an inclined frame; the lower, divided into 54 compartments, contains the small (*lower case*) letters; the upper, with 98 boxes, holds the capitals (*upper case*), etc. **C.-hardening**, (metal.) hardening surface of soft iron and mild steel objects by heating them with carbon and carbon compounds for some time in closed boxes, the carbon penetrating into surface for some distance. **C.-shot, canister shot**, artillery ammun.; metal cases filled with lead bullets, for close ranges; now used only in tank guns.

**Casein**, protein matter of milk; produced by curdling with rennet (*q.v.*) or a dilute acid. Used in commerce as an adhesive and as a plastic; substitute for ivory in manuf. of small articles.

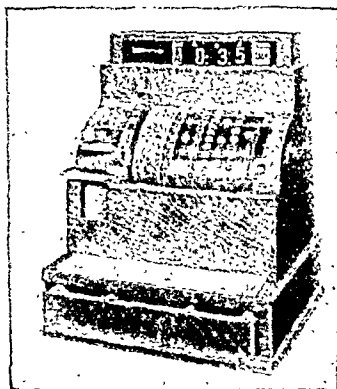
**Casella**, Alfredo (1883- ), It. composer and virtuoso; *Elegia eroica*, etc.

**Casemates**, bomb-proof shelters and storerooms in forts.

**Casement**, Sir Roger (1864-1916), mem. of Brit. consular service; report on Congo rubber industry resulted in official Belg. commission and improved conditions, 1903; investig. charges against Anglo-Peruvian Amazon Co., 1911; retired, 1912; opp. Irish participation in World War; attempted form Irish brigade in Ger. Army; captured while attempting to organize rebellion in Ireland, and hanged for treason.

**Casement cloth**, strong matl. used chflly. for window curtains.

**Cash**, 1) coin or specie; ready money;



"National" Cash Register

immed. pymt. 2) Small copper coin current in E. India and China; usu. with hole pierced

for stringing. **C. against documents**, in over-sea trade: delivery of shipping papers agst. pymt. of bill. **C. business**, 1) sales agst. immed. pymt. 2) (Stk. Exch.) Deals in wh. the handing over of the scrip and pymt. take place on day on wh. they are made or following day; ant.: *Credit business*. **C. bargains**, on Stk. Exch. refer to deals for immed. delivery, acceptance, and payment. **C. discount**, deduction from purchase price allowed by traders for prompt payment. **C. register**, aut. appliance with keyboard for receiving and recordg. cash payments.

**Cashel**, city Co. Tipperary, I.F.S.; pop., 2,950. On Rock of C. (300 ft.) are remains of St. Patrick's Cathed. (12th cent.), Cormac's Chapel, and Cross at base of wh. kings of Munster were crowned; below Rock is Hore Abbey, fndd. 1272.

**Cashew, Acajou**, W. Indian tree (*Anacardium occidentale*) producing small edible nuts, wh. are eaten either raw or roasted and wh. also yield a sweet oil; stem yields gum. **C. apple**, thick, pear-shaped stalk below the nut, also edible.

**Cashier**, (mil.) to dismiss an officer with ignominy.

**Cashmere**, 1) native state, N.W. India; see KASHMIR, JAMMU. 2) The long, fine, silky hair of the Kashmir (Cashmere) goat, from which Cashmere shawls are made.

**Casimir**, Kgs. of Poland; **C. IV** (1427-92), took W. Prussia from Teutonic Knights, 1466.

**Casimir-Périer**, Jean P. (1847-1907), Fr. statesman; Pres., 1894-95.

**Casino**, (It.) public place of amusement at pleasure resort; used for dances, theatrical performances, etc., and often for gambling.

**Cask**, 1) quasi-cylindrical wooden vessel, with bulging middle, made of staves bound by iron hoops and having flat ends. 2) Varying meas., as for cocoa (140 lb.), nutmegs, (200 lb.), tallow (1,008 lb.), soda (3-4 cwt.), etc. See BARREL, BUTT, FIRKIN, HOGSHEAD, KILDERKIN, PIN, PIPE, PUNCHEON.

**Casket Letters**, a series of letters from Mary Qn. of Scots to Bothwell wh., if genuine, prove her to have been privy to murder of Darnley; disappeared in 1584.

**Caskets, Casquets**, dangerous rocks, Eng. Channel, betw. Guernsey and Alderney (C.I.); lighthouse.

**Caspar**, name given in Mid. Ages to one of the Magi (*q.v.*).

**Caspian Sea**, salt inland sea betw. Europe and Asia; area c. 168,500 sq.m.; largest inland sea in world; 8½ ft. below sea-level; most important rivs. flowing into it: Kura, Volga, Emba, and Ural.

**Cassandra**, prophetess in Gr. myth.; dau. of Priam of Troy.

**Cassava**, plants of S. Amer., W. India, and Africa, with fleshy, starchy roots; used

as foodstuff. Tapioca is one form of C. flour.

**Cassel**, Gustav (1866- ), Swed. pol. econ., authority on internat. currency: *The World's Monetary Problem*, 1920.

**Cassel**, 1) dist. of Pruss., prov. of Hesse-Nassau; 3,900 sq.m.; pop., 1,100,000. 2) Cap. of the dist. (C. on Fulda), pop., 175,000; museum, academy of art; engineering (locomotives, etc.).

**Casserole**, covered fireproof dish of glass or earthenware, in wh. food is cooked and served.

**Cassia**, leguminous tropical plant. Alexandrian senna is obtained from leaves of *C. acutifolia*, Tinnevely senna, from *C. angustifolia*; senna pods from *C. fistula*: commonly used as a simple laxative either as an infusion or with other ingredients as a confection.

**Cassiodorus**, Magnus Aurelius (c. 480-568 A.D.), Rom. statesm. and historian: *History of the Goths*, of wh. only an epitome is extant.

**Cassiopeia**, (Gr. myth.) mother of Andromeda (q.v.); (astron.): constell. supposed to repr. C. sitting in a chair and holding up her arms; see Pl. ASTRONOMY, N.C.H., A.

**Cassiquiare**, river joining Orinoco to Rio Negro (trib. of the Amazon), S. America.

**Cassiterite**, alternative name for Tinstone (q.v.).

**Cassius**, Gaius C. Longinus (?-42 B.C.), one of conspirators agst. Jul. Caesar, (q.v.); deftd. with Brutus (q.v.) at Philippi, 42.

**Cassivelaunus**, Brit. prince, ruler of the Catuvellauni, inhab. country N. of Riv. Thames, now corresponding to Herts., Bucks., and Beds., conquered by Caesar, 54 B.C.

**Cassock**, eccles. garment, not a *liturgical vestment* (q.v.), long, close-fitting, with sleeves, buttoning to neck and reaching to feet, worn by clergy under surplice or as ordinary walking dress, also by choristers and other ch. officials; lower clergy as a rule wear black, bps. purple, cardinals scarlet, and the Pope a white cassock.

**Cassone**, marriage-chest, in use in Italy, 15th cent., etc.; usu. richly decorated with painting, carving, gesso-work, etc., often by leading artists.

**Cassowary**, large bird similar to an ostrich, native of Australia and New Guinea; has slender, long, black feathers and rudimentary wings, a horny crest and highly coloured pendant wattles on the neck. **Australian c.** stands over 5 ft. high; in Papuan Islds. eleven other species are found.

**Castanets**, small wooden instruments that are beaten together; used to accompany Span. dances.

**Caste**, a class of soc. that closes its ranks agst. ingress of strangers; in India: ly, warrior, merchant, and wage-



Cassowary

**Castellamare**, tn. in Italy, on Bay of Naples; pop., 25,100; port, seaside resort.

**Castellan**, the governor of a castle.

**Castellani**, Sir Aldo (1875- ), direc. of School of Trop. Med., Ross Institute, London, Eng.; princ. of School of Trop. Med., Rome; important researches into tropical diseases and their cure.

**Castiglione**, Baldassare, Ct., (1478-1529), It. statesm. and auth.; *Il Cortegiano* (the Courtier) is prominent in 16th. cent. Europ. prose literature.

**Castile**, central part of Spain, div. by the **Castilian Mtns.** (a range 500 m. long, up to 8,720 ft. high) into Old and New C.; arid plateau, arable only by means of artificial irrigation. Chf. tn. of N. part (Old C.), Valladolid; of S. part (New C.), Madrid. In 1037 kgdm. under Ferdinand I of Navarre;

several times united with and separated from Aragon. Span. kgdm. came into being on marriage of Isabel of C. with Ferdinand of Aragon in 1469.

**Castilla**, Ramón (1797-1867), Pres. of Peru, 1845-51, 1854-62; abolished slavery.

**Casting**, producing metal in desired shape by pouring it in a mould when in a molten state.

Moulds of metal are used, but sand moulds, freshly made from pattern for each C., are commonest.

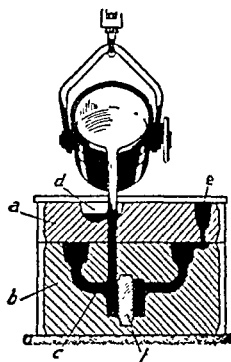
**Castings**, (zool.) pellets of undigested foodstuffs thrown up by owls and other birds of prey.

**Cast-iron**, iron cntg. much carbon and also silicon, whereby it becomes more easily fusible; casts well bec. of expansion on solidifying, and is extremely hard, but brittle.

**C. steel**, old name for steel made in crucibles.

**Castizo**, half-breed of Port. and Mestizo, or white and Indian blood.

**Castle**, 1) medieval fortified bldg., usu. on a hill, often surrounded by moat or ramparts; finest examples to be found in Eng. (after Nor. conquest) and France. 2) A piece in chess (q.v.). 3) (Her.) Freq. intro. in coats of arms. **C. of Otranto**, romance by Horace Walpole, 1765; typical of "Gothic School" of novel. **C. of Sant' Angelo** (Rome), erectd. as imperial mausoleum of Hadrian (*moles Hadriani*); since 923 a fortress; after 1406 in possess. of the popes. **C. Pinckney**, nat. monument (1924) in



Casting  
a) Upper container (removable); b) Lower container; c) Mould; d) Filling aperture; e) Riser; f) Core (only in hollow casting).

S. Carolina, U.S.A.; site of fort in War of Independence. **C. Rackrent**, chronicle novel of Irish life by Maria Edgeworth (q.v.), describing the difficulties and troubles of both landlord and tenant.

**Castlebar**, cap. Co. Mayo, Munster, I.F.S.; pop., 4,300.

**Castleconnell**, anc. seat of kgs. of Thomond, Co. Limerick, I.F.S.; ruins of castle from which tn. was named, destroyed 1690; centre of Shannon salmon fishery.

**Castlereagh**, Rob. Stewart, Visct. (1769-1822), Brit. statesman; as Sec. for Ireland arrgd. Union, 1800; For. Sec. (1812-22); comtd. suicide.

**Castleton**, vil., Derbysh., 7 m. E. of Chapel-en-le-Frith; pop., 650; ruined 11th cent. castle of Peveril of the Peak; Peak Cavern, Speedwell, and Blue John Mines.

**Castletown**, tn., S.E. coast, Isle of Man, former cap.; pop., 1,900. **C. Geoghegan**, tn., Co. Westmeath, I.F.S.; fine medieval castle.

**Castling**, (chess) operation, counting as single move, of moving Kg. to Kg.'s Knight's square, and Kg.'s rook to Kg.'s Bp.'s square, or Kg. to Qn.'s Bp.'s square and Qn.'s Rook to Qn.'s square; move cannot be made if either piece concerned has been prev. moved, if Kg. is in check, or if in doing so the Kg. has to move on to or over any square occupied or commanded by another piece.

**Castor and Pollux**, 1) Lat. names of the *Dioscuri* (q.v.); 2) (astron.) 2 stars,  $\alpha$  and  $\beta$  of zodiacal constell. Gemini (q.v.). See Pl., ASTRONOMY, N.C.H., C.

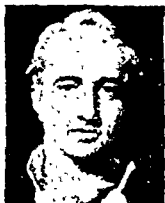
**Castor oil**, oil obtained from seeds of *Ricinus communis*, native plant of India, cultivated elsewhere; used medicinally as a purgative, in dyeing, and as a lubricant for internal combustion engines.

Plant grows 6 ft. high, with palm-like leaves; sometimes used as an ornament; known as *Palma Christi*.

**Castration**, emasculation by removal of testicles, or, in case of females, by removal of ovaries, or by subjecting them to Röntgen rays. Male animals are *castrated* (gelded) to make them suitable for domestic use or for slaughtering.

**Castro y Bellvis**, Guillen de (1569-1631), Sp. dramatist: *Las Mocedades del Cid*, source of Corneille's *Cid*.

**Casts**, (med.) minute tubes excreted in urine, having their origin in kidney tubules; significant of kidney disease.



Lord Castlereagh



Castor-oil Plant

**Casual labour**, intermittent employment on short-time jobs, e.g., harvesting, dock-yard work, etc.

**Casualty clearing station** (C.C.S.), first milit. hospital behind the front line.

**Casuarina**, genus of trees growing chfly. in Australia, but also found in Malaya; related to birch and oak. They are jointed, leafless trees somewhat like gigantic horse-tails. (see *EQUSETUM*.) Furnish a hard and heavy timber. The variety known as the She-oak is *C. stricta*.

**Casuistry**, doctrine or methods of one who settles questions of conscience "case by case" (*casuist*). **Juridical c.** endeavours to settle every case on its own merits, and admits that "circumstances alter cases." Cf. SOPHISTRY.

**Casus belli** (Lat.), act or fact as a reason or justification for war.

**Cat**, any species of the genus *Felis*, including the lion, tiger, leopard, puma, jaguar, cheetah, lynx, and numerous small forms, such as the British wild cat, ocelot, pampas, jungle, serval and viverrine cats, and the var. domestic breeds. Members of cat tribe are indigenous all over the world, except Australia and New Zealand; all carnivorous.

**Catacombs**, 'underground galleries provided with recesses for receiving bones of the dead; esp. those in Rome, wh. formed a refuge for early Christians.

**Catafalque**, decorated structure on which coffin rests while deceased is lying in state, or while burial service is being said in church.

**Catalan language**: see LANGUAGE SURVEY, *Provençal*; fl. 13th-16th cents.; revived 19th century.

**Catalaunian Fields**, scene of defeat of Attila the Hun in 451, usually identified with plains round Châlons-sur-Marne.

**Catalectic**, verse lacking syll. in last foot.

**Catalepsy**, (med.) state of trance or unconsciousness, accompanied by rigidity of the muscles, usu. caused by emotional excitement and most common in women; may continue for several days.

**Catalonia**, mountainous region in N.E. Spain; agric., cattle-breeding, mining, copper, zinc, lead, weaving; cap. Barcelona. Granted measure of autonomy, 1932.

**Catalpa**, N. Amer. and E. Asiatic tree with large heart-shaped leaves, white panicles, and long pods. Furnish a useful timber.

**Catalyst**, (chem.) inert substance which



Catacombs

promotes or accelerates chem. action, but is itself unchanged.

**Catamaran**, canoe fitted with floating outriggers wh. prevent it from capsizing; used in Malaya and East Indies.

**Catania**, 1) Ital. prov. in E. Sicily; area c. 1,900 sq.m.; pop., 754,400. 2) Seapt.; cap. of prov., pop., 271,000; univ., health resort; shipbuilding.

**Cataplasm**, med. name for poultice.

**Catapult**, an anc. milit. machine for throwing missiles, on the princ. of a cross-bow. **C. starter**, trolley used for launching aeroplanes from a ship; it is jerked forward on rails by a starting rope operated by compressed air, giving the aeroplane sufficient impetus for it to take the air.

**Cataract**, 1) waterfall, downpour of water. 2) Grating, portcullis. 3) Disease of eye in wh. crystalline lens becomes opaque. 4) Device in pumping engine to regulate strokes of piston by flow of water.

**Catarrh**, a cold in the nose, characterized by increase in the number of cells (proliferation) of the mucous membrane, and by shedding of these cells (desquamation) in the excreted mucus.

**Catastrophe**, a great misfortune; the final turn or change in action of a drama.

**Catbird** (*Galeoscoptes carolinensis*), N. American bird of fam. *Mimidae*, named from its peculiar clucking and whistling cries.

**Catch-as-catch-can**, method of wrestling ("Lancashire") in wh. every hold (bar strangleholds) is legitimate; both shoulders touching floor together constitutes a fall.

**Catch-fly**, (bot.) *Silene otites*, grows abt. 12 ins. high in sandy places; small yellow flowers. English catch-fly, *S. anglica*, abt. 12 ins.; pinkish flowers. Nottingham catch-fly, *S. nutans*, 24 ins., in chalky places; white or pink, fragrant flowers. **C. word or key-word**, first word (printed in large type) of an article in a dictionary or encyclopaedia, forming the subject of the article.

**Catechetics**, practice of imparting relig. instruction by word of mouth.

**Catechism**, summary of relig. doctrine in form of question and answer; notably *Luther's larger and smaller Cs.* (1529), *C. Romanus* (1566), *C. of E. Pr. Bk. C.* (1549 and 1604).

**Catechu**, *cutch*, astringent extract containing tannin prepd. from var. E. Indian acacias; used in tanning and to dye cotton brown.

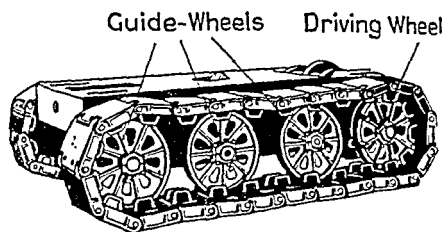
**Catechumen**, one undergoing any kind of elementary instruction; in early Christian Ch., adult person being prepared for baptism; now a candidate for confirmation.

**Categorical**, unconditional. **C. Imperative**, accdg. to Kant, a moral law that is to be accepted without question. See HYPOTHETICAL IMPERATIVE.

**Category**, 1) a group of objects with similar characteristics; 2) as a fundamental idea in philosophy: an *a priori* (q.v.) principle of the understanding, to which objects of thought may be reduced (defined by Aristotle); foundation of Kantian epistemology.

**Caterham**, urb. dist., Surrey, 7 m. S. Croydon; Guards depôt.

**Caterpillar**, larva of butterflies and moths. **C. vehicles**, those having wide

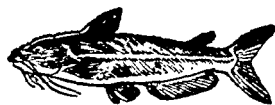


Caterpillar Tractor

bands or chains, divided into separate plates, which are passed round wheels and prevent them sinking into ground; used for heavy tractors and armoured cars or tanks (qq.v.).

**Catesby**, Robt. (1537-1605), Eng. conspirator; originator of Gunpowder Plot (q.v.), 1605; shot at Holbeache House, nr. Dudley, in resisting arrest.

**Catfish**, **Sheath-fish**, members of the immense family *Siluridae*, of which the huge wels (*Silurus glanis*), that lives in the larger rivers of E. Europe, is the sole European representative. Repulsive-looking fish with dark skin, large, ungainly head, small eyes, and long barbels or feelers; sluggish habit, living for the most part on bottom of muddy rivers, lakes, or ponds. Front of dorsal fin often armed with long, powerful, poisonous spine. Found chfly. in tropical and sub-tropical regions.



Catfish

**Catgut**, strong, thin cord made of intestines of sheep or other animal; used for stringed instr. and, when sterilised, in surgery.

**Catharists** (Gr., "the pure ones"), name given at various times to certain Christian sects, members of wh. professed exceptional purity of life and doctrine.

**Catharsis**, in drama, the purging, or ennoblement of human passions through the sufferings of the hero.

**Cathartic**, purgative or aperient medicine.

**Cathay**, name given by Marco Polo (q.v.) to region in E. Asia; applied poetically to China.

**Cathedral**, (Gr.) principal church of a diocese, in which bp.'s throne is placed. **C. school**, in Mid. Ages, school attached to

cathedr. or collegiate church, and controlled by secular clergy; had much to do with development of universities.

**Catherine, St., of Alexandria**, condemned to be broken on the wheel; martyred. 307; tutelary saint of maidens; commem. Nov. 25th. **C. of Siena, St.** (1347-80), a mystic; worked for unity of Church; commem. Apr. 30th.

**Catherine**, name of two empresses of Russ.: **C. I** (1680-1724-27), wife of Peter the Great; fndd. Russ. Academy of Sciences; **C. II** (1729-62-96), wife of Peter III; after his murder she ascended throne as Empress; introd. new laws; encouraged art and letters.

**Catherine of Aragon** (1485-1536), dau. of Ferdinand and Isabella of Spain; 1st qn. (1509) of Henry VIII of Eng.; mother of Qn. Mary; marriage decl'd. void by Abp. Cranmer, 1533. **C. of Braganza** (1638-1705), dau. of John, Duke of B.; qn. (1662) of Charles II of Eng. **C. Howard** (d. 1542), dau. of Lord Edmund Howard; 5th qn. (1540) of Henry VIII; convicted of adultery and executed. **C. de' Medici** (1519-89), dau. of Lorenzo de' M.; Qn. (1533) of Henry II of Fr.; regent for her son, Charles IX, 1560-63; inspired massacre of St. Bartholomew, 1572. **C. Parr** (1512-48), dau. of Sir Thomas P.; 6th qn. (1543) of Henry VIII, whom she outlived. **C. of Valois** (1401-38), dau. of Charles VI of France; qn. (1420) of Henry V of Eng., after whose death she marr. Owen Tudor (1425), their son, Edmund, becoming father of Henry VII of England.

**Catheter**, tube for introd. through any narrow passage into a body cavity, e.g., bladder, to withdraw urine.

**Cathetometer**, (phys.) instr. for measuring differences of level, partic. in surfaces of liquids; consists of a telescope provided with sighting wires and sliding on a graduated bar.

**Cathetus**, the perpendicular on a line or surface. In rt.-angled triangle there are two catheti.

**Cathode rays**, (phys.) invisible rays emitted by cathode of a discharge tube; sim. in char. to Beta rays (*q.v.*) of radio-active substances; consist of free electrons (negative electr. atoms) with a velocity up to one-tenth that of light and are deflected from their direct course by elec. and magnetic



Catherine II

fields. Crystals exposed to them glow with characteristic colours; rubies and calcspar glow red, diamonds light green; alkaline salts assume var. colours thr. chem. change, thus bromide of potassium becomes blue. Where they strike a solid, X-rays are produced.

**Catholic Apostolic Church, The:** see IRVINGITES. **C. Emancipation Act**, (U.K.) 1820, removed all disabilities under wh. Rom. Caths. laboured and opened to them all offices under Crown except those of regent, and ld. chanc. **C. Epistles**, (N.T.) 7 epistles to "all" communities of the Church, *viz.*, those of James, Peter (2), John (3), Jude. **C. Majesty**, title borne by Kgs. of Spain from 1474 to 1930.

**Catholicos**, title of Patriarchs of Armenian and Nestorian churches.

**Catiline** (Lucius Sergius Catilina, c. 108-62 B.C.), Rom. noble, conspir. agst. Repub. 63 B.C.; exposed and denounced by Cicero (*q.v.*).

**Cation:** see KATION.

**Catkin**, flower of several trees, spike-shaped and pendant; deciduous.

**Catmint, catnip** (*Nepeta cataria*), aromatic plant with tall spikes of small blue flowers.

**Cato**, Marcus Porcius (234-149 B.C.), *the Censor*; Rom. patriot and philos.; opposed spread of Hellenic culture in Rome; his gt.-grandson **Marcus Porcius C.** (95-46 B.C.), *Uticensis*; stoic philos.; committed suicide at Utica.

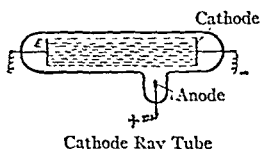
**Cat's-eye**, semi-precious stone, yellowish brown; a variety of quartz or chrysoberyl. **C.'s-foot**, folk name for 1) ground ivy; 2) *Antennaria dioica*, mountain cudweed, also called *everlasting*; grows 6 in. high; downy leaves; white or pink flowers wh. retain their colour and shape when dried. **C.'s-tail grass**, also known as timothy grass, *Phleum pratense*, common meadow grass.

**Catskill Mountains**, group, in N.Y. State, belonging to Alleghanies; highest peak *Hunter Mtn.*, 4,030 ft.; C. Reservoirs are chf. source of N.Y. water supply (aqueduct, 92 m.); holiday resort.

**Cattaro, Kotor**, Yugoslav port in Bocche di Cattaro, Dalmatia; pop., 4,800; Cath. and Gr. Orthodox diocese.

**Catterick**, vil., N. Riding, Yorks, on Riv. Swale, 7½ m. S.S.W. Darlington; milit. camp; race-course at **C. Bridge**, 1 m. N.

**Cattle**, bovine animals; name usu. denotes domesticated variety. Horned ruminants. Male: *bull* (young castrated bull, *steer*, later *ox*); female: *cow* (before calving, *heifer*); young of either sex: *calf*. For breeds: see SHORTHORN; HOLSTEIN; HEREFORD; HIGHLAND; KERRY; CHILLINGHAM; CHANNEL ISLANDS; for statistics, see next page. **C.-plague**, acute infectious disease of cattle, lasting 4-10 days, often fatal.



Cathode Ray Tube



**Cattleya**, tropical Amer. orchids with very handsome flowers.

**Catullus** (87-54 B.C.), the greatest purely lyric Rom. poet: love poems to *Lesbia*; satirical epigrams; 1st master of hendecasyllabic (*i. e.*, 11 syllabled) verse.



Cattleya

**Caucasian Area**, North, prov. in Russian S.F.S.R., bounded W. by Ukraine, Sea of Azov and Black Sea; S. by Abkhazia and Georgia; E. by Daghestan and Kalmuck; N.E. by Stalingrad; c. 114,000 sq.m.; pop., 8,325,000; rich deposits of manganese ore and petroleum; many mineral springs; wheat, tea, tobacco, and wine. Chf. tn., Rostov-on-Don (*q.v.*). **C. Language:**

see LANGUAGE SURVEY. **C. races:** Chechens, Ossetians, Kabardians, and Cherkess. See TRANSCAUCASIA.

**Caucasus**, mtn. range (c. 920 miles), extends from N.E. shore of Black Sea to Apsheron penins. on the Caspian Sea; forms Europe-Asia boundary; Mt. *Elbruz* (18,480 ft.), *Jaikyl* (17,780 ft.). Georgian and Ossetic strategic roads pass thr. Central C. 6,000-9,000 ft. abv. sea lvl. **Little C.** (*Armenian Highlands*) include Mt. *Ararat* and L. *Gokcha*; rivs. in area: *Kuban*, *Rion*, *Aras*, *Kura*, and *Terek*; many glaciers, peaks, and extinct volcanoes.

**Cauchy**, Aug. Louis (1789-1857), Fr. mathematician; joint founder of theory of functions.

**Caudine Forks**, pass in Italy in which Romans surrendered to Samnites, 321 B.C.

**Caul**, 1) network cap worn by women, 15th and 16th cents. 2) (Physiol.) Membranous bag enclosing the foetus, sometimes enveloping head of new-born child; formerly regarded as lucky omen and worn as a charm agst. drowning.

**Cauliflower**, variety of cabbage (*q.v.*) with highly developed and thickened flower-head; cultivated as table vegetable. See BROCCOLI.

**Caulk**, to make watertight, esp. the seams of wooden vessel with oakum and pitch; term also used for "making watertight" of steel plates by means of compressed air tool.

**Causal**, causative; effective as a cause or origin. **C. clause**, (gram.) clause beginning with *because* or *since*. **C. nexus**, causality, connection betw. cause and effect. **Law**

of causation, dogma that every event must necessarily have a cause (of which it is the effect).

**Cause célèbre** (Fr.), notorious, celebrated trial or case.

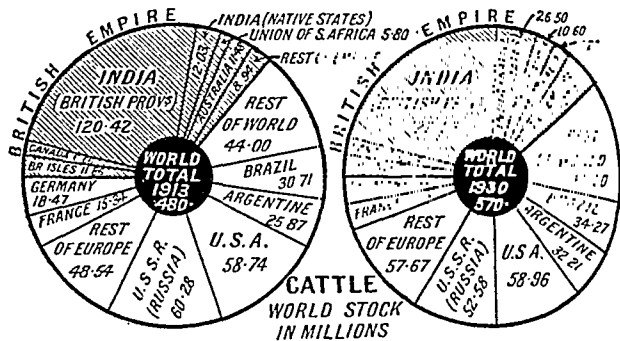
**Caustic**, corrosive, burning; (fig.) bitterly satirical. **Lunar c.**, nitrate of silver.

**Cauterets**, spa, dépt. Hautes-Pyrénées, S.W. France; pop., 1,050; warm springs; winter sports.

**Cauterization**, surg. oper. for removal of tissue by diathermy, hot iron, or caustic substance.

**Cauvery**, riv., S. India, rises in Coorg (W. Ghats) and flows through Mysore and Madras into Bay of Bengal (extensive delta); length 415 miles.

**Cavalier**, knight or horseman; a gentleman; in Eng. history, partisan of the Royal



World stock has increased by nearly 20% and Brit. Emp.'s at slightly higher rate. Brit. India, showing little change, is still by far largest holder (though difference of quality should be borne in mind when making comparisons with other countries). No particular country shows a remarkable change, the world total being chiefly affected by small absolute changes of countries making up Rest of World.

cause against Cromwell. **C. Poets**, Eng. Royalist poets of 17th cent., incldg. *Lovelace*, *Suckling*, *Sedley*, *Rochester*, etc.

**Cavalleria Rusticana**, opera by Mascagni (*q.v.*) (1890).

**Cavalry**, mounted soldiers, armed with swords or lances and, in mod. times, with carbines.

**Cavan**, 1) nthrn. inland co., I.F.S.; area 730 sq.m.; pop., 82,500; surface undulating or mountainous (*Cuiclagh*, in N.W. 2,190 ft.); lakes, mineral springs; agric., distilling. 2) Cap. Co. C., pop., 3,000.

**Cavatina**, solo song, simpler in form than an aria.

**Cave**, Geo. C., 1st visct. (1856-1928), Eng. statesman; called to bar, 1880; M.P. for Kingston, 1906; solicitor-gen., 1915; home sec. in 1st Coalition Govt. 1916; ld. chancellor 1922, 1924-28.

**Cave, cavern**, partly enclosed, natural hollow space under the ground, usu. with an opening or mouth (sometimes horizontal); often an object of superstitious veneration

as the abode of spirits or as a gateway to the Lower World. In prehist. times the abode of man; in all ages used as shelter or burial-place. Source of many discoveries of the Stone Age.

**C.-bear**, extinct plantigrade; mammal of the European Ice Age. **C. paintings**, prehistoric paintings, usu. of animals, and prob. of Stone Age Per., done on the interior walls of caves, rock-shelters, etc., esp. in Spain and S. France.

**Caveat** (Lat.: let him beware), a caution. **C. emptor** (Lat., let the buyer beware), sale of goods is at the buyer's risk. **Cave canem**, Lat., beware of the dog.

**Cavell**, Edith Louisa (1865-1915), Brit. nurse; 1st matron of Berkendael Medical Institute, Brussels, 1907, wh. was organized as Red Cross hospital, 1914; arrested by Germans, 5 Aug., 1915, on charge of sheltering enemies; shot, 11 Oct., 1915, after saying, "Let there be no bitterness," bur. in Norwich Cath., 1919; statue (Sir Geo. Frampton) unveiled in London by Qn. Alexandra, 1920.

**Cavendish**, Lord Frederick Charles (1836-82), Brit. politic.; 2nd s. of 7th Duke of Devonshire; lib. M.P., 1865-82; priv. sec. to Gladstone, 1872-73; apptd. chf. sec. to lord lieut. of Ireland, 1882; stabbed in Phoenix Park on day of arr. in Dublin. **C., Henry** (1731-1810), Eng. chem., disc. hydrogen, carbon dioxide, etc. **C., Thomas** (1555-92), Eng. circumnavigator.

**Cavendish** (pseudon.), see JONES, HENRY.

**Cavendish-Bentinck**: see PORTLAND, DUKES OF.

**Caviare**, salted hard roe of Russ. sturgeon, and sterlet. A great delicacy. *Malasol*, finest C., only slightly salted.

**Cavity**, (physiol.) a hollow, either normal or pathological. Space above the hard palate is a normal cavity (*antrum*); abnormal cs. occur in the lungs in tuberculosis.

**Cavour**, Camillo, Ct. di (1810-61), It. statesm.; achieved unification of Italy, 1861.

**Cavy**, burrowing tailless rodent, found mainly in S. Amer.; incl. the guinea-pig (*g.u.*); the **Giant c.** is the capybara.

**Cawdor**, vil., Nairnsh., Scot., 6 m. S.W. Nairn. **C. Castle** (15th cent.) is made by Shakespeare the scene of Duncan's murder by Macbeth, Thane of C. (1040). **Earldom of C.**, created 1827, was preceded by a barony, 1796.

**Cawnpore**, city, United Provinces, India, on Riv. Ganges; cap. dist. same name (area 2,400 sq.m.; pop., 1,300,000); mil. station; memorial church and gardens on site of massacre; pop., 243,800. **C., the Massacre of**, 15 June, 1857, during the Indian Mutiny. The garrison surrendered

to the Sepoys under a pledge of safety, but were ruthlessly massacred to the number of about 450.

**Caxton**, William (c. 1422-91), first Eng. printer; learned printing (prob. at Cologne), c. 1471; printed first book, his own trans. of *Le Recueil des Histoires de Troie* (prob. at Bruges), c. 1474; returned to Eng., 1476, and pubd. from his press at Westminster nearly 100 books, 1477-91, Earl Rivers' trans. of *The Dictes and Sayings of the Philosophers*, 18 Nov., 1477, being the first dated, and, prob. the first book printed in English. Buried at St. Margaret's, Westminster.

**Cayenne**, cap. and fortress of French Guiana, on Is. of C.; pop., 13,500; penal settlement. **C.-pepper**, the dried ripe fruit of *Capsicum minimum*, small shrub indigenous to S. India, cultivated in Sierra Leone and Zanzibar and other tropical countries. Other varieties of *capsicum* are also used for the purpose. See PAPRIKA; PEPPER.

**Cayuga Lake**, in N.Y. State, U.S.A., 66 sq. miles.

**Ch**, (chem.), symbol of columbium.

**C.B.**, abbr. Companion of Order of the Bath.

**C.B.E.**, abbr. Commander, Order of Brit. Empire.

**c.c.**, abbr. cubic centimetre.

**C.C.C.**, abbr. Central Criminal Court.

**Cd**, (chem.) symbol for cadmium.

**C.D.V.**, abbr. *carte de visite* (Fr.), a size of photographs.

**C.E.**, abbr. Civil Engineer; Ch. of England.

**Ce**, (chem.) symbol of cerium.

**Cebu**, 1) one of the Philippine Isls.; 1,695 sq.m.; pop., 650,000; 2) seapt., cap. of isl., pop., 65,500.

**Cecilia**, St., patr. saint of music, mart. c. 176; day, Nov. 22nd.

**Cecil of Chelwood**, Robert Cecil, 1st visct. (1864- ), Brit. statesm.; chm. Supreme Econ. Council, 1919; jnt. pres. League of Nations Union, 1919.



Cedar

**Cedant arma togae** (Lat.), 'let arms give place to the toga, i.e., military to civil power.

**Cedar**, *cedrus*, evergreen coniferous trees; best known variety is **C. of Lebanon** (*C. Libani*); grows in Syria, Asia Minor, and cultivated in Eur. for its beauty; the aromatic wood used for lead pencils is obtained from the **Red C.** (*Juniperus virginiana*).

Name also applied to a number of unrelated tropical trees. **C.-wood oil**, used in perfumery and in microscopy with oil-immersion lenses.

**Cedilla**, hook sign under letter "c" (ç) indicating *S* sound; used only before a, o, u.

**Cedron**, N.T. form of Kidron (*q.v.*).

**Ceiling**, (bldg.) inner roof of a room; consists of: 1) framing of joists, 2) boarding above, and 3) packing between; under side usually surfaced with plaster.

**Celandine**, *Chelidonium majus*, member of poppy family; yellow flowers; yellow acrid juice pop. supposed to cure warts.

**Cela va sans dire** (Fr.), that goes without saying; it is agreed.

**Celebes**, isl. on Equator, Dut. E. Indies, betw. Borneo and the Moluccas; largest of Sunda Isls.; 72,700 sq.m.; pop. 3,528,775 (6,500 Europeans); form great mountainous penins. (*Muna*, 10,000 ft.) enclosing deep gulfs (Tomini or Gorontolo in N.E., Tolo or Tomaiki in E., Boni in S.); N.E. peninsula volcanic; short rapid rivs., several lakes; dense forests in interior; exports iron ore, coffee, coconuts, rice, tobacco. Politically divided into: 1) govt. of Celebes, 2) residency of Menado, 3) E. peninsula and Bangaya Is. (included in residency of Ternate, *q.v.*). Cap., *Macassar*, on W. coast S. penins.; second port, Menado, on N. coast N.E. penins. Discovered by Portuguese, 1512; Dut. colony since 1819. **C. Sea**, betw. C. and N. Borneo.

**Celebrant**, (R.C.Ch.) priest who reads central part of the Mass and performs act of Consecration.

**Celeriac**, plant resembling celery (*q.v.*); cultivated chfly. in N. Eur. for its edible root.

**Celery**, *Apium graveolens*, umbelliferous plant. Wild C., or smallage, is inedible, but the leaf-stalks of the cultivated variety, either blanched or green, are eaten raw as a salad, or cooked as a vegetable. The seeds are used in the treatment of rheumatism.

**Celestina**, *Tragi-comedy of Calisto and Melibea*, Span. prose drama in 21 parts; 1st part attrib. to Rodrigo Cota (c. 1480).

**Celestine**, name of 5 popes, of whom the most import. historically are: **C. I**, St. (422-32), promoted Ch. in Eng. and Ireland. Convoled Council of Ephesus wh. condemned Nestorian heresy. **C. V**, St. (July-Dec., 1294), abdictd.; fndr. of Benedictine order of Celestinians.

**Celestinian Hermits**, branch of Franciscans (*q.v.*) practising the rule with great strictness; named after Pope Celestine V. **Celestinians**, congregtn. of Benedictine monks founded c. 1254 by the hermit, Peter of Morrone (afterwards the "Hermit Pope," Celestine V); spread through France, Italy, and Germany.

white or bluish sulphate of

**Celibacy**, unmarried state. In R.C.Ch. condition required, with varying strictness, since before Council of-Nicea (325), of all in Holy Orders; married men now ordained only if wife consents and herself makes vow of chastity. In Gk.Orth.Ch. secular priests may be married men, but may not re-marry on death of wife; bps. usually chosen from monastic orders. In Protestant Chs. clergy under no vows of celibacy.

**Cell**, 1) (biol.) smallest and simplest form of life, consisting of cell-wall, protoplasm, and cytoblast or nucleus; higher animal and vegetable life consists of innumerable Cs. forming cellular tissue. Most common method of reprod. of C. is by *karyokinesis* or *mitosis*, in wh. minute processes or threads are produced. 2) Small group of political workers; esp. applied to Communists. 3) Photo-electric cell (*q.v.*). 4) Galvanic or primary cell, accumulator cell generating electric current. 5) Standard cell: see WESTERN ELEMENT.

**Celle**, tn. in Hanover, dist. Lüneburg; pop., 25,500; petroleum.

**Cellini**, Benvenuto (1500-71), It. Renaiss. sculptor and goldsmith; *Autobiography*.

**Cello**, violoncello, large deep-toned fiddle.

**Celluloid**, substance formed by dissolving cellulose in a mixture of nitric and sulphuric acids, forming mono- and di-nitrocellulose, to wh. camphor, either nat. or synth., is added; very inflammable. Used for photog. films and in manuf. of small fancy articles.

**Cellulose**, plant tissue, chem. a carbo-hydrate; constituent of wood pulp; extens. used in manuf. of celluloid and artificial silk (*q.v.*). Cotton contains abt. 90% cellulose.

**Celsius**, Anders (1701-44), Swed. astron.; introd. centigrade thermometer (*q.v.*), c. 1742.

**Celt**, 1) (ethnol.) general name for anc. Aryan-speaking race inhabiting Centr. and W. Europe. Applied by anc. writers (who called them *Keltioi* or *Gauls*) to tall, fair-haired peoples living N. of the Alps, incl. the Nordic and Alpine races, though, in modern usage, the word often connotes the short, swarthy peoples of France, Gt. Brit., and Ire., speaking the so-called Celtic languages (see LANGUAGE SURVEY). Fl. in Centr. Europe during La Tène period (*q.v.*); advanced into France, Spain, Italy (occupying Rome, 390 B.C.), Macedonia, Thessaly, Phocis (280 B.C.), Thrace, Asia Minor (defeated by Eumenes II of Pergamon), Gt. Brit. (Brythons), and Ire. (Goidels). 2) (prob. Lat., *cellis*: "chisel") Prehistoric sharp-edged implement of stone, bone, or bronze, of various shapes, used as axe, hoe, or chisel.

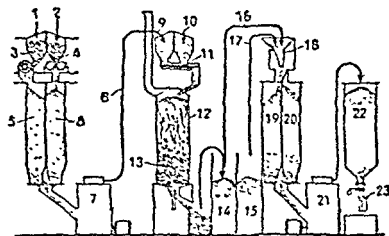
**Celtic**: see LANGUAGE SURVEY, *Indo-Ger.*, A group. **C. Revival**, movement at end of 19th cent. to re-establish Celtic literature freed from Eng. influence; chief

repres.: W.B. Yeats (Irish), "Fiona Macleod" (Scottish).

**Cembalo**, horizontal, stringed instr. of zither type, played by hammers; has a harp-like sound. Also a name for harpsichord.

**Cembalon**, small keyless piano in gipsy orchest., tapped with felted drumsticks.

**Cement** (Portland, Roman), consists of a mixture of silicates and aluminates of calcium, wh. is decomposed by water with



Cement Manufacture

1) Limestone. 2) Clay. 3) Crusher for Limestone. 4) Rolling Mill for Clay. 5) Silo for Broken Limestone. 6) Silo for Broken Clay. 7) Mulling, Drying, and Sieving. 8) Supply-pipe for 9) Rough Powder. 10) Fuel. 11) Mixer. 12) Furnace. 13) Material sintered to Clinker. 14) Clinker Silo. 15) Silo for Gypsum. 16) Clinker. 17) Plaster of Paris. 18) Breaker for Clinker and Plaster of Paris. 19) Silo for Plaster of Paris. 20) Silo for Clinker. 21) Milling of the Mixture. 22) Cement Silo. 23) Putting into Sacks

formation of free lime; the mass then slowly forms fresh chem. combinations in interlaced crystals, becoming extremely hard and resistant to water. Made by calcining in furnace a mixture of clay and limestone, or natural earths having such or sim. composition, with coal dust. Resulting *clinker* is ground, with add. of plaster of Paris (up to 3%), to finest poss. powder. Other raw materials: blast furnace slag, volcan-tufa. Annual world-prod., 72 mill. tons.

**Cementation steel**, soft (mostly wrought) iron, carbonized by heating with charcoal powder (cementing); carbon contents: 0.9-1.6%

**Cementite**: see STEEL.

**C.E.M.F.**, abbr. counter-electro-motive force.

**Cenci**, Beatrice (1577-99), Rom. noblewoman; dishonoured by her father, whom she killed; executed. Subject of dramatic poem by Shelley (q.v.).

**Ce n'est que le premier pas qui coûte** (Fr.), it is only the first step that matters, i.e., is difficult.

**Cenis, Mont**: see MONT CENIS.

**Cenobites**, monks living a communal life in a convent, in contrast with anchorites or hermits. **Cenobiarch**, the superior of a *Cenobium* in which C. lived together.

**Cenotaph**, memorial to a deceased person whose body is elsewhere. C. in Whitehall, London, Eng., monument to those killed in

World War (1914-18), designed by Sir Edwin Lutyens; the scene of annual commem. service on Armistice Day (Nov. 11th).

**Censer**, vessel used in religious ritual for burning incense (q.v.) swung on chains; a thurible.

**Censor morum** (Lat.), censor of morals.

**Censors**, officials of anc. Rome, who every 5 years conducted the *census* (i.e., classif. of all citizens acc. to their capabilities), and assigned to them their places in the State.

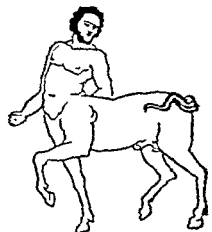
**Censorship**, term now used for governmental suppression of statements, facts, or opinions the publication of which is, for any reason, undesirable. In the U.K. this is officially applied only to *stage plays*, which have been subject to control since temp. Henry VII; present system dates from 1737, when a Licensing Act prohibited the acting in public of any play not licensed by the Lord Chamberlain, who operates through an Examiner of Plays, and (since 1909) can refer in cases of doubt to a representative committee of arbitrators. *Cinematograph* films are unofficially licensed by a film trade organisation, the Brit. Board of Film Control; local authorities may suppress exhibition of any film in their own sphere of adminstrn. Home Office may authorise postmaster general to seize specified *postal communications*. Exc. in war time, *printed matter* (advertisements, books, the press) has been exempt from restriction since 1693, etc., except in so far as they may contravene the laws of libel, blasphemy, obscenity, etc. In Irish Free State allegedly obscene or undesirable books are subject to censorship by an *ad hoc* board. In war time all such restrictions are widened and extended. **Religious c.** most complete in R.C.Ch.; see INDEX LIBRORUM PROHIBITORUM.

**Census**, enumeration, usually of pop. as under Rom. Emp. and (now quinquennially) in Eng. Also **C. of production**, official collectn. of statistics of productn. of individ. producing firms; Brit. census of manufactures has been taken in 1907, '12, '24, and '30.

**Cent.**, abbr.: 1) *centum* (Lat.), 100; 2) centime; 3) cental or quintal (100 lbs.).



The Cenotaph, London



Centaur

**Cental**, wt. of 100 lb. used in measuring corn.

**Centauro**, (Gr. myth.) fabulous creature; upper half human, lower half horse (see **IXION**). (Astron.) constell. of great brilliance; see **PL. ASTRONOMY**, S.C.H., D.

**Centaury**, **Lesser**, *Erythraea centaurium*, plant of gentian family with small red blossoms; found in meadows and dry places; in folk med. used as a bitter stomachic.



Centaury

**Centering**, (bldg.) temporary framework, usu. of wood, used to support arched or vaulted work during construction.

**Centesimal** (Lat.), having a hundred parts.

**Centi-**, (metric system) hundredth part of a measure or weight unit, e.g., centimetre = 1/100 metre.

**Centigrade**, term applied to the thermometer (*q.v.*), as divided by Celsius into 100 degrees, ranging from the normal freezing-point (0°) to the boiling-point (100°) of water.

**Centipede**, insect of order *Myriapoda*



Centipede

(*q.v.*), having a body consisting of from 15 to 100 segments, the head bearing two long antennae. See also **SCOLEPENDRA**.

**Centner**: see **ZENTNER**.

**Centovalli** (100 Valleys), mountain vall. in the Canton of Ticino, Switzerland, with elec. rly., Locarno-Domodossola.

**Central Alps**, section of the Alps betw. Splügen Pass and Tyrol; includes Albula, N.E. Swiss, Rhaetian, and Tridentine Alps.

**C. America**: see **AMERICA, CENTRAL**. **C.**

**Australia**: see **AUSTRALIA, CENTRAL**.

**Central banks**, bankers' banks, i.e., those acting as bankers to private or joint-stock banks and (usu.) to the govt.; they usu. have exclusive right to issue notes and exercise control over money market, and for foreign exch. mkts., deposits by other banks are considered by the latter as cash; see **BANK OF ENGLAND**; **DISCOUNT MARKET**; **ISSUING BANKS**; **OPEN MARKET OPERATIONS**.

**C. heating**, heating by means of centr. furnaces, heat being carried by water, low-pressure steam, hot air, to where it is required, whence it is emitted from radiators.

**C. nervous system**, consists of brain (*q.v.*) and spinal cord; latter is encased in the bony vertebrae and extends down to 2nd lumbar vertebra. This system must be distinguished from *Autonomic* or *Involuntary N.S.*, wh. consists of nerves running to organs and blood-vessels. See **NERVOUS SYSTEM**. **C.**

**Powers**, Ger., Aus.-Hung., Bulg., Turk. during the World War.

**Central Provinces and Berar**, prov. Centr. India; area, 99,876 sq.m.; pop., 15,508,000; rice, tea, cotton, millet, oil-seeds; coal and manganese ore; cap., *Nagpur*. **C. Railroad of New Jersey**, U.S.A., operates in New Jersey and Pennsylvania: 692 miles.

**Centralization**, in pub. admin., tendency to gather functions in hands of nat. gov. Centralization of some functions may go side by side with decentralization of others.

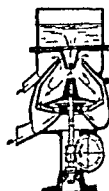
**Centre**, 1) in Continental politics, there is commonly a Centre party combining now with Right and now with Left. See **LEFT, RIGHT**. 2) (Tech.) To fix axis of rotation of a piece of work. **C.-board**, (naut.) triangular-shaped keel or board, wh. can be let down or hoisted in through a slot in bottom of sailing boat; increases stability and lessens drift.

**C. of gravity or mass**, point in a body at wh. its wt. appears to act. A body free to turn about an axis passing thr. its C. of G. will rem. in any position since its wt. produces no turning moment. **C. punch**, a punch with a hard conical head, used for making a small depression at point where a hole is to be drilled.

**Centrifugal casting**, prod. by casting molten material, e.g. iron, white metal, into rapidly revolving moulds (*chill-moulds*), in order to obt. a firm, sharp casting, e.g. for tubes, also for hollow objects of concrete, etc. **C. force**, force exerted by a body moving in a curved path along radius of curvature. In a rotating body (flywheel; motor armature) it produces a stress wh. tends to cause body to burst into pieces. Varies directly as square of no. of revolutions per. second. **C. pump**, mechan. driven; efficient pump, with interior fast-revolving blades (runner wheels) wh. drive liquid into pipe line by centrifugal force.

Used in mines as *water pump*, in machinery as *oil pump*.

**Centrifuge**, machine for separating liquids and solids, or emulsions of liquids of different densities. Mixture in rapidly revolving drum is acted upon by centrifugal force.



**Centroid**, (geom.) point of a figure fixed with regard to the point at which its moment, with regard to any plane, is the same as if the whole volume, area or length were concentrated at this point. Sometimes called centre of volume, C. of area, or C. of arc. Cf. **MOMENT**.

**Centurion**: see **CENTURY**.

**Century**, aggregate of 100 things. 1) Body of infantry in Rom. army, orig. consisting of 100 men and commanded by a *centurion*; formed 60th part of a legion (*q.v.*). 2) Period of 100 years reckoned back-

wards or forwards from a given epoch, esp. from beginng. of Christian Era (e.g., 1801 to 1900 = 19th cent.). 3) (Sport) Score of 100 (e.g., runs at cricket).

**Ceos, Kea**, Gr. island in the Aegean Sea (Cyclades) 13 m. by 8; fertile; fruit farming and vine culture.

**Cephalonia**, largest of the Ionian Islands (Greece); 336 sq.m.; pop., 66,415; olive growing, vine culture; olive-oil manuf.; cap., Argostoli, pop., 8,300; seapt., fishery.

**Cephalopoda**, class of the Mollusca including octopus, cuttlefishes, and nautilus (q.v.).

**Cepheids**, variable stars of considerable brightness in constell. Cepheus (q.v.).

**Cepheus**, (Gr. myth.) father of Andromeda; (astron.) constell.; see PL. ASTRONOMY, N.C.H., H.

**Ceram, Serang**, largest of Molucca Isls. (Dutch E. Indies); area c. 7,000 sq.m.; pop., 78,630; mountainous, thickly forested.

**Ceramics**, art of manufacturing in clay, known generally as pottery, i.e., bricks and tiles, earthenware, stoneware (distinguished from earthenware by being non-porous) and porcelain (china), distinguished by translucency due to use of kaolin (q.v.). Reached highest perfection in terra-cotta vases and statuettes (Tanagra) of Greece, faience (glazed earthenware) of Persia, and porcelain of China. Porcelain manuf. flourished in Europe in 18th cent. (Sèvres, France; Dresden, Germany; Chelsea, Derby, etc., England). Majolica (faience), the characteristic pottery of Italian Renaissance (Gubbio, Faenza). The faïences of Moorish Spain (Hispano-Morisc ware), Nuremberg and Delft, also of great beauty.

**Cerberus**, sleepless guardian dog (with 3 heads) of Gr. underworld.

**Cerdonians**, relig. body of ascetics wh. appeared in Rome A.D. 138, and abjured marriage, wine, and meat.

**Cereal**, plant producing grain, e.g., wheat, barley, oats, etc.

**Cerebellum**, part of brain situated below occipital or hind portion of cerebrum; controls muscular co-ordination. See BRAIN.

**Cerebro-spinal fever, spotted fever, cerebro-spinal meningitis**, acute infectious disease in which there is inflammation of the meninges (membranes) of the brain and spinal cord; outset characterized by headache, fever and stiffness of neck. Often fatal within first week; treatment with serum (q.v.). **Cerebrum**, the princ. part of the brain, the upper and anterior portion. It consists of two hemispherical masses and a central part (the vermis).

**Ceres**, 1) Rom. goddess of fertility; Gr. Demeter. 2) Asteroid, 160 m. in diameter, discovered by Piazzi at Palermo in 1801.

**Ceresin**, purified ozocerite, min. wax;

occurs in var. parts of the world in neighbourhood of coalfields.

**Ceriph**, fine line at top or bottom of a letter in printing.

**Cerium**, (chem.) rare metallic element, sym. Ce, at. wt. 140.13; occurs in monazite in assoc. with thorium; cert. salts are used in manuf. of incandescent gas mantles, tracer bullets, and in pyrotechnics; alloys with iron used for sparking "stones" for pocket lighter.

**Cernauti, Czernovitz**, cap. of Bukovina, Rumania, on Riv. Pruth; pop., 90,000; Gr. Orthodox abpric.; univ.; cattle and corn trade. Austrian, 1775; scene of heavy fighting in World War.

**Certificate of origin**, (commer.) document evidencing country in wh. merchandise was produced; reqd. by customs authorities where preferential tariffs are in force, e.g., commodities in reg. to wh. Brit. import duties on Empire goods are lower than on foreign goods: see NATIONAL MARK.

**Certosa di Pavia**, Carthusian monastery, 5 m. N. Pavia; built 1396-1507; begun in Gothic (nave), completed in Renaissance style; notable cloister; Palazzo Ducale, part of monastery, is now a museum.

**Certum est quia impossibile** (Lat.), it is true because it is impossible; phrase of Tertullian (q.v.) indicating that it is the logical improbability of the supernatural that makes it credible.

**Cerussite**, (mineral.) carbonate of lead (PbCO<sub>3</sub>), an important lead ore; varies from colourless or white to grey or green; crystalline; transparent or translucent; occurs in Nassau and elsewhere in Germany, in Pennsylvania and New South Wales.

**Cervantes** Saavedra, Miguel de (1547-1616), Sp. auth. and soldier: *Don Quixote* (q.v.), satire on romances of chivalry.

**Cervix** (*uteri*), neck of uterus or womb.

**Cesarewitch**, (horse-racing) Eng. handicap race (2 m. 2 fur.) held at Newmarket since 1830; named after Alexander II of Russia.

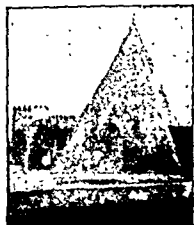
**Cession**, (commer.) surrender of property by a debtor to creditors.

**Cestius, Pyramid of**, Rome, tomb erected c. time of birth of Christ to Lucius C., a Gk. rhetorician; Shelley, Keats, and Goethe's son lie buried near by.

**C'est magnifique, mais ce n'est pas la guerre** (Fr.), "it is magnificent, but it is not



Cervantes



Pyramid of Cestius, Rome

war"; said by one

of the Fr. generals, with reference to the Charge of the Light Brigade, 1854.

**Cetatea Alba, Akkerman**, port on Riv. Dniester, Rumania, c. 10 m. from Black Sea; pop., 40,000; centre of Ruman. grain export.

**Cetera desunt** (Lat.), the rest is wanting, missing. **Ceteris paribus** (Lat.), other things being equal.

**Cetinje, Cetinye**, cap. banovina Zeta, Jugoslavia, pop., 5,495 (Gr. Orthodox Montenegrins); poss. of Montenegro till 1918.

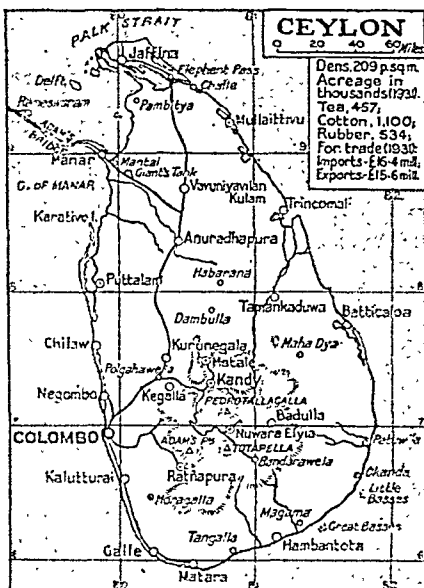
**Cetiosaurus**, huge fossil lizard; remains found in Jurassic (q.v.) system in Eng. indicate a total length of over 60 ft.

**C.E.T.S.**, abbr. Church of Eng. Temperance Society.

**Cette**, naval port on Medit. Sea; dépt. Hérault, France, pop., 36,500; zoological laboratory of univ. of Montpellier; seaside resort.

**Cetus**, the Whale, constell. contg. the long-period variable, Mira; see PL. ASTRONOMY, S.C.H., H.

**Cetywayo** (d. 1884); Kg. of the Zulus;



became their ruler during his father's lifetime (1857); at war with British, 1879 (actions of Isandhlwana, Rorke's Drift, Ulundi); captured and Zululand partitioned, 1879; d. soon after his restoration (1883) to a portion of his kingdom.

**Ceuta**, fortified port in Span. Morocco, opp. Gibraltar; pop., 25,300; part of Prov. of Cadiz.

**Cévennes**, S.E. edge of mtns. of the Massif Central, France; av. height, 4,920 ft. **War of the C.**, revolt of the Huguenot Camisards, 1702.

**Ceylon**, isl., Brit. crown colony, separated from S.E. India by the Gulf of Manar and Palk Strait, but almost connected with the mainland by Adam's Bridge (q.v.). Length to S. 270 m., width 140 m.; area 25,332 sq. m.; pop., 5,312,500, Sinhalese (or Cingaleses), Tamils, and Veddas (q.v.), 30,000 "burghers" (nationalized inhab. of European descent), 9,000 Europeans. Interior mountainous (Pedrutallagalla, 8,292 ft.; Adam's Peak, 7,360 ft.); climate tropical, except in tableland of Nuwara-Eliya (6,190 ft.). products include rice, breadfruit, maize, rubber, cotton, coconuts, spices, tea, coffee, cacao; pearl-fisheries in Gulf of Manar, minerals: plumbago, mica, gold, iron ore, sapphires, rubies, amethysts and other gems; chief exports: tea, rubber, copra, spices. Port. settlement, 1517-1656, then Dut., until 1796 (annexed to Brit. Crown 1802). Cap., Colombo; anc. cap., Kandy.

**Cézanne**, Paul (1839-1906), Fr. painter; dominant influence in 20th-cent. advanced school of art.

**cf.**, abbr. *conferatur* (Lat.), compare.

**cg.**, abbr. centigramme.

**C.G.S. System**, (phys.)

the system of "absolute" units based upon the centimeter, gram, and second, fixed by internat. agreement. The "practical" units are formed by multiplying or dividing by powers of 10, so as to obt. units of suitable size.

**C.H.**, abbr. Companion of Honour.

**Chablis**, Fr. tn. in dépt. of Yonne, pop. 2,000; also, white wine (Burgundy) produced in the district.

**Chaco Canyon**, national park (1907) in New Mexico, U.S.A.; 21,509 acres; extensive prehistoric ruins.

**Chaconne**, old form of instr. mus. in slow time, with a recurring bass theme. Derived from an old dance, probably of Span. origin.

**Chacun à son goût** (Fr.), everyone to his taste; more correctly written, *à chacun son goût*.

**Chad or Tsad, Lake**, fresh-water lake. Centr. Sudan, Africa, alt. 800 ft.; area c. 7,000 sq. m.; water-level dependent on Riv. Shari and other tribs.; W. side British (Bornu; N. Nigeria), the rest French.

**Chadwick**, George Whitfield (1854-1931), one of 1st important Amer. composers: *Rip Van Winkle*; *Melpomene*; *Adonais*; *Judith*.

**Chaeronea**, anc. Gr. city, Boeotia; victory of Philip II of Macedon over Gr. confederation, 338 B.C.

**Chaffinch**, bird, common in Gt. Brit. and throughout Europe; ruddy plumage, male with purplish cap; short, joyous song repeated many times in succession; feeds mainly on insects.



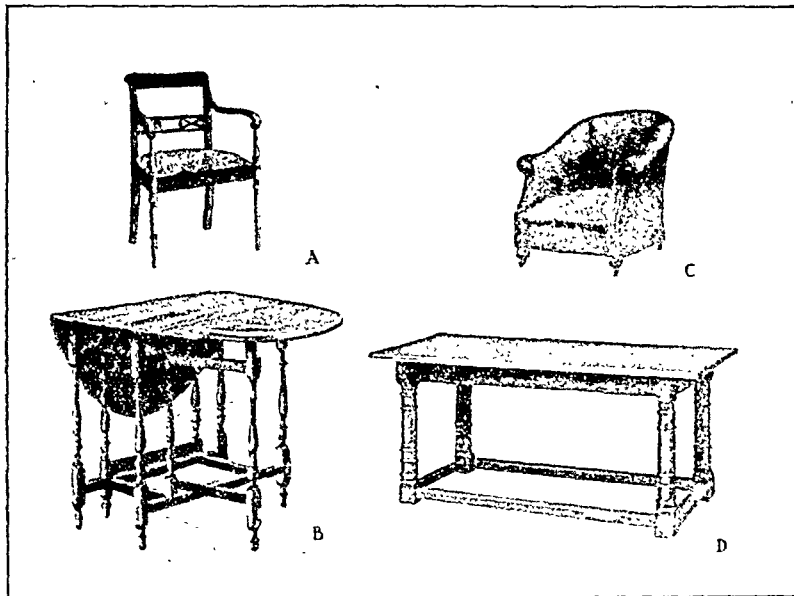
Cézanne

**Chagall, Marc** (1890- ), Russ. painter resident in Paris; *The Rabbi*.

**Chagos Archipelago:** see MAURITIUS.

**Chaillu, Paul Belloni Du** (1835-1903), Fr. traveller and explorer in African interior; later settled in America and became naturalized; *Explorations and Adventures in Equatorial Africa*, 1861; *A Journey in Ashango-*

**Chair, 1)** movable seat, usu. with 4 legs and back, with or without arms. In use from anc. times (Egypt, Greece, Rome); chair-design developed in 18th cent., esp. in Eng. and Fr. (see CHIPPENDALE; LOUIS XVI, SHERATON). C. may also be symbol of office and as such elaborate in structure; e.g. C. of St. Peter in St. Peter's Church,

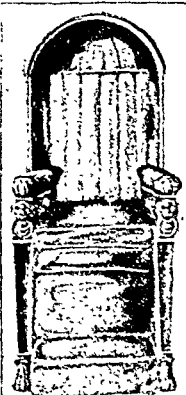


(A) Sheraton Elbow Chair  
(B) Gate-Leg Table

(C) Modern Easy Chair  
(D) Oak Dining-Table

land, 1867; *The Country of the Dwarfs*, 1872; *The Land of the Midnight Sun*, 1881.

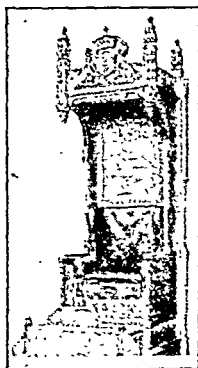
**Chain, 1)** number of sim. variously shaped pieces of metal each linking into the next. Used for carrying loads, also for driving over pulleys (*chain wheels*) having teeth which grip the links (ills. p. 204). 2) Linear measurement (66 ft.) used in surveying, 100 links; 80 chains = 1 m. **Sq. c.**, 16 sq. rods, poles, or perches. **C. mail**, armour made of interlocking iron rings. **C.-stitch, tambour-stitch**, a kind of embroidery, either hand or machine made, with small meshes wh. are joined like the links of a chain. **C.-store system:** see MULTIPLE SHOP SYSTEM.



Hall-porter's Chair

Rome (Byzantine), Coronation C., (13th cent.; ill. DESTINY). Speaker's C. in Hse. of Com. See also FURNITURE (ill.); SEDAN. 2) Status of one presiding over committee or similar body (*chairman*). 3) (rly.) Means of attachment of rails to sleepers. Consists of iron piece or pieces fastened to sleeper and forming a groove in which rail rests; held in place by a wooden wedge.

**Chalcedon**, anc. seapt. on Bosphorus, opposite Byzantium, on site of present Kadikoi. Fndd. by Megarians c. 650 B.C.; conquered successively by Persians, Romans, Goths, Persians (again), and Turks. "Synod of the Oak" held there, A.D. 403; **Chalcedonian Council:** 4th Oecumenical Council,

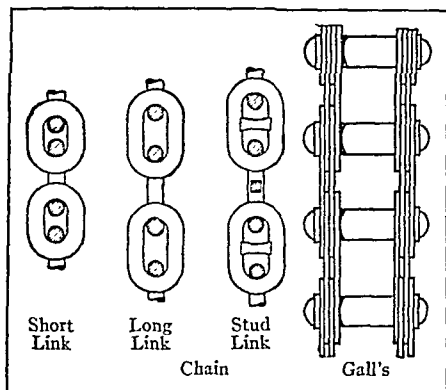


Speaker's Chair



A.D. 451, condemned Eutychianism and declared union of two distinct natures in one person of Christ.

**Chalcedony**, mineral, variety of quartz of varying colour, often striped. Chief constituent of many semi-precious stones, e.g., agate, onyx, heliotrope, carnelian.



Forms of Chain

**Chalcidice**, triple penins. in Gr. Macedonia, stretching into Aegean Sea; pop., 64,800; chf. tn., Polygyros; pop., 2,480.

**Chalcocite**: see COPPER GLANCE.

**Chalcopyrite**: see COPPER PYRITES.

**Chaldea**, Bibl. name of Babylonia.

**Chaldaeans**, Semitic immigrants c. 1000 B.C.; astrologers.

**Chaldee**, Aramaic dialect in wh. portions of bks. of Daniel, Ezra, and Jeremiah were written.

**Chaldron**, dry meas. of capacity containing 36 bushels. **C. of coal**, 52 cwt.

**Chalfont St. Giles**, vil., S. Bucks, 22 m. N.W. London; here Milton finished "Paradise Lost" and began "Paradise Regained," 1665; 2 m. S. is *Jordans*, a hostel and meeting-house of Society of Friends (tomb of Wm. Penn).

**Chalgrove**, vill., Oxfordsh.; scene of defeat of Parliamentarians by Prince Rupert, 1643, when John Hampden (q.v.) was slain.

**Chaliapine**, Fyodor Ivanovich (1873- ); Russ. bass singer; debut, 1894.

**Chalice**, (eccles.) cup used in celebration of the Eucharist (q.v.).

**Chalk**, mineral, carbonate of lime, formed from the shells of minute organisms of Cretaceous period (see GEOLOGICAL FORMATIONS). Present in the form of grey limestone nearly everywhere; pure white in Denmark, S. England, and Champagne. Chief use, for making lime (q.v.) by burning in kilns. Whiting, used as pigment, mixed with size, casein, etc., also as whitewash and

distemper, is fine chalk. **Prepared C.**, precipitated chalk (calcium carbonate); used as toothpowder, for painters' colours, polishing, etc.

**Challenge cup**, prize presented for ann. competition; may sometimes be won outright by 3 or more consec. victories.

**Challis**, soft fabric of wool or silk, or mixture of both.

**Chalmers**, Thos. (1780-1847), Scots divine; fndd. Free Church of Scotland, 1843. Wrote *Institutes of Theology*.

**Chalmette**, nat. monument (1907) in Louisiana, U.S.A., in mem. of battle of New Orleans (1812).

**Châlons-sur-Marne**, cap. of dépt. Marne, France; pop., 31,400; champagne trade. To N., **Camp de C.**, largest training centre of French Army; German Army H.Q. during battle of Marne, 1914. See CATALAUNIAN FIELDS.

**Châlon-sur-Saône**, tn. in dépt. Saône-et-Loire, France; pop., 31,500; wine trade.

**Chalybeate water**, water impregnated with iron; chalybeate springs at Buxton, Harrogate, and other spas, efficacious in cases of anaemia.

**Chalybite**, same as siderite (q.v.).

**Chameleon**, arboreal reptile bearing a superficial resemblance to a lizard, but belonging to a distinct sub-order, the *Rhaptoglossa*. Slow and deliberate in movements, with feet adapted as perfect grasping organs; long prehensile tail; large prominent eyes capable of separate individual movement; the tongue, of relatively great length, is shot out with lightning rapidity in capture of insect prey. Capable of certain colour changes to harmonise with tone of surrounding foliage. Found in Africa, India, Ceylon, Malaya; in Eur. confined to E. Medit. countries.



Chameleon

**Chamber**, synonym for a "House of Parliament." See HOUSE OF LORDS, HOUSE OF COMMONS, TWO CHAMBER SYSTEM.

**Chambered barrow**: see PASSAGE GRAVE.

**Chamberlain**, Joseph (1836-1914), Eng. statesm.; Sec. of State for Colonies, 1895-1903; an imperial federationist, working for imperial union. Leader of Tariff Reform movement, 1903-10. **C., Sir (Joseph) Austen, K.G.** (1863- ), son of above, Eng. statesm. Chanc. of Excheq. 1903-5, Sec. of State for India 1915-17, For-



Chaliapine



Joseph Chamberlain

Sec. 1924 (Locarno treaties, 1925), strong supporter League of Nations; Nobel Prize (Peace) 1926. **C., Neville** (1869- ), son of Joseph C., Eng. statesm., Min. of Health 1923 (Housing and Rent Restriction Acts), Chanc. of Excheq. 1923-24, 1931.

**Chamberlain**, offic. in pers. service of monarch; also finan. officer in anc. Eng. cities, surviving in City of London.

**Chamber music**, originally court music; now music that is performed only by a small number of solo instruments; sonatas for two instruments, trios, quartets, etc. **C. orchestra**, a small orchestra.

**Chambers, Robert** (1802-71), Scot. publisher and author; *Life and Works of Robert Burns* (1851); *Book of Days* (1862-64); joint fndr. of firm of W. and R. Chambers, with his bro. **William** (1800-83), business manager of firm; together the bros. superintended publication of *Chambers' Encyclopedia*, edited by Dr. Andrew Findlater (1859-68); Wm. restored St. Giles's Church, Edinburgh; offered baronetcy but died before it was conferred.

**Chambers of Commerce**, local assoc. of commerc. and indus. business men, formed to develop and protect business and trade of a district by dissemination of information, propaganda, legal and polit. action, etc.

**Chambertin**, vineyard in Burgundy (*q.v.*), Fr., from wh. red wine produced there derives its name.

**Chambéry**, cap. dépt. Savoie, France; pop., 23,400; cathedral.

**Chambord**, Henri, Ct. de, Duke of Bordeaux (1820-83). Legitimist claimant to throne of Fr. as Henri V.

**Chambord**, vil., France, dépt. Loir-et-Cher, 10 m. E. Blois; pop., 320; château, built by Francis I in 1526; Fr. royal res. till 18th century.

**Chambre ardente**, Fr. tribunal and torture-chamber inaug. by Francis I, 1535, for extirpation of heresy. Abol. c. 1560, but temporarily re-estab., 1679, for investigation of poisoning cases.

**Chamfer**, in wood or metal work, the flat surface produced by removal of a sharp edge formed by two plane surfaces at right angles.

**Chamisso**, Adelbert von (1781-1838), Ger. poet and writer: prose narrative, *Peter Schlemihl*.

**Chamois**, gemze, or izard; active hollow-horned ruminant intermediate betw. goat and antelope, hence sometimes termed a caprine or goat-like antelope; inhabits all higher mountain ranges of Europe. **C. leather**, wash-leather; tanned with fish oil, wh. gives it its suppleness and softness.

**Chamomile**: see CAMOMILE.



Chamois

**Chamonix-Mont-Blanc**, Fr. Alpine vall. of Riv. Arne, W. of Mont Blanc; much visited as health resort and for mountaineering.

**Champagne**, chalky plateau in France betw. Riv. Aisne and middle Yonne; dry heaths; some afforestation nr. Châlons-sur-Marne; well watered, fertile in N. Wine dist. around Epernay and Reims in W. French country 943; crown land 1361. French attacks in World War, Sept., 1915, and April, 1917. German attack across Aisne and Marne and subseq. retreat, May-July, 1918. **C. wines**, sparkling wines produced in C. district; effervescence caused by retention of carbonic acid gas. Types of C. are distinguished by names of shippers who have blended wines of different vineyards.

**Champerty**, offence of maintenance (*q.v.*), with an agreement to share proceeds of a successful judgment.

**Champion**, one officially recognized as finest performer in some branch of sport, either internat. (world champion) or in a partic. country, locality, or institution.

**Champlain, Lake**, in N. of New York State, U.S.A., 490 sq.m.; connected by Richelieu Riv. with St. Lawrence Riv., and by C. Canal (65 m.) with Hudson Riv. Scene of battle betw. American and British fleets, 1776.

**Champollion**, Jean François (1790-1832), Fr. Egyptologist; deciphered hieroglyphs (*q.v.*).

**Champs Élysées** (Fr.), broad, park-like avenue in Paris, nearly 1½ m., from the Place de la Concorde to the Arc de Triomphe.

**Chanak**, fort, Dardanelles, on Asiatic coast, opp. Kilid-Bahr, at the Narrows, 5 m. S. of Abydos.

**Chancel**, (archit.) part at E. end of a church, containing the sanctuary.

**Chancellor**, in Med. Kgdms., Kg.'s pers. sec., usually a priest. In mod. (esp. Ger.-speaking) countries, chief Minister of State; cf. LORD CHANCELLOR. **C. of the Exchequer**, title of Eng. Finance Minister. Name *Exchequer* (derived from a board marked in squares for counting) now connotes totality of funds nationally collected and admin. See TREASURY.

**Chancellorsville**, vill., Va., U.S.A.; during American Civil War, Federals, under Hooker (120,000), deftd. by Confederates, under Lee and Jackson (53,000), Jackson being mortally wounded, 1863.

**Chancery**, orig. secretariat of Med. Kg., now denotes secretariat of an ambassador and (in Eng.) body of judges administering equity (*q.v.*); Chancery Div. of High Court deals specif., with cases affecting land and companies.

**Chancre**, 1) *Hard chancre*, ulcer, primary

sore of syphilis (*q.v.*); 2) *soft chancre*, chancre, small flat ulcer, surrounded by area of inflammation, situated on genital organs, non-syphilitic, but a venereal disease.

**Chanctonbury Ring**, hill (815 ft.), W. Sussex, on S. Downs, 2½ m. N. of Cissbury Hill; anc. Brit. or Saxon camp on summit.

**Chandernagore**, tn. Bengal, India, on Riv. Hugli, 20 m. above Calcutta; Fr. settlement since 1688; pop., 27,400.

**Changeling**, in pop. superstition: ill-favoured child wh. the fairies leave behind in place of an infant stolen by them.

**Chang-sha**, cap. of prov. of Hu-nan, Centr. China, on Riv. Siang; pop., 607,000; univ.; chem. industry; tea, rice, coal.

• **Chang tso-lin** (1873-1928), Chinese gen. and administrator.

**Channel**, **English**, connects N. Sea with Atlantic, sep. Eng. from Fr.; only 18 m. wide at Strait of Dover (*q.v.*); 200 light-houses and lightships. Recent geol. formation. **C. swimming**, Eng. Channel 1st swum in 1875 by Capt. M. Webb (21 hr. 45 m.). Many unsuc. attempts by M. Holbein and others; T. W. Burgess suc. 1911. Time record held by G. Michel (1926; 11 hr. 5 m.); 1st woman to swim C., Miss G. Ederle (1926; 14 hr. 30 m.). **C. Tunnel**, projected rly. tunnel (31 m.) under Str. of Dover; to run from a point betw. Dover and Folkestone (Eng.) to nr. Wissant (Fr.), connecting with Nord rly.; new rly. (Continental loading-gauge) proposed from London. Trial tunnels (each 2,000 yds. long) bored, 1882, from each end. Provision made for flooding a section in event of war. Cost variously estimated at betw. £16 mil. and £30 mil. (shared betw. Eng. and Fr.). Scheme indefinitely postponed, chfly. for state reasons.

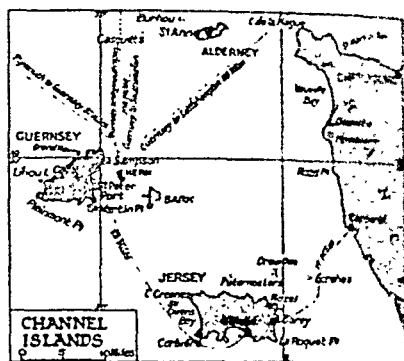
**Channel Island Cattle**, classfd. under 2 breeds: *Jersey* and *Guernsey*, prob. from stock imptd. from Normandy and Brittany in 18th cent.; Guernsey slightly the larger; milk exceptionally rich; purity of strain protected by law forbidding import. of foreign cattle; name *Alderney* used erroneously, as there is no such breed.



Jersey Cow

**Channel Isles**, group of Brit. islands in Eng. Channel, off W. coast of Normandy: *Jersey*, *Guernsey*, *Alderney*, *Sark*, *Herm*, *Jethou*, and numerous rocks and reefs; total area 70 sq.m.; pop., 90,230 (anc. Norman dialects); mild climate; very fertile soil, intensive cultivation; chief exports potatoes, tomatoes; famous for cattle. *Jersey* and *Guernsey* (incl. its dependencies of *Alderney*, *Sark*, *Herm* and *Jethou*) have each independent constitutions and self-government.

Cap. of *Jersey St. Helier*, of *Guernsey St. Peter Port*.



**Channing**, William E. (1780-1842), Amer. theologian; a founder of Amer. Unitarianism (*q.v.*).

**Chant**, song; esp. (eccles.) melody to which Ch. canticles are sung; hymns and canticles sung to such melody.

**Chantal**, Jeanne Françoise, Baronne de (1572-1641), fndd. Order of Visitation (1610).

**Chanticleer**, cock in *Reynard the Fox* (*q.v.*), and in Chaucer's (*q.v.*) *Nun's Priest's Tale* (*Canterbury Tales*); play by Rostand (1910).

**Chantilly**, tn., dépt. Oise, N. France, 25 m. N. Paris; pop., 5,100; once famous for lace; Renaissance châtelet (picture gallery) adjoining mod. château; horse-racing in park.

**Chantrey**, Sir Francis L. (1781-1842), sculptor and portrait-painter; bequest to R.A. for purchase of modern works of art "of highest merit" executed in Grt. Brit.; these now exhibited at Tate Gallery (*q.v.*).

**Chantry**, chapel, altar, or part of a ch. where Masses are sung for repose of founder's soul.

**Chaos**, 1) formless void, bottomless abyss, prior to Creation; 2) utter confusion, disorder, absence of ordered arrangement.

**Chapbooks**, stitched booklets of pop. tales formly. circulated by itinerant dealers. e.g., *Tom Thumb*, *Jack the Giant-killer*, etc.

**Chapel** orig. the sanctuary in which the cloak (*cappa*) of St. Martin of Tours was kept; small place of Christian worship; later. part of a church with separate altar; private place of worship attached to a college, hospital, house, etc.; church of denomination other than C. of E., esp. a Protestant Nonconformist one; Protestant Nonconformity in contrast to the Established Church.

**Chaplain**, clergyman officially appointed to a college, hospital, prison chapel, etc., or commissioned as minister in the armed forces.

**Chaplin**, Charles Spencer (1889- ),

Anglo-Amer. cinema actor; famous comedian; *The Kid*; *The Gold Rush*; *The Circus*, etc. **C., Hy. C.**, 1st. visct. (1841-1923), Eng. statesman, and sportsman; prominent agriculturalist; pres. of Board of Agriculture, 1889-92, and of Local Govt. Board, 1895-1900; responsible for Agricultural Rates Act, 1896; won the Derby with Hermit, 1867.



**Chapman, Geo.** (c. 1559-1634), Eng. dramatist; trans. Homer.

**Chapter**, div. of a book; (fig.) an episode; (eccles.), gov. body of a cathedral (or collegiate) church, consisting of the *canons*, presided over by the *dean*; the episcopal council.

**Char, charr**, name applied to number of fresh-water fishes of the salmon and trout genus *salmo*; found almost exclusively in mountainous lakes, where the water is cold and deep.



**Charade**, game in wh. a word is guessed from written or acted clues given for each syllable and finally for whole word.

**Charadriiformes**, order of birds including bustards, curlews, sandpipers, ruffs, woodcock, snipe, etc.

**Charcoal**, more or less pure carbon produced by carbonization by heat or chemical action of organic substances, esp. wood, other vegetable waste (e.g., sugar, coconut shells), and animal refuse (bones, etc.). *Uses*: Most important in technology, for purification by adsorption of gases and liquids; removal of valuable or deleterious matters from gases (gasolene from natural-gas, poison gas from air in gas-mask); colouring matters from liquids, e.g., cane- and beet-sugar solutions, fusel-oil from alcohol, etc. Mode of preparation of charcoal of greatest importance. Used also as fuel in well wooded districts; prepared by C. burners.

**C. burning**, conversion of wood into C. by slow burning in kilns; the wood stacks are piled obliquely round a central post and covered with earth, apertures for slight draught being left; this method is still in use in Russ. and Sweden. **C. iron**, *Swed. iron*, produced from pig-iron by refining, with charcoal as fuel, in box-like furnaces; still practised in Sweden and the Urals; used for electromagnets; produces steel of good quality.

**Charcot**, Jean Baptiste (1867- ), Fr. physician and polar explorer; commanded Antarctic expeds., 1903-05, 1908-10.

**Chardin**, Jean-Baptiste Siméon (1698-1779), Fr. painter, noted for still life subjects.

**Charente**, dépt., W. France, watered by Riv. Charente; 2,305 sq.m.; pop., 310,489; minerals, quarries, wine; distilleries, paper-mills, wool, gun-foundry (Ruelle); cap., *Angoulême*. **C.-Inférieure**, dépt. W. France, on Atlantic; 2,791 sq.m.; pop., 415,249; salt marshes; agric., fisheries, stone quarries; cap., *La Rochelle*.

**Charge, electric**, excess or defect (pos. or neg.) of elec. on the surface of a body.

**Chargé d'affaires**, head of an embassy, legation, etc. in absence of ambassador or other chief.

**Charing Cross**, London; the northern end of Whitehall and the open space at W. end of Strand, S. of Trafalgar Square, so named from the cross erected there by Edward I (1291), the last of a series of 13 marking route of funeral procession of his qn., Eleanor, from Notts. to Westminster Abbey; cross removed 1647 and memorial to the queen erected 1865 in yard of Charing Cross station. On site of cross is equestrian statue of Charles I by Le Sueur (1674).

**Charis** (Gr.), grace; **Charites**, the Three Graces (q.v.).

**Charity Commission**, body apptd. by Brit. Parl., 1853, to supervise administration of charities and (later) educational endowments; acts under permanent chief and second commissioners and a parliamentary commissioner. **C. Organisation Society**, Brit. body fndd. 1869; orig. soc. for organising charitable relief and suppressing mendicity. C.O.S. fndd. in U.S.A., 1877. **Sisters of C.**, one of several R.C. relig. bodies of women caring for the sick.

**Charivari** (Fr., "rough music"), title of a Fr. humorous paper, fndd. 1832; **London C.**, sub-title of *Punch* (q.v.).

**Charlemagne**, see CHARLES I, EMPEROR OF HOLY ROMAN EMPIRE. **C. Cycle**: see CAROLINGIAN CYCLE.

**Charleroi**, tn. in Belgium, prov. Hainault; pop., 28,200; iron and coal industry; connected with Brussels (35 m.) by C. Canal.

**Charles**, Emperors of the Holy Roman Empire. **Chas. I**, the Great, *Charlemagne* (743-800-14), emp.; Kg. of Franks, succeeded jointly with bro. Carloman, 768; usurped entire govt. on his death, 771; wars agst. Saxons, 772, and Desiderius, Kg. of Lombardy, 773; Lomb. incorporated with land of Franks, 774; expedtn. agst. Arabs in Spain, with destructn. of Frankish rearguard under Roland at Roncevaux, 778; subdued Bavaria, 788; crowned emp. at Rome, 800; complete subjugatn. of Saxony,



Charlemagne and Pepin

804; defeat of Danes 808-10; patron of letters; resided chfly. at Aix-la-Chapelle. **Chas. II, the Bald** (823-75-77), emp.; Chas. I or II, Kg. of Franks; succeeded jointly with bros. Louis and Lothair; united with Louis agst. Lothair; compelled him to accept Treaty of Verdun, 848; invaded Italy, 875; realm ravaged by Normans with sack of Bordeaux, Tours, Rouen, Orleans. **Chas. III, the Fat** (839-81-88), emp.; Kg. of Saxony, 882; siege of Paris by Northmen, 885; humiliating peace with them, 886; became Kg. or Regent of France, 885; deposed by Arnulf of Carinthia, 887. **Chas. IV** (1316-55-78), emp.; Kg. of Bohemia, 1346; publ. Golden Bull (*q.v.*). **Chas. V** (1500-20-58), emp.; succ. to Netherlands and Franche Comté at death of father, 1506; Chas. I of Spain at death of g-father Ferdinand, 1516; Diet of Worms, 1521; defeated Francis I at Pavia, 1525; Peace of Cambrai, 1529; conq. Tunis, 1535; P. of Crespy, with Francis I of France, 1544; P. of Augsburg with Protestants, 1555; abdicated Netherlands and Spain in favour of s., Phil. II; retired to monastery at Just. **Chas. VI** (1685-1711-40), emp.; as Chas. III pretender to Span. throne, 1703-11; issued Pragmatic Sanction (*q.v.*), 1713. **Chas. VII** (1697-1742-45), emp.; succ. father as Elector Chas. Albert of Bavaria, 1726; proclaimed Kg. of Bohemia, 1741.



Charles V

**Charles I** (1887-1916-22), Emp. of Austria; Kg. of Hungary; abdicated in Austria Nov. 12, 1918, in Hungary, Nov. 18, 1918; attempted to regain throne of Hungary, 1921.

**Charles**, Kings of: 1) *England*: **Great Britain and Ireland**: **Chas. I** (1600-25-49), 2nd s. of James I; Pr. of Wales, 1616; m. Henrietta Maria, 1625; granted Petition of Right (*q.v.*), 1628; govd. without Parliament, 1629-40; compelled to summon Long Parliament (*q.v.*); Grand Remonstrance published by Hse. of Com., 1641; royal forces deftd. by Parl. troops at Naseby, 1645; kg. delivered himself to Scot. Army; tried for treason and executed; his son, **Chas. II** (1630-60-85), exiled 1645-60; deftd. by Cromwell, 1651; restored through influence of Gen. Monk; m. Catharine of Braganza, 1662. 2) *France*: **Chas. I**, see CHAS. I, Emp. of Holy Rom. Empire. **Chas. II**: see CHAS. II, Emp. of H.R.E. **Chas. III, the Simple** (879-98-929), Treaty of Saint Clair-sur-Epte with Normans, 911; territ. later known as Duchy of Normandy, ceded to



Charles II

Rollo. **Chas. IV, the Fair** (1294-1322-28), war with Eng., 1326; sister Isabella m. Edw. II of Eng.; last of Capetians in dir. line. **Chas. V, the Wise** (1337-64-80), at battle of Poitiers, 1356; lieut.-gen. of France, 1356-60; recovered all territ. conqd. by Edw. III, except Calais and Bordeaux; fndd. Royal Library, Paris. **Chas. VI, the Well-Beloved** (1368-80-1422), assumed govt., 1388; became insane, 1392; govt. by Dukes of Burgundy and Orléans; civil war betw. Burgundians and Armagnacs, 1405; France invaded by Hy. V of Eng., battle of Agincourt, 1415; massacre of Armagnacs, 1418; Treaty of Troyes, 1420. **Chas. VII, the Victorious** (1403-22-61), succession disputed by Hy. VI of Eng.; crowned after raising of siege of Orléans by Joan of Arc; reconciled Burgundian and Armagnac factions; regained all France except Calais. **Chas. VIII** (1470-83-98), only s. of Louis XI; invaded Italy, 1494; forced by coalition to return to France. **Chas. IX** (1550-60-74), under regency of mother, Catharine de' Medici, until 1563; contind. under her domination; consented to Massacre of St. Bartholomew. **Chas. X** (1757-1824-36), younger bro. of Louis XVIII; leader of *Emigrés*, 1789; succeeded bro.; formed extreme Royalist party, under Pr. de Polignac, 1820; forced to abdicate, 1830. 3) *Hungary*: **Chas.** (1288-1310-42), s. of Chas. Martel of Naples; succession disputed; crowned 1310; united with Poland agst. Habsburgs and Czechs; raised Hungary to status of Eur. Power. 4) *Naples and Sicily*: **Chas. I** (1226-66-85), attacked Manfred, Kg. of Sicily; deftd. him and usurped crown; Sicilian Vespers (*q.v.*) provoked by his tyranny and extortion. His son, **Chas. II** (1250-89-1309). 5) *Navarre*: **Chas. II, the Bad** (1332-49-87). His son, **Chas. III, the Noble** (1361-87-1425). 6) *Rumania*: **Chas. I, Karl Eitel, Carol** (1839-81-1914), s. of Pr. Karl Anton of Hohenzollern-Sigmaringen; reigned as Prince, 1866-81; kg. from 1881; m. Princess Elizabeth, "Carmen Sylva" (*q.v.*); only child died. **Chas. II, Carol** (1893-1930- ), s. of Kg. Ferdinand; m. Princess Helen of Greece, 1921; pronounced right of succession, 1925 in favour of son Michael; seized throne, 1930. 7) *Spain*: **Chas. I**, see CHARLES V, Emp. of H.R.E. **Chas. II** (1661-65-1700), last of Habsburg line in Spain. **Chas. III**, see CHARLES VI, Emp. of H.R.E. **Chas. III** (1716-59-88), 2nd s. of Phil. V; Kg. of Two Sicilies, 1735-59; sided with France in Seven Years' War (*q.v.*) and Amer. War of Independence (*q.v.*); expelled Jesuits from Spain and dependencies, 1767. His son, **Chas. IV** (1748-88-1819), surrendered crown to Napoleon, 1808. 8) *Sweden*: **Chas. IX** (1550-1604-11), s. of Gustavus Vasa; made kg. in preference to Catholic Sigismund of Poland; conqd. Fin-

land; crowned Kg. of F., 1604; began war with Poland. **Chas. X, Gustavus** (1622-54-61), deftd. Poles nr. Warsaw, 1656; invaded Denmark, 1658; unsuccessful siege of Copenhagen, 1658-59. His son, **Chas. XI** (1655-60-97), great victory over Danes, 1676; re-estab. power of Sweden; fndd. mod. kgdm. His s., **Chas. XII** (1682-97-1718), invaded Denmark, 1700; deftd. Russ. at Narva, 1700; deftd. Poles and Saxons, 1701-06; deftd. by Peter the Great at Poltava, 1709; escaped to Turkey; returned 1714; killed at siege of Fredriksten. **Chas. XIII** (1748-1809-18), took part in revolution, 1772; regent, 1792-96; Kg. of Norway, 1814. **Chas. XIV, John, Jean Baptiste Jules Bernadotte** (1764-1818-44), Fr. gen., 1794-1809; Fr. Min. of War, 1799; Marshal of Fr., 1804; disting. service at Austerlitz, 1805; elected Crown Pr. of Sweden, 1810; commanded Army of the North agst. Napoleon, 1813. **Chas. XV** (1826-59-72), s. of Oscar I; reign marked by widespread reforms.

**Charles, Karl Alexander** (1712-80), Pr. of Lorraine; commanded Austr. Army in War of Austr. Succession; deftd. by Kg. of Prussia at battle of Leuthen, 1757. **Chas.** (1421-61), Pr. of Viana; deprived of kgdm. of Navarre by father, John II of Aragon. **Chas., Karl Ludwig** (1771-1847), Archduke of Austria; Duke of Teschen; Austr. gen.; 3rd s. of Emp. Leopold II; commanded Rhine armies, 1796, '99; deftd. Masséna at Caldiero, 1805, and Napoleon at Aspern, 1809, but deftd. by him, in same year, at Wagram. **Chas., of Blois, of Châtillon** (c. 1310-64), Duke of Brittany; nephew of Phil. II of Fr.; killed at battle of Auray. **Chas. the Bold** (1433-67-77), Duke of Burgundy; s. of Phil. the Good; conqd. Lorraine, 1475; deftd. by Swiss at Granson, 1476, and at Nancy, 1477. **Chas. I** (c. 950-77-92), Duke of Lorraine; younger s. of Louis IV of Fr.; helped Emp. Otto in struggle with Lothair; attempted to seize Fr. crown from Hugh Capet; imprisoned at Orléans, 991. **Chas. II, the Bold** (d. 1431), Duke of Lorraine; succeeded father, John I, 1390. **Chas. III, the Great** (1543-1608), Duke of Lorraine; took part in Fr. wars of religion; member of the League. **Chas. IV** (1604-75), Duke of Lorraine; intrigued incessantly agst. crown of Fr. **Chas. V** (1643-90), Duke of Lorraine; served in imperial army agst. Turks; twice unsuccessful candidate for crown of Poland. **Chas. II, Charles Louis de Bourbon** (1709-1883), Duke of Parma; attempted reforms; involved P. in debts and heavy taxation; abdicated, 1849.

**Charles Albert** (1798-1831-49), Kg. of Sardinia; leader of movement for Ital. independence, 1848; deftd. by Austrians at

Custoza; abdic. after defeat at Novara 1849.

**Charles Augustus** (1757-75-1828), grand-duke of Saxe-Weimar-Eisenach; worked for unity of Germany; 1st Ger. pr. to grant liberal constitution to his State; friend and patron of Goethe.

**Charles Edward Stuart**, (1720-88), the Young Pretender; s. of James Francis S. Charles Edward Stuart (g.v.); landed in Scot. (1745) in unsuccessful attempt to recover Brit. Crown for his father; d. in exile.

**Charles Emmanuel**, name of 2 Kings of Sardinia: **Chas. Em. I** (1701-30-73), as C.E. III, Duke of Savoy; deftd. Austr. at Guastalla, 1734. **Chas. Em. II** (1751-96-1802), abdicated. **Chas. Em. I, the Great** (1562-80-1630), Duke of Savoy; acquired Saluzzio, 1601.

**Charles Martel** (689-741), Frankish "Mayor of the Palace"; deftd. Saracens at Tours 732, in one of the decisive battles of the world.

**Charleston**, 1) port and largest tn. of S. Carolina, U.S.A., on Atlantic; pop., 70,000; cotton exchange; oil refining; manuf.: iron and asbestos; naval repair yard; bunkering. Capture of Fort Sumter by S. Carolina troops, 1861, marked beginning of Civil War. 2) Cap. West Virginia, U.S.A.; pop., 60,400; on Kanawha Riv.; centre for coal and oil trades; govt. munition factory. 3) American mod. ballroom dance with syncopated rhythm, of Amer. Negro origin.

**Charleville**, dépt. Ardennes, France, on Riv. Meuse; pop., 22,600; in World War, German G.H.Q., until 1916.

**Charlock** (*Brassica sinapis*), wild or field mustard.

**Charlotte** of Mecklenburg-Strelitz (1744-1818), dau. of Pr. Chas. Louis of M.-S., qn. consort of George III of Eng.; undertook management of kg.'s household during the periods of his insanity, 1788, and 1810-18.

**Charlottenburg**, resid. quarter of Berlin; former Royal Pal.; techn. coll.; manuf., porcelain, beer, and machinery.

**Charlottetown**: see PRINCE EDWARD ISL.

**Charlottesville**, tn., Virginia, U.S.A.; pop., 15,250; seat of Univ. of Va. (1825); agric. trade centre. Four thousand of Gen. Burgoyne's troops, surrendered under Convent. of Saratoga, quartered here, 1779-80 (War of Independence).

**Charnwood Forest**, undulating, rugged, mainly treeless, tract, W. Leics, c. 20 m. round, extending N.W. Leicester; Bardon Hill, 850 ft.

**Charters Towers**, inland tn., Queensland, on rly. 70 m. S.W. Townsville; centre of gold-mining district; pop., 9,200.



Charles Edward Stuart

**Charon**, (Gr. myth.) ferryman who conveyed the dead across the Styx on payment of a coin (*obol*).

**Charpentier**, Gustav (1860- ), Fr. composer: mus. romance (4 acts), *Louise*.

**Charter**, orig. a formal written document assigning right or privilege, now superseded by Acts of Parl. or document issued by Kg.'s ministers; a royal charter is still used as an alternative method of incorporation by the Crown of a company or a mkt. (amongst other purposes) and is still sole method of est. a borough. See CORPORATION. **C. party**, name applied to contract when a ship is hired from owners for stated period or voyage; *charterer* may sublet space but has no voice in handling of vessel.



Charon

**Chartered accountant:** see ACCOUNTANT.

**Charterhouse**, name derived by pop. Eng. etymol. from "House of Carthusians" esp. charitable foundation (1611) on site of old Carth. mon. in city of London, providing asylum for old men and school for boys; school removed from orig. site to Godalming (Surrey) in 1872.

**Chartier**, Alain (c. 1386-1440), Fr. poet and prose writer; sec. to Charles VI and Chas. VII.

**Chartism**, Eng. polit. movement (c. 1836-48); so called from "charter" embodying demands for manhood suffrage, vote by ballot, payment of M.P.'s, etc.

**Chartres**, cap. of dépt. Eure-et-Loire, France, on Riv. Eure; pop., 26,600; famous Gothic Cathedral, with 13th-cent. glass; manuf. of game pâtés.

**Chartreuse**, 1) *La Grande C.*, first Carthusian monastery, fndd. 1084 near Grenoble, France; monks expelled from Fr., 1904. 2) Liqueur made by Carthusian monks from a secret recipe.

**Charybdis**, sea-monster in form of whirlpool in Str. of Messina, on Sicilian side; descrbd. in Homer's *Odyssey*. See SCYLLA.

**Chase**, (printing) iron frame in wh. type is imposed and locked up ready for placing on printing machine.

**Chase National Bank**, U.S. bank, of New York, fndd. 1877; later acquired a no. of smaller finan. institutions by consolidation Deposits, (31 Dec., 1932), \$1,466,038,619 (£308,000,000 at par), Liabilities, \$1,856,290,382 (£382,000,000).

**Chassé**, gliding dance-step in wh. one foot is brought up behind the other.

**Chassepot rifle**, breech-loading rifle inven. by Antoine Chassepot (1833-1905), used in the Fr. army (1866-72).

**Chasseurs** (Fr. huntsmen), light infantry and cavalry.

**Chassis**, (Fr., frame), framework carrying

the machinery, superstructure, etc., of a motorcar or gun.

**Chastelard**, Pierre de Bocsozel de (1540-63), Fr. poet; hanged after liaison with Mary Qn. of Scots.

**Chasuble**, principal vestment worn by priest when celebrating Mass; oval-shaped cloak with opening in middle for the head, embroidered with large cross.

**Chatalja**, small tn., Turkey-in-Europe, 25 m. W.N.W. Constantinople, on **C. Lines**, fortified position extending from Sea of Marmora to Black Sea.

**Chateaubriand**, René de (1768-1848), Fr. statesm. and author: *The Spirit of Christianity*, 1802.

**Château Lafitte**, brand of red Bordeaux wine; others are *C. Latour*, and *C. Margaux*.

**Châteauroux**, cap. dépt. Indre, France, on Riv. Indre; pop., 25,800; textiles.

**Château-Thierry**, tn., dépt. Aisne, France, on right bank of Marne; pop., 8,000; vineyards. Victory of Napoleon I over Blücher, 1814; occup. by Germans, Sept., 1914 and June, 1918.

**Château Yquem:** see SAUTERNES.

**Chater's pendulum**, pendulum with 2 movable weights and 2 knife edges; wts. adjusted until time of oscillation abt. both knife edges is identical. Most accurate measurement of gravity (*g.v.*).

**Chatham**, Wm. Pitt, 1st E. of (1708-78), Brit. statesm.; Pr. Min. 1756-61; fought Bourbon Monarchy of Fr. in all parts of world and consolidated Brit. overseas possessions (Canada, India, and others) by Treaty of Paris, 1763; opposed coercive measures towards Amer. colonists.

**Chatham**, munic. bor., Kent, on Medway; pop., 43,000; important naval station; dockyard (500 acres); naval and marine barracks; R.E. depot, hospitals.

**Chatham Islands**, group, S. Pacific, 540 m. S.E. and dependency of N. Zealand; 370 sq.m.; pop., 560 (270 Europeans); largest, C. Isl., 320 sq.m.; (max. alt., 1,000 ft.) two other isls. and several islets; wool exported.

**Chat Moss**, peat bog. betw. Manchester and Liverpool; c. 12 sq.m.; despite great difficulties, Geo. Stephenson built rly. across it, 1828-30.

**Chatsworth House**, seat Duke of Devonshire, Derbysh., Eng.; 17th-19th cents.; picture and sculpture galleries.

**Chattahoochee River**, trib. of Apalachí-



Chasuble



Chatham

cola Riv., on W. border of Georgia, U.S.A.; 500 miles.

**Chattanooga**, port and largest tn. of Tennessee, U.S.A., on Moccasin Bend of Tennessee Riv.; pop., 119,800; airport, Marietta Field; univ. (1806); college of law; manuf.: iron, steel, refrigerators, paper, machinery, cement; coal and iron mining district. Scene of fighting in Civil War.

**Chatterton**, Thos. (1752-70), precocious Eng. poet; wrote "Rowley Poems," purporting to be genuine work of 15th cent. Suicide.

**Chaucer**, Geoffrey (1340-1400), 1st great Eng. poet: *Canterbury Tales*, *Troilus and Criseyde*.

**Chaudière**, (r) riv., Canada, flowing N. from L. Megantic, fr. U.S. frontier, into St. Lawrence Riv., opp. Quebec; *Falls* (power sta.), 2½ m. from confluence. ) Lake and falls, Canada, on Riv. Ottawa, immediately above city of Ottawa.

**Chaumont-en-Bassigny**, cap. dépt. Haute-Marne, France; pop., 15,190; rly. induct over Riv. Suize.

**Chautauqua**, vil., New York State, U.S.A., on lake (18 m. long) same name; seat of **C. Assembly**, an educational, religious, and social institution, with many ramifications. See also LYCEUM.

**Chauvinism**, (Fr.) exaggerated nationalism, fanatical patriotism; term derived from Nicolas Chauvin, a Napoleonic soldier.

**Chaux-de-Fonds**, cap. dist. in Swiss Canton, Neuchâtel; c. 3,250 ft. abv. sea-level; pop., 38,600; watch-making.

**Chavez**, Carlos (1899- ), Mex. com-poser.

**Chazars**: see KHAZARS.

**Cheap money**: see MONEY RATES. **C. M. Policy**, (econ.) aims at reducing rates at wh. money can be borrowed with object of stimulating trade in times of depression.

**Cheapside**, old London thoroughfare between Mansion House and Newgate St.; Bow Church (St. Mary-le-Bow) is in Cheap-side.

**Cheb, Eger**, tn. Czechoslovakia, on frontier of Bavaria; pop., 27,530; rly. junction; textile indust. Imprl. city, 12th cent.; scene of Wallenstein's murder, 1634.

**Check**, (chess) an attack on the Kg. by one or more of the opposing men.

**Checkmate**, (chess) the winning movement, when a Kg. is in check (q.v.) and has no means of escape.

**Check valve**, automatic valve for liquids or gases, that comes into action when direction of flow reverses.

**Cheddar**, tn., 22 m. S.W. of Bristol, Somersetsh., Eng.; on E. is Cheddar Gorge with cliffs 600-800 ft., and many stalactitic

caverns; remains in caves and environs of prehistoric settlements.

**C. Cheese** is so called bec. method of manufacture first practised here.

**Cheek-pouch**, extension of cheeks for storage of food; characteristic of some monkeys, rodents, and marsupials.

**Cheese**, lacteal product, rich in albumen and fat, made by fermentation of lactic acid in casein (lactic albumen), wh. is precipitated from milk by action of rennet.

**Cheetah**, or hunting leopard, feline carnivore, native of Asia and Africa; trained in India for hunting antelopes.

**Chef** (Fr.), master-cook.

**Chef d'œuvre**, masterpiece.

**Che-foo, Chifu**, seapt.

on S.E. coast of Gulf of Pe-chi-li, China; pop., 91,500; exports coal and cotton; treaty port.

**Cheiropraxis, osteopathy**, (med.) remedial system fndd. on theory that disease is due to dislocation or maladjustment of some part of body, causing pressure or obstruction. Not recognized by orthodox med. authorities.

**Cheka**, political branch of former Russ. secret police; now replaced by the OGPU (q.v.); name composed of initial letters of *Chrezvychainaya Komissiya*, meaning Extraordinary Commission.

**Cheke**, Sir John (1514-57), Eng. scholar and humanist; prof. of Gr., Camb., 1540-51; tutor to Edw. VI; ardent Protestant and supporter of Lady Jane Grey; accused of treason and committed to Tower, 1553; liberated, 1554; imprisoned again, 1556, and induced to embrace Catholicism.

**Che-kiang**, coastal prov. of China (smallest in area), S. of Yangtse-kiang; c. 36,500 sq.m.; pop., 24,139,770; silkworm culture; tea-planting; cap. *Hang-chow* (pop., 426,900).

**Chellean culture**, divn. of Lower (Earlier) Palaeolithic Period (q.v.) named after *Chelles*, vil. on Riv. Marne, 10 m. E. of Paris, where rough flint implements, etc., were discovered (in gravel-pits).

**Chelles**: see CHELLEAN CULTURE.

**Chelmo, Kulm**, fort. tn., Poland, on Riv. Vistula; pop., 12,250; breweries, machinery. Defeat of Fr. by the Allies, 1813.

**Chelmsford**, Fredk. J. Napier Thesiger, 1st visct. (1868- ), Brit. barrister of All Souls, viceroy of



By courtesy of G.W.R.

Cheddar Gorge



Chaucer



Cheetah



21; First Lord of Admiralty, 1924; acting agent-gen. for N.S. Wales, 1926-28.

**Chelmsford**, co. tn., Essex, Eng.; corn and cattle mkts.; eng. works; pop., 26,500.

**Chelsea** 1) met. bor., S.W. London, Eng., on N. bank Riv. Thames, pop., 59,000; Chelsea Royal Hospital, Crosby Hall; 18th-cent. porcelain; home of Sir Thomas More, Catherine Parr, Swift, Steele, Carlyle, Geo. Eliot, Turner, Whistler; artists' quarter. 2) City, Mass., U.S.A., 3 m. N.E. Boston; pop., 45,000; manuf. pottery. **C. Hospital:** see ROYAL HOSPITAL.

**Cheltenham**, mun. bor., Glos., Eng.; pop., 49,400; *C. College*, public school for boys, fndd., 1841; Dean Close Memorial School, fndd., 1886, for education of boys on Evangelical C. of E. principles.

**Chelyabinsk**, tn., E. of S. Urals, Russia; pop., 62,760; tractor works; open working of lignite. Occupied by Czechoslovakian troops in 1917 revolution.

**Chemical combination**, amalgamation of 2 or more substances to form one or more new substances, wh. cannot be resolved into their component parts by mechan. means.

**Chemical elements:** see ELEMENTS.

**Chemin de fer**, (Fr. railway), (cards) variety of baccarat (*q.v.*), in wh. bank passes to each player in rotation.

**Chemin-des-Dames**, exposed highway on ridge between rivs. Aisne and Ailette, N. France; bitterly contested in the World War, esp. Apr., May, July, 1917, and May, 1918.

**Chemistry**, science dealing with the constitution of matter, and the study of the changes it may undergo. **Organic c.** deals with carbon compounds; **inorganic c.** with all others. *Heavy chemicals* are those used in large quantities in indus., e.g., min. acids, soda. *Fine chemicals*, medicinal compounds.

**Chemnitz**, 1) dist. of Saxony; 804 sq.m.; pop., 980,900; 2) cap. of dist. on riv. same name; pop., 360,000; textile industry; linen since 1347; cloth in 15th cent.; cotton since 1770; metal-work since 1470.

**Chemotherapy**, use of chem. substances (as opposed to vegetable drugs) in therapeutics; usually injected.

**Chemulpo**, largest seapt., Korea, on W. coast; exports: rice, soya beans, fertilizers, etc.; treaty port.

**Cheng-tu-fu**, tn., cap. of prov. Szechwan, on Riv. Min-ho, W. China; pop., 890,700; metal, textile, silk industries.

**Chénier, André** (1762-94), Fr. lyric poet: *Jeune Captive*; **Joseph**, his bro. (1764-1811), wrote revolutionary dramas and hymns: *Jean Calas*, ou *l'École des juges*.

**Chenille** 1) caterpillar of nocturnal moth *Aelia argallacea*, destructive to cotton plant. 2) Twisted cord of silk or wool with upstandg.

pile; used for dress-trimmg. and in upholstery.

**Cheops** (Gr. form of Khufu), Egy. kg of 4th dynas. (c. 3000 B.C.), buried in **Pyramid of C.**, near Gizeh.

**Chepstow**, port and mkt. tn., Monmouth sh., Eng., on Riv. Wye; pop., 4,300; castle salmon fisheries.

**Cheque**, bill of exch. drawn on a banker payable on demand, amt. of C. being deductible from drawer's acc. or deposits with banker; **self c.** drawn on own acc., drawee and drawee being identical.

**Chequers**, country house, nr. Princes Risborough, Bucks, Eng., presented by Lord and Lady Lee of Fareham, 1921, to the Brit. nation for the use of the Prime Minister for the time being. Scene of many important discussions with foreign statesmen.

**Cher**, dépt. Centr. France, watered by Riv. Cher, l. trib. of Loire (220 m.); 2,820 sq.m.; pop., 293,918; agric., sheep, iron mines; cap., *Bourges*.

**Cherbourg**, naval and commerc. port and fortress, dépt. Manche, France, on the English Chan.; pop., 38,000.

**Cherchez la femme** (Fr.), look for the woman; maxim of those who hold that some woman will be found to be the motive behind every crime, and the root cause of every difficulty.

**Cherethites and Pelethites**, (O.T.) body-guard of Kg. David, recruited from Philistines (II Sam. xv).

**Cherokees**, civilized Indians of N. America in terr. of Oklahoma, now consid. mixed with whites and Negroes.

**Cheroot**, kind of cigar, gen. Indian, not closed by covering leaf nor pointed at one end, but open at both ends, one having slightly smaller diameter.

**Cherrapunji**, vill., Khasi Hills, Assam, Brit. Indian, alt. 4,450 ft.; heaviest known rainfall in the world (annual average 500 in.).

**Cherry**, fruit of C. tree, species of *Prunus*, enclosing a smooth, round stone. The cultivated varieties are mostly derived from *P. cerasus*, said to have been introduced into Eur. from Asia (c. 68 B.C.). **C. brandy**, liqueur made from cherries distilled in brandy. **C. fly**, a small fly, the larvae of which feed on cherries and are a serious pest. **C. laurel**, *Prunus laurocerasus*, evergreen ornamental shrub, indigenous to Persia and Asia Minor; leaves are used in pharmacy and from them an aromatic water is obtd. which contains about 0.1% of hydrocyanic acid.

**Cherub** (pl., *Cherubim*), order of angels second to Seraphim (*q.v.*).

**Cherubini**, Luigi (1760-1842), It. composer. Opera: *The Water-Carrier*, 1800.



Cherry Blossom

**Cheruski**, Ger. tribe bet. Weser and Elbe; under Arminius, defeated Romans, A.D. 9.

**Chervil**, Sweet Cicely, *Myrrhis odorata*, umbelliferous plant, white flowers; has an aromatic anise-like flavour; used in folk med. as a carminative.

**Chervonetz**, monetary unit of Russia, instituted in connection with the NEP (q.v.) in 1922; equal to 10 roubles, and has nominal value of £1.1.1 $\frac{1}{2}$ ; bank-notes issued in denominations of 1 to 5, 10, 25, and 50 chervonetz.

**Chesapeake and Shannon**, names of two ships which fought a duel during 2nd. Amer. War; Brit. frigate "Shannon," under Capt. Broke, on 1st June, 1813, engaged with and captured Amer. frigate "Chesapeake," a larger vessel with superior armament, under Capt. Lawrence, within 15 min. of latter's sailing out of Boston Harbour, Capt. Lawrence being killed.

**Chesapeake and Ohio Railway, U.S.A.**, operates in Virginia, Ohio, and Kentucky: 3,098 miles.

**Chesapeake Bay**, State of Maryland, U.S.A., outlet to Atlantic of Potomac and Susquehanna rvs.; fishing; chf. port Baltimore.

**Chē sarā sarā** (It.), what will be, will be; motto of the Russells, Dukes of Bedford.

**Cheshire**, co., N.W. Eng. bordering on Wales; area 1,027 sq.m.; pop., 1,087,544;



Game of Chess  
Alekhin v. Bogoljubov: in the centre, Lasker

undulating plain; rvs. Mersey, Dee; mkt. gardening, dairying (*Cheshire cheese*); salt-mines; co. tn., *Chesler*.

**Chesil Bank**, shingle ridge, Dorset coast, Isle of Portland with mainland

ding 18 m. N.W. beyond Abbotsbury; 50 ft. high, 180-200 yds. wide.

**Chess**, game for 2 players, played on a board divided into 64 alternately coloured squares, with 16 men a side (white and black), consisting of Kg., Qn., 2 Castles or Rooks, 2 Bps., 2 Knights, and 8 pawns, the object being to checkmate (q.v.) the opponent's



By courtesy of the Town Clerk, Chester  
The Cross, Chester

King. The Kg., Qn., and R. (Castle) are major pieces, the Bp. and Kt. minor pieces.

**Chester**, 1) city on Riv. Dee, co. tn. of Cheshire, Eng.; pop., 41,400; anc. Rom. city walls; cath.; timber houses, with the "Rows" (arcades). 2) Port, Pa., U.S.A., on Delaware Riv.; pop. 59,200; cotton, lace, cutlery. Fndd. 1646.

**Chesterfield**, Phil. Dormer Stanhope, 4th Earl of (1694-1773), Eng. politician, orator, and author; ambassador to The Hague, 1728, 1744; ld. lieut. of Ireland, 1744-46; wrote letters (posthum. pubd. by his dau.-in-law) to his natural son instructing him in morals and manners.

**Chesterfield**, munic. bor., Derby., Eng.; manuf. tn.; pop., 64,100; church with twisted spire (230 ft.).

**Chesterton**, G. K. (1874- ), Eng. poet, novelist, and critic. *Napoleon of Notting Hill*, 1904; *Man Who Was Thursday*, 1908; *Everlasting Man*, 1925, etc.

**Chestnut**, *Castanea*, genus of deciduous trees allied to beech and oak; the seeds (nuts) are enclosed in a prickly involucre. The sweet or *Spanish c.* (*C. sativa*) and *American c.* (*C. dentata*) are edible. The horse *c.* (*Aesculus hippocastanum*) is not related to the true *C.*; the fruit is similar but inedible.



G. K. Chesterton



Chestnut

**Chetverik**, Russ. meas. of capacity, 23.1 gallons (26.24 litres).

**Chetvert**, Russ. measure of capacity; = 8 chetverik (184.79 gallons, 2.09 hectolitres).

**Chevalier**, Albert (1861-1923), Brit. music-hall artist; noted for impersonations of coarser types.

**Chevalier** (Fr.), knight. **Young C.**, name for Charles Edward Stuart (q.v.). **C. d'industrie**, adventurer, swindler.

**Cheveau-légers** (Fr.), light Horse (cavalry).

**Chevaux-de-frise** (Fr.), portable milit. obstacle for barring roads, etc.; beams with steel spikes, or frames with barbed wire.

**Cheviot**, cloth made from wool of *C.* sheep, or from wool of poor quality in imitatn.; cotton cloth used for skirts, etc.

**Cheviots**, **Cheviot Hills**, range of mts. partially sep. Eng. from Scot., 35m., N.E. to S.W.; highest point, the **Cheviot** (2,676 ft.).

**Chevreul**, Michel Eugène (1786-1889), Fr. chemist; his researches int. animal fats led to manufacture of margarine, etc.

**Chevrotain**, mouse-deer, smallest of all ungulates, ranging from India and Ceylon, through Malaya to Palawan in the Philippines; also found in W. Africa; upper canine

teeth in males form tusks projectg. beyond the lip. In general appearance resemble a small deer.

**Chevy Chase:** see OTTERBURN.

**Cheyenne**, cap. Wyoming, U.S.A.; pop., 17,350; meat packing; brick making; Frontier Days Celebration held each summer, gathering of cowboys and Indians. **C. River**, trib. of Missouri Riv., S. Dakota, 500 miles.

**Chi.**, abbr. Chicago.

**Chiang Kai-shek**

(1887- ), Chin. gen. and statesm.; head of Kuomintang (Nationalist) Govt., Nanking, 1927; anti-communist campaign, 1927; Pres. Chin. Nat. Govt., 1928.

**Chianti**, 1) dist. in Tuscany, Italy; 2) a red wine, produced there.

**Chiaroscuro**, in painting, distribution of light and shade to obtain depth and gradation of emphasis.

**Chiasso**, vill., canton Ticino, Switz.; pop., 5,500; terminus of St. Gothard Railway.

**Chiavenna**, tn., at junct. of Splügen and Maloja passes, prov. of Sondrio, Italy; pop., 5,000.

**Chibcha**, civ. Indians of Colombia.

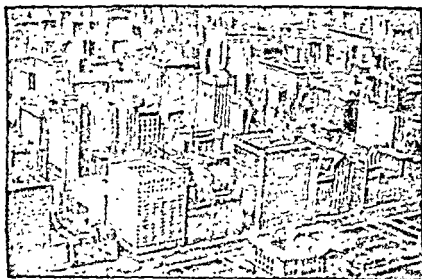
**Chibug**, Turk. tobacco-pipe with amber mouthpiece and long wooden stem.



Chibug

**Chica**, South American liquor made from fermented maize or plant juices.

**Chicago**, city, Illinois, second largest in U.S.A., on S.W. shore L. Michigan; pop., 3,400,000; four univs.; Art Institute; notable public buildings and parks; greatest U.S. rly. centre (over 30 trunk-lines); meat-packing chf. industry (with important by-products); corn-trade, iron and steel works, tanneries; manuf. elec. and agric. machinery, rly. carriages (Pullman cars), automobiles, furni-



Chicago: View from the Air

ture, clothing, soap, candles. Fndd. 1804 as fort against Indians; rapid growth in 19th century. Prospect of huge profits from manuf. and sale of illicit liquor since Prohibition Amendment (1919) attracted many

adventurous characters and resulted in disproportionate publicity. **C. and Western Railway, U.S.A.**, operates in Illinois, Iowa, Nebraska, Wisconsin, Michigan, Minnesota, North and S. Dakota; 8,459 miles. **C., Burlington and Quincy Railroad, U.S.A.**, connects Illinois, Wisconsin, Missouri, Nebraska, Kansas, Colorado, Wyoming, and Montana; 9,333 miles. **C., Milwaukee, St. Paul and Pacific Railroad, U.S.A.**, operates westward from Chicago to Omaha, Kansas City, Seattle, and Tacoma; 11,314 miles. **C. Rock Island & Pacific Rwy., U.S.A.**, operates in Minnesota, Iowa, Oklahoma, Missouri, Arkansas, Mississippi, Louisiana, Texas, New Mexico, and Colorado; 7,593 miles.



Chichester Cathedral

**Chicane**, sharp, pettifoggish tricks as are used by unscrupulous lawyers; in card score allowed to player who holds no trump. **Chichele**, Hy. (1364-1443), Eng. p. envoy to Pope Innocent VII, 1430; Gregory XII, 1407; Bp. of St. David's; envoy to France, 1410, 1413; Archb. of Canterbury, 1414; active anti-Lollard; 1416-22; recalled indulgence at order of Martin V, 1422, and under his orders tempted to get anti-papal statutes repealed 1427-28; fndd. All Souls' College, Ox. 1437; endowed *Chichele Chest* at Oxford for poor students.

**Chicherin**, Georgij Vassilievich (1878- ), Russ. statesm.; left diplom. service to join revol. movement; sec. For. Econ. Soc.-Dem. party 1907; expelled from party and became Peoples' Commissary for Foreign Affairs, 1918; concluded Treaty of Rapallo (q.v.), 1922.

**Chichester**, city, W. Sussex, Eng.; *Regnum*; cathed.; pop., 13,000; racecourse at *Goodwood Park*, 4 m. north.

**Chickahominy, battle of**, Amer. Civ. War. 1) *Seven Days' B.*, 25 June-1 July 1862, betw. Federals under McClellan and Confederates under Lee, who, after heavy losses on both sides, achieved his aim of relief of Richmond. 2) *B. of Chickahominy*, Federal Army of Potomac under Grant deftd. by Confederate army under Lee 3 June, 1864.

**Chicken Maryland**, Amer. method.

oking poultry; chickens cut up in pieces, led in egg and breadcrumbs, and baked; sted with hot butter.

**Chicken-pox** (*Varicella*), infectious disease common in children, in wh. crops of sicles (*q.v.*) appear on chest, back, scalp, e, and limbs; the vesicles become pustules .), crusts appear and fall off, and scars en remain. Incubation period 10-21 ys; duration of acute stage 3-7 days.

**Chick-pea**, *Cicer arilinum*, Mediter- lean plant, producing edible seeds, used as tile-food.

**Chickweed**, *Stellaria media*, common gar- and roadside weed; small white ver. Used in folk med. to make a ultice for ulcers.

**Chicory**, *Cichorium intybus*, blue ver, grows wild and is cultivated its fleshy root, which, when roasted ground, is often mixed with coffee used as a substitute for it. The leaves are d as salad.



Chick- weed

**Chiem, Lake of**, **Chiemsee**, largest lake Bavaria, 1,700 ft. abv. sea lvl., 33 sq.m.; ts. 3 isls., Herreninsel (with roy. palace), ueninsel (nunnery), and Krautinsel.

**Chiffchaff**, small European warbler bird am. *Sylviidae*, allied to wren.

**Chiffon**, transparent gauze of fine quality d for trimmings, etc.

**Chignon** (Fr.), knot of hair worn at back ead or nape of neck.

**Chih-li**, *marit. prov. N. China* betw. ngolia and the *Gulf of Pe-chih-li*; area, 335 sq.m.; pop., 29,945,800; mountainous he W.; iron and coal mining; in the plains n-cultivation; cap., *Peiking* (Peiping).

**Chihuahua**, cap. of Mexican State same e; pop., 37,000; silver mines.

**Chilblains**, areas of skin, usually on toes ngers, in which circulation becomes in- cient in cold weather, so that area is llen and painful. Treated by painting iodine.

**Child labour**, employment of children actories, etc., has been regulated in Gt.

by law since 1802 (see *SOCIAL LEGIS- ION*); by *Preventn. of Cruelty to Children* (1904) and *Children Act* (1908), children er 11 may not sing or perform in public out spec. licence, and those under 16 not be trained as acrobats, etc. Regu- on of C.L. was prelude to Factory and kshops acts for adults.

**Childbed**, period, usu. 8-14 days, during a woman must rest in bed at and after e of giving birth; necessary for recuper- n of abdominal organs.

**Childe Harold's Pilgrimage**, poem by By- cantos I and II, 1811; III, 1816; IV, 1817.

**Childeric**, name of 3 Frankish Kgs.: I (c. 437-81); **C. II** (c. 653-75); **C. III** (c. 751).

**Children:** see *INFANT WELFARE*. **C., National Society for Prevention of Cruelty to**, fdd. in London, 1884, by Benjamin Waugh, for protection of children; resulted in passing of statute of 1889 wh. led to Children Acts of 1894, 1904, 1908. Soc. appts. inspectors who report on cases of alleged cruelty and obtain legal redress for ill-treated children.

**Children's Courts**, special courts for trial of children under 16 charged with minor criminal offences. **C.'s diseases**, diseases that usu., but not always, occur in childhood. They are: Measles, scarlet fever, diphtheria, whooping-cough, chicken-pox, German measles, and infantile paralysis.

**Chile**, repub., W. coast S. America; 290,000 sq.m.; pop., 4,265,000 (60% half-breeds); length, 2,800 m. cover- ing 38° of latitude and greater part of Andes (*Aconcagua*, 23,000 ft.); average width 110 m.; stretches from sub-tropical Ataca- ma Desert in N. to the glacier- bearing mtns. of *Tierra del Fuego*



in S.; Trans-Andine Rly. from Valparaíso to Argentina. Agric. in central districts; min- ing in the N. (iodine, borax, gold, manganese), rich deposits of saltpetre (3,200,000 met. tons annually). Cap., *Santiago*; ports: Valpa- raíso, Arica, Iquique, Antofagasta. Colo- nized by Almagro, as part of Peru, under Charles V of Spain, 1534; independent after wars, 1810-26; wars with Peru and Bolivia, 1879; civil war 1891; ceded prov. of Tacna (*q.v.*) to Peru 1929. **Chile pine**, **monkey puzzle tree:** see *ARAUCARIA*. **Chile salt- petre**, sodium nitrate, occurring in vast deposits in the *caliche* (ore) of Chile; used princ. as a fertilizer.

**Chiliasm**, belief that Christ will return to reign on earth for 1,000 years. See *MILLENNIUM*.

**Chilled cast-iron**, hard-surfaced iron; cast into metal moulds and hence cooled very suddenly; used for rollers, rly. carriage wheels, etc. **Chilled meat:** see *REFRIGERATOR*.

**Chilli**, dried fruit of capsicum (*q.v.*), used as condiment.

**Chillianwallah, Battle of** (2nd Sikh War), 13 Jan., 1849, British, under Lord Gough, deftd. 40,000 Sikhs under Shere Singh, with severe losses on both sides; Gough had to retire, but the fight was, in effect, a Brit. victory and contributed materially to destruction of Sikh power.

**Chillingham**, vill., Northumb., Eng.; Norman castle; park (property of Ld. Tankerville), in wh. are famous, semi-wild **C. cattle**, long-horned, white breed, believed to represent *auroids*, extinct wild Eur. cattle; herd partially maintained by Zoological Soc. of London.

**Chill-moulds**, *casting-moulds* of metal,

whereby the metal poured in is chilled rapidly. See CENTRIFUGAL CASTING.

**Chillon, Castle of**, fortress, Switzerland, E. end L. of Geneva; former prison. **Prisoner of C.**, François Bonivard (q.v.).

**Chilon**, one of the Seven Sages of Greece.

**Chilperic**, name of 2 Frankish kgs: **C. I** (d. 584); **C. II** (d. 720); s. of Childeric II (q.v.).

**Chilterns, Chiltern Hills**, Eng., chalk range extending N.E. from S. Oxon (Riv. Thames) through Bucks and Beds to N. Herts; *Coombe Hill*, 857 ft. **C. Hundreds**, Stoke, Desborough, Burnham. **Stewardship of C. H.**, office of profit (sinecure) under the Crown (nominal duty to protect wayfarers from bandits), accepted by M.P. wishing to resign his seat.

**Chimaera**, monster of Gr. myth., compound of lion, goat, and serpent; slain by Bellerophon; hence, figment of a disordered imagination.

**Chimborazo**, 1) volcano in Andes, Ecuador, 20,700 ft.; glaciers; twice climbed by E. Whymper, 1880; eruption, 1932. 2) Prov. of Ecuador, c. 3,000 sq.m.; pop., 210,000; cap., *Riobamba*.

**Chimera, spook-fish**, primitive deep-sea fish of the sub-order Holocephali. Blunt head with large eyes, long tapering body and tail. See CHIMAERA.

**Chimere**, long black robe worn by Ang. bps. over the rochet (q.v.), large sleeves of which come through openings in its sides.

**Chimney**, vertical, tubular structure into which burnt gases from fire or furnace are led; causes draught by using hot-air column, wh. is lighter than cold air outside chimney and therefore rises.

**Chimpanzee**, large anthropoid ape of equatorial Africa; fruit-eater; generally living in small communities or family groups; highly intelligent and easily trained.



Chimpanzee

**China**, repub., E. Asia, bounded N. by Siberia and S. by India, Burma, and Fr. Indo-China. Extends from Centr. Asia to Yellow Sea and E. and S. China seas. Comprises (geographically) the 18 provs. of *China proper* (1,532,800 sq.m.), *Sinkiang* (550,350 sq.m.), *Manchuria* (363,700 sq.m.), and the dependencies of *Mongolia* (1,367,600 sq.m.), and *Tibet* (463,200 sq.m.). Total area 4,277,650 sq.m.; pop. est. 489,309,000 (Chinese, Manchus, and remnants of Man-tse and Miao-tse aborigines; 349,800 foreigners, mainly Japanese). Religions: Taoism, Con-

fucianism, and Buddhism; ancestor-worship of great importance. In addition Moslems number 30,000,000 and Christians 2,500,000. Coast-line (incl. in N. by Yellow Sea and Gulf of Pe-chih-li, with peninsulas of Liaotung, Shantung, and Korea; in centre by Hang-chow Bay; and in S. by Gulf of Tong-king (isl. of Hainan). Interior crossed by great mtn. ranges radiating from Pamir Plateau in W., incl. *Tien-Shan*, *Altyn Tagh*, and *Kunlun Mtns.*; *Himalayas* separate Tibet from N. India; *Altai*, *Khingon*, and other ranges enclose Mongolian deserts. Fertile E. plains watered by rvs. Hwang-ho, Yangtze-kiang, and Si-kiang; lakes include Po-yang (Kiangsi prov.) and Tung-ling (Hunan prov.).

*Climate* varies: extremes of heat and cold in N., subtropical in S., with monsoons and typhoons. *Vegetation* corresponds; soil fertile in Szechwan and in N. China plain;

crops include oats, wheat, rice, millet, soya beans, tea, cotton, sugar-cane, indigo, opium poppies; bamboo and mulberry trees (for silkworm breeding). Characteristic fauna are panthers, tigers, monkeys. Important fisheries; extensive coalfields; other min. wealth (iron, tin, copper, zinc, etc.) little exploited. Cap. *Nanking*; former cap. *Peking* (*Peiping*).

*Foreign possessions* in C. are Hongkong, with Kowloon (British), and Macao (Port.), both at mouth Canton Riv.; and Kwangtung (S. extremity of Liaotung Penins., with Port Arthur), Japanese. Kwangchow-wan, in S.E. China, is leased to France; Wei-hai-wei, on Shantung Peninsula, was leased to Gt. Brit. 1898-1930. Korea was lost by China to Japan, 1895 and ceded to her by treaty, 1910. Manchuria is (1933) in the hands of the Japanese who have formed it into the state of Manchukuo (q.v.).

*History* begins to emerge from tradition with *Hsia dynasty* (trad. dates, 2205-1766 B.C.), followed by *Shang d.* (1766-1122). Under *Chou d.* (1122-249) development and expansion of C. began, followed by disintegration (in 7th cent. B.C.) into five States; rival schools of philosophy: Confucianism and Taoism. Under *Chin d.* (249-202) country reunited: great wall built against inroads of N. barbarians (214 B.C.); literature discouraged. *Han d.* (202 B.C.-A.D. 220) saw conquest of barbarians in N.W. and revival of literature; introduction of Buddhism. Succeeded by the *Three Kingdoms* (220-589); invasions by Tatars and Tibetans. C. reunited under *Sui d.* (589-618); powerful under *Tang d.* (618-907). After disturbed period (succession of unimportant dynasties), *Sung d.* (960-1280), overthrown by the Mongols. *Mongol* (or *Yuan*) *d.* (1280-1368) started with Kublai Khan, whose empire extended



**Chinese Art and Literature**, art chiefly expressed by ARCHITECTURE: pagodas, bridges, walls. SCULPTURE: stone, marble, esp. in bronze, small figures in ivory, jade. PAINTING: in fine soft water colour, evocation of mood rather than transcription, landscape predominant, regarded as branch of hand-writing. LIT.: orig. very early (c. 1200 B.C.) variety of subj. and exhaustive treatment. POETRY: 1) *Shih Ching*, ritualistic songs and ballads; 2) the golden age of Ch. poetry, 689-740; chief authors Wang Wei, Li Po, Tu Fu, Po Chu-i; 3) also outstanding period, but life regarded more seriously; chief author, Su Tung-po 960-1260; 4) very productive but mediocre; poetry characterized by delight in natural phenomena and infinite sympathy for human grief and suffering, some love-poetry, marked melancholy, consolation and inspiration in the wine-cup 1260-1368. HISTORY: 1) Shu Ching for very early period; 2) Confucius's *Annals of Lu* (Ch'un Ch'iu); 3) Ssu-ma Chien's *Shih Chi* 145-87 B.C.; 4) Ssu-ma Kuang's



*T'ung Chien*. DYNASTIC HIST.: Wu-yang Hsiu (Old T'ang hist.). PHILOSOPHY: Confucius, Mencius, Hsun Tzu, Chu Hsi, Wang Tang-ming. NOVELS AND PLAYS: *San Kuo Chih* (The 3 Kingdoms) 13th cent. hist. romance, *Chin P'ing Mei* (trans. as *The Golden Lotus*), 16th cent. plays, fl. in Yuan dyn., *P'i P'a Ch'i*, etc.

**Chinese Chronology**, system of reckoning time based on civil lunar and astronomical solar year, the former arranged in 19-year periods contg. seven intercalary yrs. of thirteen lunations and 12 common yrs. of 12 lunations; solar year contains 365½ days. a day being intercalated every fourth year.

**Chinese religion**, orig. probably a simple monotheism, to wh. star- and sun-worship were soon added; from conception of protecting spirits arose ancestor-worship, incorporated several centuries before Christian Era in ethical systems of *Taoism* and *Confucianism* (q.v.); *Buddhism* (q.v.) prob. introd. in 2nd or 1st cent. B.C. and largely modified subsequently to suit Chinese national character: individual Chinese frequently profess simultaneous adherence to all these three cults.

**Chinese Turkestan**, vassal state of China, see TURKESTAN.

**Chingford**, urb. dist. Essex, 10 m. N.E. London, on W. side Epping Forest; pop., 22,100.

**Chinook**, 1) N. Amer. Ind. group of tribes; 2) their language; 3) patois, mixture of Fr. and C.; 4) warm, dry wind from Rocky Mountains.

**Chinoiserie** (Fr.), European imitation or adaptation of Chinese motives and conventions in decorative art, especially fashionable in mid. 18th century.

**Chintz**, glazed calico (q.v.), printed in coloured patterns on white ground.

**Chioggia**, seapt., Venetia, Italy, 15 m. S. Venice, on an isl. at S. end of the lagoons; pop., 22,300; bpric.; medieval buildings; fishing.

**Chios**, Gr. isl. off W. coast Asia Minor; 356 sq.m.; pop., 75,680; produces and exports gum-mastic; cap. and port, *Kastron* (q.v., 22,125).

**Chipmunk**, one of the commonest N. Amer. ground-squirrels; terrestrial in habit and remarkable in having pouches inside cheeks for temporary storage of food.

**Chippendale**, Thos. (d. 1779), Eng. cabinet-maker; mahogany furniture characterized by solidity, sound construction, fine carving, and beauty of line. Adapted Louis XV, Gothic, and Chinese styles. Noted for his chairs and settees.

**Chirchik**, tn., Uzbek, S.S.R., Asiatic Russia, created 1929; hydro-electric station

(280,000 kw.), nitrogen and electro-chemical plant, for increasing cotton produc. on State farms.

**Chi Rho**, sacred symbol composed of the 1st and 2nd letters of the Gr. word "Christos."

**Chiricahua**, nat. monument (1924) in Arizona, U.S.A., 4,480 acres; curious rock formations.

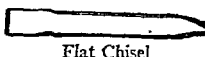
**Chirol**, Sir Valentine (1852-1929), Brit. journalist; foreign editor, *The Times*, 1899-1912; memb. Royal Commn. on Indian Public Services, 1912-16; *Fifty Years in a Changing World*, 1927.

**Chiron**, (Gr. myth.) a Centaur, expert in art of healing; tutor of Achilles.

**Chiropraxis**: see CHEIROPRAXIS.

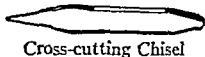
**Chiroptera**, (zool.) the bat family; see BAT.

**Chisel**, tool of steel with sharpened wedge-like cutting end, used for stone and metal-work.



Flat Chisel

**Chisholm**, George Goudie (1850-1930), Brit. geographer; lecturer at Edinburgh Univ., 1908-21; pres. of Section E., Brit. Asstn., 1907; awarded Daly gold medal by Amer. Geog. Soc. of New York, 1917. *Handbook of Commercial Geography* (1889), etc.; ed. *Ency. Brit.* (11th and 12th edns.).



Cross-cutting Chisel

**Chisinau**, **Kishinev**, cap., Bessarabia, Rumania, pop. 202,600; milling, wine, tobacco, cattle breeding.

**Chislehurst**, urban dist. Kent, 11 m. S.E. of London; pop., 10,000; anc. caves; Napoleon III died at Camden Place.

**Chiswick**: see BRENTFORD.

**Chita**, 1) county, Far Eastern Area, Russ. S.F.S.R.; c. 70,000 sq.m.; pop., 382,000; largely plateau; climate unfavourable to land cultivation, only 9% being ploughed. Gold mines employ 5,400 men; fox and squirrel furs exported; tin mines; precious stones (topaz, crystal, and amethyst) have been found but are not exported. 2) Chf. county tn., and cap. of Zabaikalsk prov. on Riv. Chita, pop., 57,311; fur and leather dressing; smuggling centre for Mongolia and Manchuria.

**Chitin**, (chem.) carbohydrate derivative forming skeletal substance of outer covering of Crustacea, insects, spiders, certain worms, etc.

**Chiton**, tunic worn by anc. Grks. 1) *Doric*, short and of wool; 2) *Ionic*, long and of linen; both, an oblong piece of cloth wrapped round the body with waist belt and an armhole in the folded side, the 2 ends fastened on opp. shoulder.

**Chitral**, Ind. State, N.W.F.P., extreme N., Brit. India, S.E. Hindu Kush; mountainous (passes 10-12,000 ft.); c. 4,500 sq.m.;

Chi Rho  
(Monogram  
of Christ)

cap. *Chitral*, on riv. same name (trib. Riv. Kabul); pop., c. 10,000. **Siege of C.**, mixed force under Sir. Geo. Robertson besieged 4 March, 1895; relieved by Col. Kelly, 20 April, 1895, before arrival of Sir Robt. Low, who had marched via the Malakhand Pass.

**Chittagong**, 1) dist., Bengal, India; area 2,500 sq.m.; pop., 1,500,000; 2) cap. of dist., on Bay of Bengal; main port of Assam; exports tea, rice, jute; pop., 29,000.

**Chive**, *Allium schaeenoprasum*, variety of garlic; grows wild, but cultivated as a salad plant.

**Chladni, Ern. Fl. Fried.** (1756-1827), Ger. physicist, the "Father of Modern Acoustics"; demonstrator of **C.'s figures**, patterns formed on a metal plate strewn with sand, and caused to vibrate by means of a violin bow drawn across its edge.

**Chlamys**, Grk. cloak, made from an oblong piece of woollen cloth thrown across left shoulder and fastened on the right with fibula (*q.v.*); worn by travellers, soldiers, etc.

**Chloral hydrate**,  $\text{CCl}_3\text{CH}(\text{OH})_2$  hypnotic drug prep. by action of chlorine on ethyl alcohol (*q.v.*).

**Chlorates**, (chem.) salts compounded of chloric acid and a metal.

**Chloride of lime**, bleaching powder, produced by action of chlorine gas on moist slaked lime. Formula doubtful, prob.  $\text{ClCaOCl}$ ; dissolves in water to form  $\text{CaCl}_2$  and  $\text{Ca}(\text{OCl})_2$ , calcium hypochlorite. Bleaching agent for cotton, linen, and paper. Also used as antiseptic, as bactericide for drinking water, and as deodorant. Acids act on it with liberation of chlorine. **C. of silver**, compound of silver and chlorine (found native as *horn-silver*); white curdy precipitate wh., when exposed to action of light, decomposes and becomes black through liberation of metallic silver; used in photography.

**Chlorides**, compounds of chlorine with another element.

**Chlorine**, (chem.) element, sym, Cl; at. wt. 35.457; sp. gr. 2.49; one of halogen series (*q.v.*); a heavy, yellowish gas. Does not occur naturally, but is found abundantly in combin., e.g. common salt (sodium chloride); used princ. in commerce as a bleach and for making bleaching powder (*q.v.*), also to sterilise drinking water; very poisonous; used during World War in gas attacks.

**Chlorite**, green micaceous mineral; formula,  $\text{H}_2(\text{Fe}, \text{Mg})_2\text{Al}_2\text{Si}_2\text{O}_{10}$ ; found in conjunction with quartz and feldspar as **c. slate**.

**Chloroform**, colourless, volatile liquid ( $\text{CHCl}_3$ ), used as an anaesthetic since 1848, also in liniments as treatment for rheumatism.

**Chlorophyll**, green colouring matter of plants; cannot develop in absence of light;

forms carbohydrate for the plant from atmospheric carbon dioxide and water.

**Chlorosis**, "green sickness", a now rare form of anaemia in girls betw. 14 and 20, characterized by a diminution of the red colouring-matter of the blood.

**Ch.M.**, abbr. *chirurgiae magister* (Lat.), Master in Surgery.

**Cho**, 1) Jap. linear meas., 118.9 yds. (108.7 metres); 2) Jap. square meas., 2.45 ac. (99.16 ares.).

**Choate**, Jos. Hodges (1832-1917), Amer. lawyer and statesman; Republican; member of Committee of Seventy wh. broke up Tweed ring; pres. of N.Y. Constitutional Convention, 1894; U.S. ambassador to Gt. Brit., 1899-1905; delegate to Hague peace conference, 1907.

**Chocolate**, preparation of cocoa and sugar, often with additions (vanilla, milk, mocha); in slabs as a sweetmeat; liquid, with milk. In use in Eur. since 1520. See COCOA.

**Choctaw**, 1) civilized N. Amer. Indian tribe now settled in Oklahoma. 2) A particular step in figure-skating.

**Chodowiecki**, Daniel (1726-1801), Pol. painter and etcher.

**Choir**, band of persons trained to sing together, esp. (eccles.) in church; part of church designed for singers. In many cathedrals and churches the choir is divided into two parts: *Decani* sitting on the south of the chancel, the side of the *decanus* (dean), *Cantoris* on the north side, that of the *cantor* (see PRECENTOR). **C.-stalls**, seats in church reserved for choir; sometimes divided from body of ch. by ornamental partition (**C. screen**).

**Choiseul**, Étienne François, Duc de (1719-85), Fr. statesm.; ambass. to Rome, 1753, Vienna, 1757; For. Min. during Seven Years' War; reformed army, encouraged colonization.

**Choiseul**, island, Pacific, one of the Solomon group (British).

**Chojnice, Konitz**, tn., Poland, on W. Pruss. frontier; pop., 11,200.

**Choke-damp**, poisonous gas, mainly carbonic-acid gas, which accumulates in disused pits and in mines; chiefly the result of the combustion of fire-damp (*q.v.*).

**Choking coil**, (elec.) insulated coil with iron core increasing *self-induction* or *impedance* (*q.v.*) to passage of variable currents. Used in place of resistance to control and adjust alternating current, to prevent passage of current fluctuations; in wireless *coupling* circuits (*q.v.*).

**Cholangitis**, inflammation of the bile-ducts. **Cholecystitis**, (med.) inflammation of the gall-bladder. **Cholelithiasis**, (med.) gall-stones. **Cholecystography**, administration of relatively inert substance opaque to X-rays, usu. compound of iodine and phe-



nolphthalein, to outline gall-bladder, prior to taking X-ray picture.

**Cholera, Asiatic c.**, acute infectious disease caused by the comma bacillus (*C. vibrio*). Symptoms: severe diarrhoea, extreme thirst, cramp and collapse followed by reaction. Treatment: warmth, rest, astringents, and saline injections. In Europe, only sporadic cases occur.

**Cholerine**, mild form of Asiatic cholera.

**Cholesterin, cholesterol**,  $C_{27}H_{46}O$ , monatomic alcohol found in blood and bile and most animal cells; an ingred. of gallstones.

**Choliamb**, (prosody) irreg. or "limping" iambus;  $\sim\sim\sim$  instead of  $\sim\sim\sim$ .

**Choline**, (chem.) crystalline base found in plants and animals; formula,  $C_5H_{10}O_2N$ .

**Cholo**, child of white and Ind. parents (Sp. Am.).

**Cholon**, port in Cochin-China; pop., 199,000, mostly Chinese.

**Chomolungma**: see MT. EVEREST.

**Chopin**, Frédéric (1810-49), Pol. composer; nocturnes, preludes, mazurkas, polonaises.

**Choral**, religious or secular mus., performed by voices in harmony. **C. Symphony**, Beethoven's 9th. Symph. with choral finale.

**Chord**, 1) (math.) straight line joining two points on a curve, or the extremities of an arc, e.g. chord of an apse. 2) (Mus.) Simultaneous sounding of several notes of different pitch.

**Chorda**, (zool.) *notochord*, dorsal axis of the lowest vertebrates, transitory in others; remains cartilaginous in lowest forms of fishes; see LANCELETS; CYCLOSTOMATA.

**Chorea**: see ST. VITUS'S DANCE.

**Choreography**, art of ballet-designing; art of teaching dance-steps by written signs.

**Choriamb**, Gr. met. foot:  $\sim\sim\sim$ ; i.e. *trochee* (q.v.) + *iambus* (q.v.).

**Chorley**, munic. bor., Lancs, Eng.; pop., 30,800; cotton mills, collieries.

**Chorus**, originally a dance-choir; in Gr. tragedy, speakers lead by *Choregos*, gen. representing the voice of the crowd. In music a composition for voices singing in harmony, or the singers performing it.

**Chosen**: see KOREA.

**Chosroes**, name of the 21st and 23rd Sassanid (q.v.) kgs. of Persia; **C. I**, reigned 531-579; fought three wars agst. Rome; greatly extended Pers. Empire; **C. II**, reigned c. 590-628; conquered Mesopotamia, Palestine, Egypt, Syria, Asia Minor, and threatened Constantinople; lost all his conquests to Heraclius (q.v.).

**Chouans**, name given to Royalist in-

surgents of Brittany during the Fr. Revolution; **War of the C.**, suppressed by Napoleon, 1800, was continuation of War of La Vendée (q.v.).

**Chough**, bird of crow tribe, found in Europe and Asia; black plumage, long, pointed wings; slender red or brightly coloured beak.

**Chow-chow**, shaggy, medium-sized dog imported from China; of uniform brown, black, blue, cream, or white; black tongue.



Chow-chow

**Chrestomathy**, anthology, collect. of typical excerpts from authors, esp. for teachg. purposes.

**Chrétien de Troyes** (c. 1200), Fr. poet; took Arthurian legends as his theme.

**Chrism**, (eccles.) olive oil mixed with balm, blessed by bp. and used by Ch. in administration of certain sacraments and in various rites (e.g., coronations).

**Christ** (Gr., the anointed), Jesus, the Saviour; orig. with "the," as a title, aftwds. as part of name, "Jesus Christ."

**Christ Church College**, Oxford;

fndd. 1532 by Henry VIII. At 9.5 P.M. the great bell, Tom, is rung 101 times by hand

to indicate that it is time to close the gates. Contains smallest Eng. cathed. King Edward VII and ten Prime Ministers of 19th cent. were among its alumni. Familiarly known as "The House."

**Christ, Order of**, Papal order of knighthood, fndd. 1319. Portugal has a similar O., fndd. 1317.

**Christadelphians, Brethren of Christ**, small Unitarian sect; arose in U.S.A., during Amer. Civil War.

**Christchurch**, 1) munic. bor., Hants, Eng., at confluence rivs. Avon and Stour; Priory Ch.; pop., 9,100. 2) City, cap. Canterbury, S. Island, New Zealand, on Riv. Avon, 8 m. above Port Lyttleton; cathedral; univ. college; manuf. boots, woollens, agric. implements; pop. (with suburbs), 126,040.

**Christendom**, whole body of Christians, and countries in which Christianity is recognized religion.

**Christian**, name of 10 kgs. of Denmark: **C. I** (1426-50-81), fndd. house of Oldenburg



Chopin



Christ, after Bellini

in Denm.; took possession of govt. of Sweden, 1457; expelled from Sweden by Sten Sture, 1470; fndd. Univ. of Copenhagen, 1479. **C. II, the Cruel** (1481-1559) Kg. of Denmark and Norway, 1513-23; conquerd. Sweden; massacred Swed. nobility; deftd. in revolt under Gustavus Vasa (*q.v.*); deposed and driven out of Denmark, 1523; descended on Norway, 1531; captured, 1532; imprisoned till death. **C. III** (1502-34-59), Kg. of Denm. and Norway; fostered Reformation; reduced Norway to a province. **C. IV** (1577-88-1648), Kg. of Denm. and Norway; successful war agnst. Sweden, 1611-13; took part in Thirty Years' War (*q.v.*), deftd. by Tilly at Lutteram-Barenberge, 1628; forced to accept peace of Lübeck, 1629; lost much territory in 2nd war with Sweden, 1643-45; fndd. Dan. settlement at Tranquebar. **C. V** (1646-70-99), Kg. of Denm. and Norway; unsuccessful war with Sweden, 1675-79. **C. VI** (1699-1730-46), Kg. of Denm. and Norway; blt. palace of Christiansborg. **C. VII** (1749-66-1808), Kg. of Denm. and Norway; his half-bro., Fredr. regent for last 26 yrs. of reign owing to kg.'s impaired reason. **C. VIII** (1786-1839-48), Kg. of Denm.; gov. of Norway when Norwegians repudiated cession to Sweden; championed Norw. national independence; proclaimed C. I of Norway, but forced by allied powers to relinquish crown, 10 Oct., 1814. **C. IX**, (1818-63-1906), Kg. of Denmark and Iceland; elected to succeed Fredr. VII; involved in Schleswig war with Germany; his dau. Alexandra m. Edw. VII of England. **C. X** (1870-1912- ), Kg. of Denmark and of Iceland; signed new constitution, 5 June, 1915, and acknowledg. Iceland as independent kgdm., 1 Dec., 1919.

**Christian Science**, tenet of cult fndd. in U.S.A. by Mary Baker Eddy (1866); based on theory that disease and sin are subjective and arise solely from mental error, wh. can be corrected by faith and prayer. **C. socialism**, movement orig. in Eng. by F. D. Maurice and Charles Kingsley, 1848, for improvement of social and indus. conditions by means of co-operative workrooms, lectures to working-men, abolition of "sweated" labour, etc. **C. Year, The**, collection of poems by Keble (*q.v.*), 1827, wh. includes a poem for every Sunday and Holy Day throughout the year.

**Christiania**: see OSLO. **C. turn**, (skiing) turn made on inside edge of ski (*q.v.*) with feet side by side.

**Christianity**, religion fndd. by Jesus Christ, now practically co-extensive with Western civilization; spread in Asia Minor and Mediterranean countries by St. Peter and other Apostles and by St. Paul ("the first missionary"); reached Rome c. 63, and probably Britain c. 150. Primitive Christi-

anity may be chronologically divided into the *Apostolic Age*, to 70 (destruction of Jerusalem), the *Sub-Apostolic Age*, to c. 140 (the period of the Gnostics), and the *Patristic Age*, to c. the time of the Council of Nicea, 325. Early Christians much persecuted, esp. under Nero (64-68), Domitian (95), Trajan (106), Marcus Aurelius (166-76), Sept. Severus (199-204), Maximus (235-38), Decius (250-52), Valerian (258-60), Aurelian (275) and Diocletian (303-11); legal recognition accorded by Constantine the Great (Edict of Milan), 313. See RELIGIONS, STATISTICS OF.

**Christie's**, name by wh. sales-room of the firm of auctioneers: Christie, Manson and Woods, of King Street, London, Eng., is known. Firm fndd. by James Christie (1766); famous for the sales of works of art wh. take place there.

**Christina** (1626-32-89), Qn. of Swed., dau. of Gustavus Adolphus II; having arranged successn. of cousin, Charles Gustavus, she abdctd., 1654. See also MARIA CHRISTINA.

**Christmas Day**, 25th Dec.; Christian festival celebrating birth of Christ, date of wh. was fixed in 4th cent.; 4th quarter-day (*q.v.*).

**C. Island**, 1) Brit. isl. W. Pacific, just N. of Equator, largest atoll (c. 70 m. in circum.) in the Pacific; pop., 420 (45 Europeans). 2) Brit. isl. Indian Ocean, 220 m. S. of Java; dependency of Singapore; calcium phosphates; area, 62 sq.m.; pop., 1,060. **C. Oratorio**, by Bach (*q.v.*), 1734. **C. rose**, the snow rose, *Helleborus niger*, garden plant of order *Ranunculaceae*; white or pink flowered; blossoms in midwinter. **C. tree**, small fir decorated and hung with presents at Christmas.



Christmas Rose

**Christology**, branch of theol. dealing with doctrine of Christ's personality and attributes.

**Christopher**, St., a Syrian mart. c. 250; said to have carried Christ in form of a child across a river; patr. st. of travellers.

**Christopher**, pope or antip. (903-04), elected agnst. Leo V; deposed and strangled by successor, Sergius III.

**Christ's College**, Cambridge; fndd. 1505 by Lady Margaret Beaufort (mother of Henry VII). Milton and Darwin were among its alumni. **C.'s Hospital**, school for boys; fndd., in London, by Edw. VI, 1552, with (since 1683) prep. sch. and girls' sch. at Hertford; London establishmt. removed to Horsham, Sussex, 1902; the boys and girls wear traditional costume; see BLUECOAT.

**Chromatic**, (mus.) proceeding by semitones, as in the *chromatic scale*. Cf. DIATONIC.

**Chromatophore**, (biol.) pigment cell; general term applied to coloured plastids of plants and animals.

**Chrome leather**, tanned with chromium salts, supple and durable; used for machinery, shoes, etc. **C. red**, colour, basic chromate of lead. **C. yellow**, painters' colour; chemically, chromate of lead.

**Chromite**, mineral of the spinel (*q.v.*) group; oxide of iron and chromium, symb.  $\text{FeO}, \text{Cr}_2\text{O}_3$ . Chief source of chromium (*q.v.*).

**Chromium**, very hard silver-white metal, chem. element. Symbol Cr, at. wt. 52, sp. gr. 6.7. Used for chromium plating; constituent of stainless steels and "Nichrom" (used as heating element in elec. stoves and cookers.) **C. salts** strongly coloured, used for tanning leather. See also BICHROMATES.

**Chromolithography**: see LITHOGRAPHY.

**Chromosomes**, (biol.) parts of the cell nucleus, which transmit hereditary characteristics.

**Chromosphere**, the outer, incandescent, gaseous envelope of the sun, visible at a total solar eclipse; consists mainly of hydrogen and helium, up to 10,000 m. in thickness. See also SOLAR PROMINENCES.

**Chromo-zincography**, photo mechanical method of producing zinc relief plates for printing in colours.

**Chronic disease**, long continued disease.

**Chronicles**, (O.T.) two historical bks., supplementary to *Samuel* and *Kings*, possibly compiled by Ezra. **C. of Kiev**, mediæval Russ. epics, consisting of the *Chronicle of Nestor* (11th cent.), telling of the warfare and ambitions of the Scand. invaders of W. Russia in the 9th cent., and *Igor*, a prose-poem relating the deeds of Igor, a descendant of the Viking Rurik.

**Chronique scandaleuse** (Fr.), a history of scandals; shady tittle-tattle about people's private lives and doings.

**Chronograph**, properly an appar. in wh. points of time are deterd. by magnetically actuated movement of a pen drawing a line upon a strip of paper moved rapidly and uniformly by clockwork or other motor. Often used for stop watches (*q.v.*) and other accurate means of timing.

**Chronology**, system of measuring time by fixed periods, or of assigning precise dates to events; var. systems in use in different ages and countries. See also CALENDAR; ERA; CHINESE CHRONOLOGY; HINDU CHRONOLOGY.

**Chronometer**, instr. for measuring time with particular exactitude, having device for compensating changes of temperature; used by navigators to determine longitude at sea.

**Chrysalis**, name applied to pupa (*q.v.*) stage in life-history of butterfly.

**Chrysanthemum**, a large genus of

compound flowers; the common ox-eye daisy is a member of the family. The cultivated garden C., with its many varieties of flowers and shades of colour (red, copper, yellow, white), is a hybrid originating from *C. indicum*. **Order of the C.**, Jap. order of knighthood, fndd. 1877.

**Chrysoberyl**, semi-precious stone, generally yellow, green, or brown.

**Chrysoprase**, apple-green variety of chalcedony (*q.v.*).

**Chrysolite**, a brass-like alloy.

**Chrysostom**, St. John (c. 344-407), bp. of Constantinople; author of homilies, treatises, and liturgies.

**Chuang-tse** (fl. 3rd cent. B.C.), Chin. Taoist philosopher.

**Chub**, fresh-water fish of the carp family *Cyprinidae*; bluish-black on upper parts, cheeks and gill-covers golden yellow; rarely exceeds 5 lbs. in weight. Plentiful in rivers of England and Europe, extending to Asia Minor.

**Chuck**, (tech.) device for holding a tool in a lathe (*q.v.*), or for securing wood to be turned in desired position.

**Chukchi**, Mongoloid people (13,000) inhabiting N.E. Siberia on **C. Penins.**; nomadic, depend. on reindeer, and hunting walrus; practise Shamanism (*q.v.*).

**Chukker, chukka**, (polo) period betwn. the ball coming into and going out of play.

**Chulalongkorn**, Paramindr (1853-1910), Kg. of Siam; introd. Europ. ideas and institutions.

**Chung-king**, treaty port in Sze-chwan, China, on Yangtse-kiang, 1,530 m. from mouth; pop., 624,700; iron industry.

**Chur, Coire**, cap. of Swiss canton Grisons, on the Plessur; pop., 15,400; cloth manuf. Diocese since 452. To S. is health resort of **Churwalden** (alt. 4,020 ft.); pop., 700.

**Church**, Richd. Wm. (1815-90), Eng. divine; leader of old High Church party; dean of St. Paul's, 1871-90; pubd. *Life of St. Anselm*, 1870; *Essay on Dante*, 1878; *The Oxford Movement*, 1878, etc.

**Church**, 1) building designed for relig. worship, now limited in use to Christian relig.; classified as cathedral, conventual, collegiate, parish, etc., churches. 2) The entire Christian community; orig. consisted of Christ and the 12 Apostles; devel. through missionary activities of St. Paul and others in primitive period; constitution took shape with creation of offices of bishop, priest, and deacon; Bp. of Rome gradually became all-powerful; after savage persecutions under Nero (64), Diocletian (303), etc., it received recognition, and became State Ch. under Constantine (early 4th cent.); after collapse of Roman Emp. the Ch. tried to build up



Chrysanthemum

world-embracing eccles. power with Rome for centre, Pope (Bp. of Rome) for supreme head. 3) One of the bodies of Christians into wh. the Ch. came to be split up; in 11th cent. *Eastern Churches* (dissociated themselves from Rom. Ch. in (see SCHISM, EASTERN); *Reformation* (q.v.), in early 16th cent. gave birth to various Protestant and Reformed Chs.; See ROMAN CATHOLIC CHURCH, EASTERN CHURCHES, CHURCH OF ENGLAND, REFORMATION, PROTESTANTS. etc. **C. Army**, founded in London by Prebendary Carlile in 1882; C. of E. institution modelled in many respects on the Salvation Army (q.v.). **C. Association**, instituted 1865 to counteract tendencies of C. of E. to assimilate her doctrine and ritual to those of R.C.Ch. **C. Congress**, annual meeting of clergy and laymen of C. of E. for discussion of all matters of interest to the Ch.; first held 1861. **C. Discipline Acts**, 1840, gave bps. certain jurisdiction over all buildings and persons consecrated to religion; 1892 (Clergy Discipline Act), provided for prosecution and trial of clergy for immoral conduct in the *Consistory Courts* (q.v.).

**Church of England**, at first 2 forms of Cath. Christianity preached in Eng: 1) that of the Celtic missionaries from Columba's monastery of Iona; 2) R.C. missionaries, headed by St. Augustine (597); *Synod of Whitby* (664) decided in favour of latter; *Council of Hertford* (673) united Heptarchy in one Ch. under See of Canterbury in commun. with Rome; after Norman Conq. C. of E. more directly under jurisdiction of Rome, but constantly resisted papal encroachments until, in reign of Henry VIII, it abjured (1534) allegiance to the Pope (see REFORMATION); period of unrest ended in Act of Uniformity (1662), ordering public worship in accordance with *The Book of Common Prayer*. C. of E. claims continuous establishment since 673, unbroken by Reformation, and that it is as truly Cath. and Apostolic as the R.C.Ch. while protesting agst. the departure of the Rom. Ch. from the doctrine and discipline of the Early Ch. **Constitution and Government**: Estbd. under supreme temporal authority of Crown (1534); comprises 2 *Provinces* under Abps. of Canterbury and York (former taking precedence), wh. are divided into *dioceses* under jurisdiction of bp., these dioc. into *deaneries* under rural dean, and these again into *parishes* under incumbent priests (rectors or vicars). Both archbps. and 24 of the 41 bps. (inclgd. always the bps. of London, Winchester, and Durham) sit in the Hse. of Lds. as Spiritual Peers. See also ARCHDEACON; ARCHES, COURT OF; CHAPTER; CONVOCATION; DEAN; ECCLESIASTICAL COMMISSIONERS; HOLY ORDERS, etc.

**Church Rate**, former tax in England and Ireland on houses or lands for maintenance

of the parish church; abolished as compulsory rate 1868.

**Church of Scotland**, a Protestant, Presbyterian (q.v.), body estabd. by Scot. parlt. as State relig., 1560; under John Knox (q.v.) a confession of faith embodying Calvinistic doctrines was sanctioned, 1577; developed form of govt. by general assembly, synods, and presbyteries; defied var. attempts to re-establish episcopalianism; has suffered from internal dissension, esp. great disruption of 1843, when a large section disagreed on questions of eccles. jurisdiction, etc., and formed the **Free Ch. of Scotland** (q.v.), from wh. emerged the **United Presbyterian Ch.**, 1847. In 1900, the Free Ch. of Scot., except for small body wh. retained its name, united with this last to form **United Free Ch.** Finally in 1928 all these bodies achieved unity in one Ch. of Scotland. See also PRESBYTER; SYNOD.

**Church Slavonic**, the former language of Bulgaria and that in wh. the Cyrillic version of the Bible (used by Orth. Gr. Churches) was written c. A.D. 870; now one of the liturgical langs. of Orth. Christianity.

**Churchill, Lord Randolph** (1849-94), Brit. statesm.; a leader of Cons. party; Sec. of St. for India, 1885; Chanc. of Excheq., 1886; s., **Winston, C.**, C. H. (1874- ), soldier (India, Egypt, S. Africa, France), statesm., author, and journalist; entered Parl. as Lib., 1906; Pres. Bd. of Trade, 1908; Home Sec., 1910; 1st Ld. of Admiralty (many import. reforms), 1911-15; Min. of Munitions, 1917; Sec. for War and Air, 1918, and Colonies, 1921. Retired from Parl., 1922; came back as Constitutional, 1924, and held off. as Chanc. Exchequer, 1924-29. Auth. of *London to Ladysmith*, 1900; *Life Ld. Randolph C.*, 1906; *The World Crisis*, 5 vols., 1923-31, etc. **C., Winston** (1871- ), Amer. novelist; *The Crossing*, 1904; *Mr. Crewe's Career*, 1908; *A Traveller in War Time*, 1918; *Dr. Jonathan*, 1919.

**Churchill**, riv. (930 m.), Canada; rises W. Saskatchewan; flows E.N.E. through Granville and Indian Lakes (Manitoba) to its mouth at *Churchill*, or *Fort Churchill*, on W. shore of Hudson Bay (terminus Hudson Bay Rly. and best harbour in S. of bay).

**Churching**, (eccles.) thanksgiving service for a woman after child-birth.

**Churchwarden**, 1) (C. of E.) one of 2 officers appointed annually in each parish, one nominated by the incumbent (*rector's* or *vicar's warden*), the other elected at the Easter Vestry (q.v.), (*people's warden*); responsible for seeing that order is maintained



Winston Churchill

during services, etc., but control of finance and most other responsibilities transferred to Parochial Ch. Council by Act of 1921.  
2) Name given to a clay tobacco pipe with a long stem.

**Churfirsten**, ridge of the Glarus Alps, Switzerland, with 13 peaks ("Firsten").

**Churn**, rotary vessel in which cream is shaken to form butter; has airtight lid with valve for gas escape, and device for beating cream as it is churned.

**Chute**, a slope, or inclined tunnel for conveying parcels, luggage, coal, or grain; also opening in river dam to allow passage of lumber.

**Chutney**, strong, hot, sweet-tasting pickle or relish, made of fruits and condiments.

**Chuvash**, autonomous repub., Centr. Russia, R.S.F.S.R.; 5,926 sq.m.; pop. 755,300; crossed by Riv. Volga; much forest-land; cap. *Cheboksari* (pop., 7,170.)

**Chyle**, lymph wh. contains fat-globules; a milky-white fluid present in the lymphatic vessels of intestine during digestion.

**Chyme**, (physiol.) product of digestion of food in the stomach; it passes into duodenum, where further processes of digestion are carried on.

**Cibber**, Colley (1671-1757), Eng. actor and dramatist; Poet Laureate (1730).

**Ciborium**, (eccles.) receptacle for the pyx, which contains the Host; also altar canopy; see BALDACHINO.

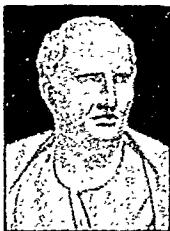
**Cicada**, winged insect of the order *Hemiptera*, noteworthy on account of the male being able to emit a shrill sound. Imago imbibes tree sap; larvae live in the soil, feeding on roots. Many tropical and sub-tropical forms; one British species.



Cicada  
(Under  
Side)

**Cicely**, *Myrrhis odorata*, aromatic plant of family Umbelliferae, found in most temperate regions; grows 2 ft. to 3 ft. high.

**Cicero**, Marcus Tullius (106-43 B.C.); Rom. orator and statesman; exposed Catiline (q.v.), 63 B.C.; leader of Senate after death of Caesar; proscribed and murdered.



Cicero

**Cicero**, tn., Illinois, U.S.A., adjoining Chicago; pop., 66,600; manuf. enamelled ware and machinery.

**Cicerone** (It.), a guide.

**Cicestr.**, abbr. *Cicestriensis* (Lat.), of Chichester (signature of bp.).

**Cicisbeo** (It.), cavalier, gallant; professed and acknowledged lover of a married woman.

**C.I.D.**, abbr., Criminal Investigation Scotland Yard).

**Cid, El, Ruy. Diaz** (c. 1040-1099), "El Campeador"; Sp. national hero of many exploits agst. the Moors; subject of *Cid Romances*, 12th-16th cents.

**Cider**, beverage made from juice of apple pressed out and clarified, either fermented or unfermented, gen. the former.

**Ci-devant** (Fr.), former, ex-; prefix to titles of nobility used by Fr. Revolutionists.

**C.I.E.**, abbr. Companion, Order of Indian Empire.

**C.I.F.**, cost-insurance-freight; formula implying that seller of goods pays all charges to destination, e.g., price may be quoted "£150 c.i.f. Cape Town."

**Cilia**, (zool.) hair-like vibratile outgrowths of the ectoderm; greatly developed in many species of infusoria (q.v.).

**Ciliated cells**, (physiol.) certain epithelial C. possessing hair-like processes.

**Cilicia**, region in S.E. Asia Minor betw. the *Taurus Mts.* and *Mediterr.*; W. mountainous (cedar forests); E. fertile plains (cotton). Persian 400 B.C., Macedonian after Alex. the Gr.'s victory at Issus 333 B.C. Ancient cap., Tarsus.

**Cimabue**, Giovanni (1240-1302), It. painter; known as Father of Mod. Painting; *Frescos* at Assisi.

**Cimarosa**, Domenico (1749-1801), It. composer; opera, *The Secret Wedding*, 1792.

**Cimarron River**, trib. of Arkansas Riv., Oklahoma, U.S.A.; 650 miles.

**Cimbri**, Germ. race of Jutland migrated to Rom. Emp. 133 B.C.; annihilated by Marius in 101 on the Raudine Plain, nr. Turin.

**Cimone Della Pala**, group of mtns., S. Tyrolean Dolomites; *Cima de Vezzara*, 10,466 feet.

**C.-in-c.**, abbr. commander-in-chief.

**Cinchona**, **Peruvian**

bark, bark of various species of cinchona, a tree indigenous to Centr. Amer., and now cultivated extensively in Java and E. Indies. Bark contains following alkaloids: quinine, cinchonine, quinidine, cinchonidine. A decoction of bark has long been recognized as a specific for malaria, but of recent years quinine has been almost entirely used for this purpose. Owing to cost of production and great demand, a preparation of the total alkaloids of red cinchona, known as *Totaquin* (20% quinine) is now recommended.

**Cincinnati**, tn., Ohio, U.S.A., on Ohio Riv.; pop., 451,000; univ. (1874); R.C. cathedral; manuf.: motor cars, clothing and boots; meat packing; coal and iron indust.; grain.

**Cincinnatus**, L. Quinctius (b. c. 519 B.C.), Rom. hero; when called from ploughing to be dictator, 458, he deftd. the Aequians; again dictator in 439, deftd. traitor Spurius Melius.



Cinchona

**Cincture, cingulum**, (eccles.) waist girdle worn over the alb, with proper colour for season.

**Cinderella**, heroine of widely distributed folk-tale; ill-treated drudge of her step-sisters; with help of fairy godmother attends royal ball, where the prince falls in love with her; leaves a slipper behind at ball, which leads to her identification by the prince and marriage to him. In a variant in the *Arabian Nights* an anklet takes the place of the slipper.

**Cinematograph**, apparatus for produc. of moving pictures; latter are taken in **c. studios** by natural or artific light. The **c. camera** photographs the object on to a negative film that moves with jerks, shutter being closed while film is moving. A positive print is made for showing. In the **c. projector** this is pulled across a projection lens, gener-

cultivated in other parts of the world, but the Ceylon product is official as a drug, and has by far the finer fragrance. Contains a volatile oil; used in cookery as a sweet spice and in med. as a flavouring agent and carminative. **C-stone**, orange-brown variety of garnet (q.v.).



White Cinnamon

**Cinquecento**, term used to describe Italian art of the 16th cent., i.e., the High Renaissance.

**Cinquefoil**, (bot.) *Potentilla*, member of rose tribe; **Strawberry-leaved c.**, *P. Fragariastrum*, is somewhat similar to wild strawberry. **Creeping c.** (*P. reptans*) has yellow flowers on long stalks. **Marsh c.** (*P. palustris*) grows abt. 12 ins. high; has large purple flowers.

**Cinque Ports**, five S.E. Eng. coastal tns. which, in return for certain privileges, had to provide ships for royal fleets (11th-15th cents.): orig. Dover, Hastings, Sandwich, Hythe, and New Romney; Rye and Winchelsea added as "Ancient Towns," and several smaller ports as "Limbs" or "Members"; C. P. are under a lord warden (Walmer Castle).

**Cinq-Mars, Henri C. de R.**, marq. de (1620-42), Fr. courtier, favourite of Louis XIII; conspired agst. Richelieu; executed.

**Cintra**, tn. in prov. Estramadura, Portugal, N.W. of Lisbon, on the **Sierra de C.**; pop., 6,000; Capuchin monastery; Moorish castle. **Convention of C.**, agreement betw. the Fr. and Allies after batt. of Vimeiro (1808) under wh. the Fr. were allowed to evacuate Portugal on Brit. ships.

**Cipher**, system of writg. in words or symbols intelligible only to those possessing a "key" or explanation.

**Cipriani, Giovanni, Battista** (1725-85), Anglo-Ital. painter and engraver; settled in London, 1755; orig. mem. R. A., 1769; ceiling at Somerset Ho., London, etc.

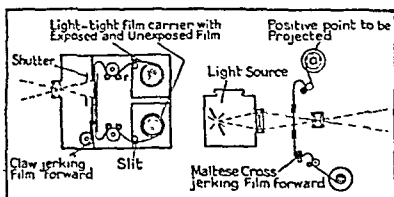
**Circ.**, abbr. *circum* (Lat.), about.

**Circassians**, remnant of Indo-Ger. race still surviving in Turkey (c. 60,000) and Russ.; Mohammedan cattle-breeders, very indep. and democratic.

**Circe**, enchantress in Homer's *Odyssey*, turned her guests or lovers into animals.

**Circensian Games**, anc. Roman games and exhibitions in the circus (esp. the *Ludi Magni*), orig. in honour of Capitoline Jupiter, held on general's return from annual campaign; name implies distinction from gladiatorial exhibitions, etc., held in the amphitheatre.

**Circle**, a closed, uniformly curved plane figure, such that all points on its circumference are the same distance from the centre; measurement: circumference = diameter  $\times$  3.1416 (rep. by Gr. letter  $\pi$ ) or as usually



Apparatus for Film Photography and Projection

ally in a series of jerks; each picture is thrown on the screen for an instant, and then light is cut off by shutter while film is jerked to next picture; 16-24 pictures per sec. are taken. A *slow-motion* effect achieved by taking photographs much more rapidly than shown. Reverse when photographs taken at slow rate (e.g., growing plants) and shown very much faster. In *steady-motion projectors*, film runs at uniform speed, picture being held still on screen by moving optical parts (lenses, mirror). See also PHOTOGRAPHY.

**Cineraria**, handsome ornamental plant with variegated flowers and heart-shaped leaves (*Senecio cruentas*). Name also given to a genus of S. African herbaceous plants.



Cineraria

**Cingalese, Sinhalese**, inhab. of Ceylon, Ind.-Dravidian race, abt. 2½ million, mostly Buddhists; agric. **C. lang.**, see LANGUAGE SURVEY, B.

**Cinna**, Lucius Cornelius, 1) (?-84 B.C.), Rom. leader of pop. party opposing Sulla (q.v.); murdered. 2) His s. praetor 44 B.C., in sympathy with conspirators agst. Julius Caesar (q.v.).

**Cinnabar**, reddish mineral, sulphide of mercury; red pigment made from this; vermilion.

**Cinnamon**, bark of *Cinnamomum zeylanicum*; cultivated in Ceylon. C. trees are

expressed,  $2\pi r$ . (i.e.,  $2 \times \pi \times$  radius); area  $= \pi r^2$ . (i.e., radius  $\times$  radius  $\times 3.1416$ );  $\frac{1}{\pi} = .3183$ ;  $\pi^2 = 9.8696$ .

**Circuit**, (elec.) closed path of elec. current (q.v.).

**Circular polarization**: see POLARIZATION OF LIGHT. **C. saw**, high-speed mechan. saw with disc-shaped blade; an adjustable fence regulates breadth of the saw-cut.

**Circulus in probando** (Lat.), argument in a circle; assumption of a conclusion as a means of proving its truth.

**Circumcision**, removal of the foreskin by surgical operation. Practised as a relig. rite by Jews (at age of 1 wk.) and by Moslems before puberty. **C. of Our Lord**, Feast of the, celebrated on the 1st January.

**Circumflex**, accent, Gr.  $\sim$  Fr.  $\wedge$ ; indicates contraction, length or spec. quality of pronunciation of vowel.

**Circumpolar star**, one the whole of whose diurnal circle at given place is described above the celest. horizon; i.e., one wh. never sets.

**Circumstantial evidence**, evidence of surrounding facts from which facts in dispute may be inferred.

**Circus**, flat, gen. circular, space surrounded by tiers of seats. In anc. Rome C. was a permanent building for chariot races, etc.; mod. C., usu. nomadic, is display of trick-riding, performing animals, acrobatics, etc.

**Cirencester** (Rom. *Corinium*), tn., Glos., Eng.; parish ch.; agric. coll.; pop., 7,200.

**Cire-perdue**: see MOULDING.

**Cirrhosis**, (med.) condition of liver in wh. it is enlarged and many of its cells are destroyed and replaced by fibrous tissue; usu. caused by excessive consumption of alcohol.

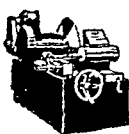
**Cirrocumulus, C.stratus**: see CLOUD.

**Cirrus**, (bot.) tendril; (zool.) thread-like appendage serving as means of locomotion, organ of touch, etc.; (meteorol.) see CLOUD.

**Cisalpine**, "this side of the Alps" (from the point of view of Rome). **C. Repub.** formed by Napoleon in Upper Italy (1797-1802) from the **Cispadane Repub.**, formed by him S. of the Riv. Po in 1796.

**Cissbury Hill**, hill (603 ft.), Sussex, on S. Downs; Nat. Trust property;  $2\frac{1}{2}$  m. N. Worthing and  $2\frac{1}{2}$  m. S. Chanctonbury Ring (q.v.); prehist. hill-fort (60 ac.), largest in S. England.

**Cistercian**, monastic order, branch of Benedictines, founded at Citeaux (*Cistercium*) in France by St. Robert (1098); revitalized by St. Bernard of Clairvaux (1115), hence also called *Bernardine Order*.



Circular Saw

**Citric acid**, acid present naturally in cert. fruits, e.g., lemons, black-currants, bilberries, etc.; used in med. to increase flow of urine.

**Citron**, *Citrus medica*, evergreen tree growing in China, W. Indies, Madeira, Corsica, etc. Bears large oblong fruit, with thick, yellowish outer rind, which is candied for use in confectionery, etc., and also yields an essential oil.

**Citronella oil**, an essential "grass oil" from Java and Ceylon; used for scenting cheap soap, etc.

**Citrus**, genus of Asiatic fruit-trees now widely cultivated in sub-tropical Amer., S. Africa, etc.; includes orange, lemon, mandarin, lime, and grapefruit.



Citron

Twig with Fruit

**City**, in med. times, tn. possessing a bp. In mod. Eng. law, bor. dignified with this title by grant from kg. Many anc. cities (usually those which have or had bps.) are small, but title is newly conferred only on towns with pop. of not less than  $\frac{1}{4}$  million, Westminster (q.v.) being an exception. Title does not confer any spec. powers on the gov. body.

**City (of London), the**, central part of London under jurisdiction of Lord Mayor and Corporation, covering area of 675 acres divided into 26 wards, each electing an Alderman (excepting Bridge Ward Without); resident pop., 10,900. The business centre of the Brit. Empire, and centre of world's financial and mercantile system. See LONDON. "The City," term used for the financial firms of London (covers gen. banks, discount and money markets, Stk. Exch., etc.), bec. they are centred in City of London. Corresp. term in U.S.A., *Wall Street*. **C. of L. School**, public sch., fndd. nr. Cheapside, by City Corporation, in 1835, from funds provided by an endowment of John Carpenter, 1442; new building on Victoria Embankment opened, 1883.

**City of God, Of the**, *De Civitate Dei*, apologetic treatise by St. Augustine, in vindication of Christianity and the Church.

**Ciudad Bolívar**, Angostura, cap., State of Bolívar, Venezuela, S. Amer., on Riv. Orinoco; riv. port; pop., 16,800.

**Ciudad Rodrigo**, tn. in W. Spain, stormed by Wellington, 1812.



[Civet Cat

**C.I.V.**, abbr. City Imperial Volunteers (2nd Boer War).

**Civet**, nearest allied carnivore to the cat, from which it differs externally in more elon-

gated form of body, shorter legs, longer head, and sharper muzzle. Confined to Old World, attaining maximum development in Africa and Oriental countries. Possesses highly odoriferous glands with a pungent secretion (civet) much used in perfumery.

**Civilization**, condition of ordered, organized community; sum total of progress in knowledge, science, and art; esp. in West.

**Civil List**, annual income voted by Parl. to Eng. Crown in exchange for hered. revenues; used for State purposes. **C. L. pensions**, pensions paid to specified persons as reward for signal services to the State in Gt. Brit.; granted by sovereign on recommendation of 1st Ld. of Treasury, and paid from Consolidated Fund. **C. service**, collective title for pers. employed by Crown (*q.v.*) in work of civil government. **C. War, English**, struggle betw. monarchy and the Parlt., having its root in the accession of Stuarts to the throne (1603), war actually breaking out in 1642 and ending with execution of Charles I, 1649; resulted in temporary expulsion of Stuarts, estabment. of Commonwealth and, in 1653, of a Protectorate under Cromwell.

**Civita Vecchia**, fortifd. seapt., 35 m. N.W. of Rome, Italy; pop., 20,000. Anc. *Centum Cellae* founded by Trajan.

**Cl.**, abbr. centilitres. **Cl**, chem. symbol of chlorine (*q.v.*).

**Clackmannanshire**, inland co., smallest in Scot., 55 sq.m.; pop., 31,900; agric., pasture, coal-mining; co. tn., **Clackmannan**, pop., 2,500.

**Clacton-on-Sea**, urb. dist. and seaside resort, Essex., Eng.; pop., 15,000.

**Claim**, action brought in the courts to enforce a right. In the High Court begun by a *Writ*; in lower courts by a *Plaint* stating plaintiff's demand.

**Clairvaux**, Cistercian monastery in the French dépt. Aube, founded by St. Bernard, 1115. Since 1808, a gaol.

**Clairvoyance**, alleged supernatural knowledge of future, distant, or hidden things; ability to see things not visible under normal human conditions, *e.g.*, "second sight."

**Clam**, family of bivalve molluscs, with a short foot, mainly tropical in habitat. In Amer., the name is loosely used for various kinds of edible mollusc. **C. chowder**, stew of fresh clams, with salt pork, onions, biscuit, etc.

**Clan**, correctly used of constituent soc. unit found in every prim. soc.; disting. by prohib. of marriage betw. clan members and restriction of membership according to descent either through father (patriliny) or through mother (matriliny); C. members have mutual oblig. and privileges not extended beyond clan. Scottish clan of this sort in earlier times; now vague family

grouping, often purely honorific, but still preserving distinguishing colours (tartans).

**Clan-na-Gael**, extremist Irish Fenian organisation, also known as *The United Brotherhood*, fndd. 1881, for forcible rupture of the Union betw. Gt. Brit. and Ireland.

**Clapham**, 1) resid. suburb, London, part of Wandsworth; C. Common (220 ac.); rly. junction. 2) Vil., Yorks., 18 m. E.N.E. Lancaster; pop., 600; 1½ m. N. is *Ingleborough Cave* (stalactites) and 3 m. N. *Ingleborough* (2,373 ft.). **C. Sect.**, name given by Sydney Smith to evangelical party in C. of E., of which several notable members, *e.g.*, Wm. Wilberforce, resided in Clapham, London.

**Clapper valve**, (tech.) a valve in water pipes, etc., closing when the flow ceases, in order to prevent water from returning.

**Claque** (Fr.), persons paid to applaud a speech, play, etc.

**Clare**, name of famous Eng. family, fndd. in the 13th cent. by Richard, Earl of Gloucester, who took it from Clare in Suffolk, his chief honour. The *Honour of Clare* passed by marriage to Lionel, 3rd son of Ed. III., who was then made D. of Clarence (*q.v.*), and is now vested in the Crown. *See also* CLARENCEUX.

**Clare**, John (1793-1864), "The Northamptonshire Peasant Poet."

**Clare**, marit. co., Munster, I.F.S.; area, 1,231 sq.m.; pop., 95,100; surface mainly hilly; Shannon estuary S. boundary; Lough Derg (24 m.) in E.; coast indented and precipitous; stock-raising, fisheries (oysters, salmon); co. tn., *Ennis*.

**Clare College**, Cambridge; fndd. 1326; re-endowed by Elizabeth de Burgh, Countess of Clare. Chaucer is reputed to have been among alumni.

**Clarence**, English ducal title derived from Clare (*q.v.*), held exclusively by members of royal family. Dukes of C. have been: Lionel, 3rd son of Ed. III., 1338-69; Thomas, 2nd son of Henry IV, 1389-1421; George, bro. of Ed. IV, 1449-78; William, 3rd son of George III and afterwards Wm. IV, 1765-1837; Albert Victor, eldest son of Ed. VII, 1864-92.

**Clarenceux**, title of Eng. Kg. of Arms with jurisdiction south of the Trent, derived from Lionel, 1st Duke of Clarence (*q.v.*). *See* HERALD.

**Clarendon**, Edward Hyde, 1st E. of (1609-74), Eng. statesm. and histor.; 1d. Chanc., 1660-67; *History of the Rebellion* in England, 1704-07, written from royalist point of view.

**Clarendon, Assize of**, 1166, an ordinance abol. trial by ordeal and providing for trial of criminal cases in Shire Courts. The origin of jury system.

**Claret**, red wine orig. made in Médoc;



term now used in Eng. for any red Bordeaux wine.

**Clarinet**, wood-wind instr. with rich and mellow tone.

**Clarissa**, novel by Saml. Richardson (*q.v.*), 1748; written in letter-form.

**Clarkson**, Thos. (1760-1846), Eng. abolitionist and anti-slavery leader; gained support of Wm. Wilberforce, Pitt, Fox, Burke, Grenville, etc.; *Hist. of the Abolition of the Slave Trade*, 1808; *Memoirs of William Penn*, 1813.

**Clarté** ("Light"), group of pacifist writers in Paris, called after novel by Barbusse, fndd. 1919.

**Clary**, pot-herb of sage family; sometimes cultivated for its ornamental leaves.

**Class**, group of persons or objects having certain characteristics in common; rank or order of society, *e.g.*, upper, middle, lower, professional, working, etc. **C.-Consciousness**, sense of the conflict of interests between classes of a diff. social order. **C.-War**, struggle for polit. and econ. dominance between working and capitalist classes.

**Classics**, term applied since 2nd cent. A.D. to representative writers of Gr. and Rom. antiquity; later to outstandg. masters of all kinds of art. **Classicism**, the imitation of classic style, esp. in Fr. art *c.* 1800 (Empire).

**Claude Lorrain** (1600-82), pseudon. of C. Gellée; Fr. landscape painter; made outline drawings of most of his paintings in 6 *Libri Veritatis* (Books of Truth), wh. have been engraved and published.

**Claudé**, Paul (1868- ), Fr. author and diplomat; dramas, *The Hostage*; *Tidings Brought to Mary*.

**Claudius** (10 B.C.-A.D. 54), Rom. Emp. A.D. 41-54; husband of Messalina and Agrippina; poisoned by latter.

**Claudius**, Appius, surnamed Caecus (*fl.* *c.* 312 B.C.), Rom. statesman; blt. Appian Way and first aqueduct in Rome; one of first Rom. jurists and grammarians.

**Clausen**, Sir Geo. (1852- ), Eng. painter, esp. of country life; R.A., 1908; publ. *Six Lectures on Painting*, 1904; *Aims and Ideals in Art*, 1906.

**Clausewitz**, Karl von (1780-1831), Pruss. gen. and military writer: *On War* (posthumous).

**Clausius**, Rudolf (1822-88), Ger. physicist; shares honour of putting thermodynamics on scientific basis.

**Clavaria**, genus of fungi (*club fungi*); most are edible and none, so far as is known, is poisonous.

**Clavichord**: see PIANOFORTE.

**Clay**, **Frederic Emes** (1838-89), Eng. composer of operas and cant.; of the latter, *alla Rookh* (1877) contains famous song "sing thee songs of Araby." **C., Henry**

(1777-1832), Amer. statesman and orator; Senator from Kentucky, 1806-07; 1810-11; member of Hse. of Representatives, 1811-21, 1823-25; forced Pres. Madison to declare war on Gt. Brit., 1812; member of peace commission at Ghent, 1814; Sec. of State, 1825-28; thrice candidate for Presidency.

**Clay**, kind of soil, sticky, tenacious, plastic, hardening when baked; a hydrous aluminium silicate; **Potter's c.**, see BOLE. **C. slate**, strong and durable type of slate, splits easily into thin slabs; used for roofing, slate pencils, etc. **C.-with-flints**, (geol.) deposit of stiff clay containing flints, both whole and in fragments; patches of various sizes found over large area of southern England.

**Claymore**, ancient Scot. two-edged broadsword, esp. one used formerly by the Highland clans.

**Clayton**, Philip Thomas (1885- ), temp. chaplain B.E.F., 1915; fndd. Toc H (*q.v.*); vicar of All Hallows, Barking, London.

**Clean bill**, (finan.) bill of exch. unsupported by shipping documents (B. of lading, insur. policy, etc.), or other security; ant.: *Documentary bill*.

**Clearwing**, a small diurnal moth of family *Sesiidae*, having the wings transparent and largely free from scales. **Hornet C.**, closely resembles a small wasp.

**Clearance**, of a bridge; inner measurement from under side of arch to land or water level beneath.

**Clearing banks**, those wh. are members of a C. house (*q.v.*); eleven such in Lond., often termed in Eng. C.B.; issue a monthly statement, *C. B. statement*. **C. house**, (banking) orig., central meeting place where clerks of all banks in a town met at end of day to effect mutual exch. of cheques drawn on one another's banks; now, instit. effecting clearances of all cheques, each bk. paying to or recg. from C.H. net diff. between cheques drawn on them and those drawn on other bks. and held by them; in Eng. eleven C.H.; in Scot. two.

**Cleat**, (naut.) wooden or metal double hook to wh. ropes can be made fast without knotting; species of bollard (*q.v.*).

**Cleavers**, name for *goose-grass* (*q.v.*).

**Cleek**, iron golf club with upright face for long shots.

**Cleethorpes**, seaside tn., Lincs, 2 m. S.E. Grimsby; pop., 28,500; oyster fisheries.

**Clef**, (mus.) sign at beginning of stave determining position of a given note and thereby of all others. C. in general use are: *Treble* (G); *Alto* (C on 3rd line); *Tenor* (C on 2nd line); *Bass* (F).



**Cleft-palate**, split in the soft, and sometimes also in hard, palate; causes defective articulation; congenital deformity often combined with hare-lip.

**Clematis, traveller's joy** (*Clematis vitalba*), climbing hedge plant with greenish-white flowers. Also known as "old man's beard," from the feathery seed pods; variety, with large flowers, cultivated as climbing plants in gardens.



Clematis

**Clemenceau, Georges** (1841-1929), *The Tiger*; Fr. statesm.; Senator, 1911; Pr. Min., 1906-09, Pr. Min. and Min. of War, 1917-20, in "Victory Cabinet"; Chmn. Peace Conference, Versailles, 1918-19.

**Clemens, Samuel Langhorne** (1835-1910), Amer. humorist and writer under pseudon. **Mark Twain**: *Immigrants Abroad*, 1869; *Tom Sawyer*, 1876; *Huckleberry Finn*, 1885.



Clemenceau

**Clement**, name of 14 popes and 2 anti-popes, of whom the most import. historically, are: **C. I, St., of Rome** (c. 91-100), an "Apostolic Father." **C. III** (1187-91), preached 3rd crusade agnst. Saracens under Saladin. **C. V** (1304-14), moved papal court to Avignon, 1309; dissolved order of Templars, 1312. [**C. VII** (1378), antip.; election marks beginning of Western Schism.] **C. VII** (1523-34), nephew of Lorenzo de' Medici; attempted to stem Reformation; hastened final breach betw. Eng. and Papacy by forbidding divorce of Hy. VIII from Catherine of Aragon. [**C. VIII** (1424-29), antip.; resigned, terminating Western Schism.] **C. VIII** (1592-1605), ordered revised Clementine edn. of the Vulgate, 1592. **C. XIV** (1769-74), suppressed order of Jesuits, 1773.

**Clementi, Muzio** (1752-1832), It. pianist; from early age resident in England. Sonatas: Pianoforte Studies, *Gradus ad Parnassum*, 1817.

**Clement's Inn**, formerly one of the Inns of Court (*q.v.*) of London, betw. ch. of St. Clement Danes, Strand, and Clare Market; the orig. 15th-cent. bldgs. have been replaced by modern offices, etc.

**Cleon** (d. 422 B.C.), leader of democratic party in Athens; opposed Pericles; refused to conclude Peloponnesian war; successful in expedition agnst. Spartans at Pylos, 425; killed in attempt to recapture Amphipolis, 422; portrayed by Aristophanes and Thucydides.

**Cleopatra** (69-30), last Qn. of Egy.; loved by Caesar and by Antony; committed suicide on learning of latter's death. **C.'s Needle**,

London, Eng., one of pair of Egypt. obelisks erected c. 1500 B.C. at Heliopolis; brought to L. (1878) and placed on Victoria Embank.; its fellow is in Central Park, New York.

**Clepsydra**, device for measuring time by the flowing of water from one graduated vessel into another; used in anc. Rome to limit speeches made in courts of justice.

**Clergy, Benefit of:** see BENEFIT; **C. Discipline:** Act: see CHURCH DISCIPLINE ACTS.

**Clergyman**, one in *Holy Orders*, esp. an ordained minister of the C. of E.; now extended to a recognized minister of any Christian sect. **C.'s sore throat**, inflammation of the larynx due to frequent public speaking associated with imperfect voice-production.

**Clericalism**, undue and exaggerated influence exerted by the clergy; state of mind or system favourable to such domination.

**Clerk-Maxwell, Jas.** (1831-79), Scot. physicist; prof. of Nat. Hist., Marischal Coll., Aberdeen, 1856-60; of physics and astronomy, Kg.'s Coll., London, 1860-65; of experimental physics, Camb. Univ., 1871. Pubd. *Essay on Motion of Saturn's Rings*, 1857; *Theory of Heat*, 1871; *Matter and Motion*, 1876, etc.

**Clerk**, 1) clergyman (clerk in Holy Orders); 2) learned scholar (archaic); 3) one of various types of official in govt. service; 4) (law) barrister with permanent duties in a criminal court; 5) lay official of a parish church; 6) person employed as copyist, book-keeper, etc. in commercial or business office. **C. of the Crown**, officer respons. for formal steps in calling Parl.; posit. now combined with that of perm. sec. to Ld. Chancellor. **C. of the Peace**, official in Eng. counties, acting as clerk of quarter sessions (*q.v.*) and custodian of co. records under Ld. Lieut. Was ex officio clerk of co. council until 1931, when offices severed. **C. of the Weather**, fictitious official supposed to control the weather. **C., Town:** see TOWN CLERK.

**Clerkenwell**, district N. of City of London, in bor. of Finsbury; so-called from a well in C. Green at wh. parish clerks of London used annually to perform miracle plays.

**Clermont-Ferrand**, cap. of dépt. Puy-de-Dôme, France; pop., 111,800; univ.; cathedral; mineral springs. First Crusade proclaimed at *Council of C.*, 1095.

**Cletus**, St. (or *Anacleus*), semi-historical successor of St. Peter as Bp. of Rome, c. 79-91.

**Cleve**, tn. in Rhine Prov., Germany; pop., 18,000; Chalybeate springs; iron; county of C. became Duchy, 1417; united with Jülich, Berg, and Ravensberg, 1521; annexed France, 1801; Prussian since 1815.

**Cleveland, Barbara Villiers**, Duchess of (1640-1709), dau. of Wm. Villiers, 2nd Visct. Grandison; m. Roger Palmer (Earl of Castle-

maine, 1661), 1659; mistress of Chas. II c. 1660-c. 1674, to whom she bore the dukes of Cleveland, Grafton, and Northumberland; exercised grt. influence, procuring dismissal of Clarendon (1667) and others; created Duchess of Cleveland, 1670. **C., Grover** (1837-1908), Pres. of the U.S.A., 1885-89, 1893-97.

**Cleveland**, 1) iron dist. N. Riding, Yorks, Eng., with Middlesborough on W., and Whitby on East. 2) Tn., Ohio, U.S.A., port on L. Erie; pop., 901,000; univ.; timber mkt.; manuf. iron, steel, motorcars, telescopes, sewing machines, and clothing; airport.

**Clew, clue**, (naut.) a lower corner of a square sail, or the aft-most corner of a fore-and-aft sail. **C. garnet**, rope and pulley attached to clews of main and fore sails for hauling them up to the yard (*q.v.*); **c.-line**, similar tackle applied to smaller square sails.

**Clifanthus, glory-pea**, Australian and New Zealand leguminous plants, cultivated for their handsome flowers.

**Cliché**, 1) block (*q.v.*) for printing. 2) Metaphor: in literary style, phrase wh. has become commonplace by repetition; *e.g.* "to return to the fold," "play the game," "truth is stranger than fiction."

**Click-beetle**, one of a large group of beetles occurring on vegetation; able to right themselves with a spring when fallen on their backs; larvae of some (*wireworms*) extremely destructive to root crops.

**Clicker**, (printing) foreman compositor, responds for making up of type into pages.

**Cliff-dwellings**, prim. human habitations, mainly prehist., blt. by taking adv. of nat. cavities in faces of cliffs; often fairly elab. in construction; best exs. extant found in S.W. Colorado and Mexico.

**Clifford, John** (1836-1923), Brit. Non-conformist divine; minister Baptist Chapel, Paddington, London, 1858-1915; pres. of Baptist Union, 1888-89; of Baptist World Alliance, 1905-11. **C., Rosamond** (d. c. 1176), *the Fair*; mistress of Hy. II; dau. of Walter de C.; buried before high altar, Godstow Nunnery ch., but body removed to chapter house by order of St. Hugh of Lincoln; figures in Scott's *Talisman* and *Woodstock*.

**Clifford's Inn**, betw. Fetter Lane and Chancery Lane, City of London; formerly one of the Inns of Chancery, attached to Inner Temple. Hall now standing was built in 18th cent.; most of anc. bldgs. demolished. Museum of Brit. Optical Assoc. is here.

**Clifton College**, Eng. publ. school for boys; fndd., 1862, at Clifton, near Bristol.

**Climacteric, Menopause**, period of change of life in women betw. 45 and 55; cessation of menstruation and of internal secretion of ovaries; freqtly. accmpd. by unpleasant bodily disturbances and mental changes.

**Climate**, sum of the various natural

conditions obtaining in any given place or region and influencing character and habits of its inhabitants, fauna, and flora. These include: dryness or humidity of ground and air; altitude; atmospheric pressure; direction and strength of winds; mean air temperature; daily variations of temp.; proportion of dust in air; duration and strength of sunshine; prevalence of clouds; proportion of atmospheric admixtures, *e.g.*, common salt, radium emanations, carbon dioxide, etc. Hence classification of climates as *mountain, sea, desert, damp, tropical*, etc. **Climatic health resorts**, provide, through the stimulus of their climate, a means of restoring health to invalids amenable to such treatment.

**Climbing irons**, devices of var. types strapped to the feet, enabling user to climb posts, trees, steep ice slopes, etc.

**Clinch**, (boxing) grappling with opponent after exchange of blows; boxers must "break away" at once when ordered by referee.

**Clinic**, (med.) establishment for exam. and treatment of patients. **Clinical thermometer**, one used to register temp. in fevers, etc.; see THERMOMETER.

**Clinker**, (bldg.) hard-baked brick which, when struck, emits a clear ring or clink; sometimes coloured and glazed.

**Clinkstone**, phonolite, grey-green, compact volcanic rock resembling porphyry; gives metallic ring when struck.

**Clinometer**, apparatus for measuring gradient or inclination to horizontal.

**Clío**, Muse of History.

**Clipper**, fast type of sailing-ship, with raking bows; used esp. for transport of tea in 19th and early 20th century.

**Clitheroe**, mun. bor., Lancs, 10 m. N.E. Blackburn; pop., 12,000; ruined 12th-cent. castle; cotton and paper mills, foundries, quarries.

**Clitoris**, (anat.) highly sensitive protuberance placed just within anterior part of fem. ext. genital organs or vulva.

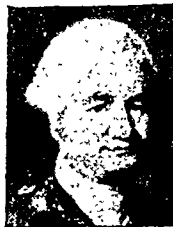
**Clive of Plassey**, Robert, Bn. (1725-74), Eng. gen. and statesm.; victor of Arcot and Plassey; Gov. of Bengal, 1758; estabd. Brit. power in India; physical pain, ill-health, and the strain of an enquiry into his official conduct drove him to suicide.

**Cloaca**, 1) (zool.) common chamber into which the intestinal, urinary and genital ducts open in birds, reptiles, and monotremes.

2) Sewer in anc. Rome discharging into Tiber.

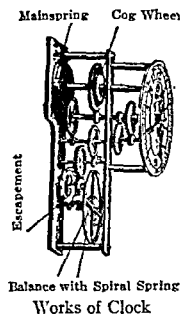


Clipper



Clive

**Clocks and watches**, instr. for measuring and indicating the time; in antiquity **sand c.**, **water c.**, **sundials**. **Pendulum c.**, one in which clockwork is regulated by a



Old Nuremberg Watch

constantly swinging P. Mod. C. and W. all consist of trains of wheels driven by weights or springs and moving in jerks, as released by an **escapement** controlled by a **pendulum** or **balance-wheel**. Many types of escapement: **cylinder**, **lever**, **anchor**, etc. For spec. purposes, alarm clocks, stop-watches, and var. types of control clocks for printing time on employees' cards. **Electric c.**, of numerous types: electrically maintained pendulum driving C. (Hipp); electrically wound C. (Aron, etc.); elec. motor controlled by escapement (Bowell); synchronous motor on alternating mains with time-controlled frequency.

**Clood**, Edward (1840-1930), Brit. scientist; studied folk-lore and human origins; exponent of materialist conception of universe; *The Story of Creation*, 1888; *Animism, the Seed of Religion*, 1905; *Memories*, 1916.

**Clog-dance**, dance, in clogs; orig. Lancs.; rhythm provided by quick toe-and-heel tapping; usu. solo dance.

**Cloisonné**, enamel work with metal strips between each colour. See ENAMEL PAINTING.

**Cloister**, 1) establishment where monks or nuns live in retirement; 2) covered way, generally round quadrangle, usu. with vaulted roof supported at intervals by pillars on the inner (open) side, the other side being formed by the walls of the building.

**Cloister and the Hearth**, **The**, historical novel by Reade, 1861; the hero is the supposed father of Erasmus.

**Clonmacnoise**, par., Offaly Co., I.F.S., on Riv. Shannon; eccles. antiquities ("Seven

Churches," round towers, crosses); a Christian centre since 6th cent. A.D.

**Clonmel**, cap. of Co. Tipperary, I.F.S.; pop., 9,000; walled town of importance in Mid. Ages; walls dismantled by Cromwell, 1650; agricultural centre.

**Close time**, period during which game and certain fish may not legally be killed or taken.

**Closing prices**, (Stk. Exch.) prices at wh. buying and selling were taking place at end of day. Ant.: *Opening prices*.

**Clotho**, (Gr. myth.) one of the Three Fates (*g.v.*).

**Cloud**, condensation of water-vapour suspended in atmosphere above ground level; chf. classifications: **cirrus**, having appearance of straggling locks of hair; **nimbus**, storm- or rain-cloud, thick and dark with irregular edges; **cumulus**, rounded piled-up masses; **stratus**, low horizontal uniform layer; more particular sub-divisions are **cumulo-nimbus**, **cirro-cumulus**, **cirrostratus**.

**Cloudberry**, *Rubus chamaemorus*, creeping plant, species of wild raspberry; found in hilly, temperate regions.

**Clouds**, **The**, comedy by Aristophanes.

**Clouet**, François (c. 1510-72), Fr. painter: portrait in chalks of *Mary Qn. of Scots*, in Bibliothèque Nationale, Paris.

**Clough**, Arthur Hugh (1819-61), Eng. poet; head of Univ. Hall, London, 1849; friend of Matt. Arnold and subject of his elegy, *Thyrsis*; wrote *The Bothie of Tober-na-Fuossich* (later *Tober-na-Vuolich*), 1848; *Ambarvalia*, 1849.

**Clove**, clove pink, *Dianthus caryophyllus*, garden flower; white or pink blooms, sweet clove-like smell. The double variety, now cultivated to produce a large number of shades of colour, called *Carnation*. See PINK. 2) Cheese or butter wt., 8 lb., wool wt., 7 lb.

**Clovelly**, fishing vill., N. Devon, Eng.; pop., 600; well known "beauty spot."

**Clover**, **trifolium**, small leguminous plants extensively cultivated for fodder. Meadow clover (red) is *T. pratense*. White or **Dutch c.** is *T. repens*. There are other species, many of which are of little use.

**Clove-tree**, large evergreen tree, native to the Moluccas or Spice Islands of Malay Archip. The buds of the crimson flowers are dried before expansion and are used, for their pungent flavour, as spice in cookery. One of the earliest of Eastern spices to be introduced into Europe (16th century).

**Clown**, comic performer in circus, pantomime, etc.

**C.L.S.S.**, abbr. Chautauqua Literary and Scientific Society.



Cloisters



Clover

**Club**, association of persons for some specific purpose (e.g., social intercourse); similar assocns. mostly for religious purposes existed in Greek and Roman times; modern C. arose in 17th cent., largely as result of development of coffee-houses; large extension in Eng. of political and literary clubs (*October C.*, *Kit-Cat C.*) in 18th cent.; becoming more specialised in object at end of cent.; most well known existing literary and social Cs. founded during 19th cent. (e.g., Athenaeum, 1823), Carlton, 1831; in latter part of which working men's Cs. also first arose, most of wh. are federated in Working Men's Club and Institute Union (fndd. 1862). In Eng. Cs. are reqd. to be registered with clerk to justices, and are subject to legislation, esp. as regards supply of liquor.

**Club foot, talipes**, malformation of the foot; dependent upon contraction of one or more muscles or tendons.

**Cluj, Klausenburg**, cap. of Transylvania, Rumania; pop., 105,200; univ.; two bprics.; textiles, earthenware.

**Clumber House**, seat (Duke of Newcastle), W. Notts, in C. Park (4,000 ac.), 4 m. S.E. Worksop; former breeding-place of **C. spaniel**, a thickset, short-legged, silky-haired variety.

**Cluniacs**, strictly reformed Benedictine monks of the monastery of Cluny.

**Cluny**, tn., dépt. Saône-et-Loire, France; pop., 4,500. Here are the ruins of the greatest of the Fr. Benedictine monasteries (fndd. 10th century). **Hôtel de C.**, bldg. in Paris, erected by the abbots of Cluny (see CLUNIACS) c. 1470-1515; a fine Late Gothic mansion. Became property of French nation at time of Revolution; purchased by A. du Sommerard (1833), who housed there his collection of medieval works of art. Building and collection bought by Fr. Govt., 1843; now public museum of antiquities.

**Clywd**, riv. (31 m.) N. Wales; rises Denbighsh.; flows N. through **Vale of C.** (20 m. long) into Irish Sea at Rhyl (Flint); **Clywdian Hills** (1,820 ft.) on east.

**Clyde**, principal riv. in Scot., 105 m. long, rises in Tweeddale, flows into Firth of Clyde; navig. for large ships up to Glasgow. **Falls of C.**, largest in Brit. Isles. Iron and coal fields in **Upper Clydesdale**; Clydesdale horses famous. **Forth and C. Canal**, see FORTH.

**Clydebank**, police burgh. Dumbartonsh., Scot., on Riv. Clyde, 7 m. N.W. Glasgow; pop., 47,000; shipb.; engineering.

**Clynes**, John Robt. (1860- ), Brit. politician; worked in cotton-factory; organised General Labourers' Union, Lancs, Lab. M.P. for N.F. 1906; chairman of parliamentary food-controller, 1917; deputy leader for Home Aff.

**Clyster**: see ENEMA.

**Clytaemnestra**, (Gr. legend) murdered her husband Agamemnon and was slain by her son Orestes in the resulting blood-feud.

**cm, cm<sup>2</sup>, cm<sup>3</sup>**, abbr. for centimetres, square and cubic centimetres.

**C.M.**, abbr., (Lat., *Chirurgiae Magister*), Master in Surgery. **C.M.D.**, abbr. (hymns) Common Metre Double.

**C.M.G.**, abbr., Companion, Order of St. Michael and St. George.

**C.M.S.**, abbr. Church Missionary Society.

**Cnossus**: see KNOSSOS.

**Co**, chem. sym. for cobalt (q.v.).

**Co.**, abbr. 1) Company; 2) county; 3) (pharmacy) compound.

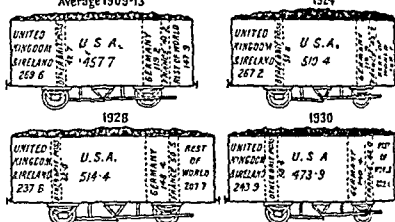
**Coach** 1) four-in-hand closed vehicle with seats on roof. *Mail c.*, carried mails prior to railways. 2) Rly. passenger carriage, divided into compartments.

**Coadjutor-bishop**, bp. in R.C.Ch. who assists a diocesan bp.; cf. SUFFRAGAN.

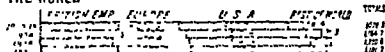
**Coagulation**, thickening or clotting of a liquid, e.g., heated white of egg, or blood exposed to air.

**Coal**, brown to black mineral, product of gradual decomposition under great pressure, in Carboniferous (q.v.) period, of conifers,

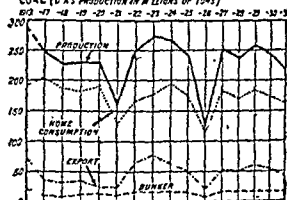
COAL: WORLD PRODUCTION INCLUDING ANTHRACITE (IN MILLION TONS)  
Average 1909-13



THE WORLD



COAL (U.K. PRODUCTION IN MILLIONS OF TONS)



Rate of incr. of prod. of coal retarded by competition of other fuels (esp. oil). U.S.A. still produces some 40% of total, with U.K. her nearest rival; but U.K. prod. declined since World War; during strike of 1926 she even imported 21,000,000 t. U.K. export of C. recd. impetus during occupation of Ruhr, but is now less than pre-war. Expts. do not include bunker coal shipped

palms, bracken, rushes, and (in Devonian and Silurian systems) seaweed, after these have been much changed by action of bacteria, logically, it is mostly older than

chalk, and usu. occurs between sandstone and clay, in veins or beds varying in thickness from a few inches to 40 ft., in Eng., but reaching 200 ft. in India and France, and lying at depths from the surface to over 4,000 ft. Contains from 45% to 95% carbon, 4% to 7% hydrogen, remainder oxygen, nitrogen, and mineral matter.

**Kinds of C.:** **Anthracite**, purest, gives off hardly any gas or tar when heated; **Welsh steam-c.**, semi-bituminous; **bituminous c.**, gives off much gas and tar when heated, leaving coke (*q.v.*); **cannel c.**, very bituminous; **lignite**, nearest to peat (*q.v.*), which is first stage in formation of coal. C. is found in various parts of the world, in each of the post-Carboniferous stratified formations, either as true coal or lignite; but best C. always in carboniferous formation. Chief coalfields are found in Europe (esp. Gt. Brit., Germany, Belgium), Asia (China, India, Japan), America (U.S.A.), Australia (N.S.W. and Victoria) and N. Zealand (S. Isl.). Of total world production, U.S.A. provides abt. 50%, Brit. Emp. abt. 25%. **Economic uses:** C. is the most important fuel; it is the raw material for preparation of coal gas, and also of many by-products, e.g., coke, coal tar, naphtha, benzol, and carboic acid. **C. dust explosions:** see FIRE DAMP.

**Coal gas**, is obtained by the destructive distillation of coal, which is heated in airtight retorts, gas passing through purifiers into gasometers; consists of c. 49% hydrogen, 34% methane ( $\text{CH}_4$ ), 4% ethylene ( $\text{C}_2\text{H}_4$ ), 9% carbon monoxide ( $\text{CO}$ ), remainder being incombustible carbon dioxide ( $\text{CO}_2$ ) and nitrogen. Gas is purified from tar, ammonia, cyanogen, sulphur compounds, and benzene, wh. are used to make valuable by-products, e.g. coal-tar dyes, artific. manures, etc. C.G. is used for cooking, heating, and lighting; also for driving G. engines. A ton of coal yields c. 1,000 cu. ft. of gas. **C.-gas poisoning**, caused by inhaling of carbon monoxide (*q.v.*) present in this gas, wh. enters the blood and combines with pigment hæmoglobin (*q.v.*), so that latter is no longer free to carry out its ordinary duty of transporting oxygen, thus causing subject to die of lack of oxygen.

**Coal tar**, a black, viscous product of coal distillation (high and low temp. carbonization gives different products, viz., **primary t.** at 300-400° C.; **secondary** at 800-1,100°). A mixture from wh. an enormous number of synthetic chemicals, e.g., dyes, perfumes, medicaments, flavouring essences, etc., are prepared; also light oils (benzol, toluol), medium oils (phenol, naphthalene), and heavy oils (creosote, anthracene, etc.), with a residue of pitch. Can also be used as fuel in Diesel engines (*q.v.*). **C.-tar dyes**,

prepared by chem. change of constituents of tar produced by distillation of coal.

**Coalbrookdale**, vill., Salop, Eng., on Riv. Severn, 10 m. S.E. Shrewsbury; pop., 1,500; iron works (fndd. 1709). See also MADELEY 1) and IRONBRIDGE.

**Coalite:** see GAS COKE.

**Coalition**, 1) Alliance of States with dipl. or milit. ends. 2) Polit. coalition: agreement of two or more parties on a common programme not involving violation of fundamental principles. **C. Wars**, wars of sev. allies agst. a common enemy, partic. those of allied Eur. Powers against Fr. (1791-1815).

**Coalport**, vill., Salop, on Riv. Severn, in par. of Madeley: china works, fndd. 18th century.

**Coast**, edge of land at seashore; seashore and area adjacent to it. Subject to encroachment by the sea due to erosion, i.e., disintegration of land through constant battering by waves of sea; also to extension, e.g., by means of alluvial deposits.

**Coastal Ranges**, on Pacific coast of U.S.A., extending through Washington, Oregon, and California; part of Rocky Mtn. system.

**Coastguard**, in the U.K., a force recruited mainly from pensioners of the Royal Navy, since 1925 under the Board of Trade, and having life-saving as its primary object. Orig. formed, after Napoleonic Wars, to assist in suppression of smuggling, and controlled by Customs Office until 1831; came under the Admiralty, 1836, as a reserve coastal defence in time of war, with peace-time work mainly confined to protection of revenue and life-saving.

**Coatbridge**, police burgh., Lanarksh., Scot.; centre iron and coal dist.; pop., 43,100.

**Coati**, long-nosed, long-tailed mammal, related to raccoons; arboreal in habit, feeding chiefly on birds' eggs, insects, lizards, and fruits; social, wandering about forests of Centr. Amer. and Paraguay in small parties.

**Coating**, (med.) a deposit of mucous membrane on tongue or gums.

**Coat-of-arms:** see HERALDRY.

**Cob**, stout, short-legged riding-horse.

**Cobalt**, tn., N. Ontario, Canada, on Cobalt L.; pop., 5,000; silver, cobalt, nickel, arsenic.

**Cobalt**, (chem.) element, sym. Co; at. wt. 58.94, sp. gr. 8.8; magnetic metal, the colour of iron, but very hard; chemically resembling nickel; occurs naturally combined with sulphur and arsenic (C. glance in Australia and Canada); used as constituent of steel for high speed tools and magnets; oxide used as blue colouring matter for glass.

**Cobbett**, William (1762-1835), Eng. writer and econom.: *Rural Rides*; *Cottage Economy*; *Grammar of the English Language*; orig. *Hansard's Debates*, 1806.

**Cobbler**, summer drink made of iced wine, sweetened and flavoured with fruit juice. See CUP.

**Cobden**, Richard (1804-65), Eng. statesm. and pol. econ.; fndd. Anti-Corn Law League and "Manchester School" (q.v.); pioneer of peace movement, 1848-51. Cf. CORN LAWS.

**Cobego**: see FLYING-LEMUR.

**Cobh**, Queenstown, seapt. tn., Co. Cork, I.F.S., on Great Isl., Cork Harbour; docks; transatlantic port of call; pop., 7,000.

**Cobham**, Sir Alan (1894- ), Brit aviator; flew Eng.-Australia and back, 1926; 1st flight round Africa; promoted African Air Route scheme, 1927-28. Cf. AVIATION.

**Coble**, flat-bottomed boat, used for herring-fishing in N.E. England.

**Coblentz**, 1) dist., of Pruss.-Rhine province, 2,400 sq.m.; pop., 792,600. 2) Cap. of dist. at confluence of Moselle and Rhine; pop., 58,400; Rhine Museum; castle (1778).

**Cobra**, venomous snake whose bite is fatal; native of Africa and Asia. Lower part of neck can be inflated at will producing a "hood" with eye-markings resembling spectacles. Those Cs. exhibited by native "snake charmers" have always had their poison fangs removed. Best known species are *Egyptian Asp* and common *Indian Cobra*.

**Coburg**, tn., Upper Franconia, Bavaria, Germany; pop., 25,000; iron foundries, saw mills, machinery, glass.

**Coca**, *coca* (*Erythroxylon coca*), S. American plant; leaves are used to make a tonic decoction, and when dried are chewed, producing a warm, pungent taste. Leaves also contain alkaloid cocaine (q.v.).

**Cocaine**, alkaloid obt. from leaves of *Coca* tree, indigenous to Centr. Amer. Powerful local anæsthetic; is habit-forming and one of commonest drugs of addiction. See DANGEROUS DRUGS.

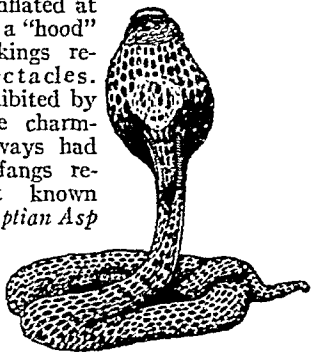
**Cocci**, round or oval-shaped bacteria, e.g., staphylococci. Diplococci is name given to C. which occur in pairs.

**Coccids**: see COCHINEAL.

**Coccyx**, (anat.) lowest bone of spinal column; rudimentary remains in man of 'emal's tail.



Sir Alan Cobham



Cobra

**Cochin**, 1) native State, Madras, India, N. of Travancore; area 1,417 sq.m.; pop. 980,500; cap. *Ernakulam*. 2) Seapt. tn. (formerly cap. of State), Malabar, Madras, India; first fort in India (Portug.), 1503; harbour; pop., 22,150. **C.-China, Cochinchine**, colony, S.E. coast of Fr. Indo-China; 25,090 sq.m.; pop. 4,392,900; unhealthy marshes and fertile plains; rice, maize, rubber. Fr. feudatory State, 1852-83; colony, 1883. **C.-C. fowl**, species of large domestic fowl with tufts of feathers on the legs; see POULTRY.

**Cochineal**, a red dye obtained from the bodies of coccids, scale insects, infesting a variety of cactus in Mexico and Peru; now cultivated elsewhere.

**Cochran**, Charles Blake (1872- ), Brit. theatrical manager; *Secrets of a Showman*, 1925.

**Cock**, 1) device for regul. flow of fluids; consists of chamber and turning piece with corres. bores; e.g. passage cocks, three-way cocks, mixed cocks. 2) On firearms, a discharging device for ignition. 3) Male bird.

**Cockade**, mod. developmt. of the badge (see HERALDRY), now confined to male servants of those bearing commissions from the Crown. Also an emblem of revolution, e.g. the orange C. of the supporters of William III in 1688, the Jacobite white C., and the Fr. revolutionary red cockade.

**Cockateel**, small Australian bird of order *Psittaci*, related to cockatoo, having a similar crest. Plumage is grey shading, from dark to light; head yellow, grey, and red.

**Cockatoo**, group of birds of parrot family, native to Australia; characterized by crest, wh. they can erect at will. **Sulphur-crested c.**, destructive to crops; **head-beater's c.** of S. Australia has white and rose-coloured plumage; **funereal c.** (Wyla) is a large, dark-plumaged species.

**Cockatrice**, 1) fabulous reptile, said to be hatched from cock's egg, with death-bearing glance and breath. 2) (Heraldry): Conventional reptile, winged, legged, and crested.

**Cockchafer**, a beetle of light-brown colour; flies at dusk on warm evenings during May and June; sometimes destructive to trees. Larvae live in soil, feeding on roots, for 3-5 years.

**Cocker**, Edw. (1631-75), Eng. engraver; teacher of writing and arithmetic; stamp-collector; reputed author of *Cocker's Arithmetick*, 1678, wh. gave rise to phrase "According to Cocker" as synonym for precision.



Cochineal



Cockatoo

**Cockerel**, young cock under 1 yr. old.  
**Cockermouth**, mkt. tn., Cumberland, 12 m. W. Keswick, at confluence rivs. Cocker and Derwent; pop., 4,800; birth-place, Wm. Wordsworth.

**Cocker spaniel**, small, long-headed, silky-coated variety of spaniel, heavily fringed on throat and limbs. **Welsh C.**, liver or liver and white; **modern c.**, generally black.

**Cock-fighting**, pop. sport, now illegal, in wh. gamecocks armed with spurs are pitted agst. one another.

**Cockle**, *Cardium edule*, edible bi-valved mollusc living buried in sand or sandy mud, low down on the shores and beyond low-tide mark. Shells somewhat heart-shaped; when alive can progress on the surface of the sand by a series of leaps, using its long, slender feet.

**Cock Lorell's Bote**, anon. Eng. satire, c. 1510; variant of *Narrenschiff* (q.v.); derived from Lat. and Eng. versions.

**Cockney School**, supporters of *Lake School* (q.v.) in early 19th cent., incl. Leigh Hunt, Hazlitt, Lamb, Keats, Haydon; so called by Lockhart, who attacked them in "Blackwood's Mag."

**Cockpit**, 1) small arena enclosed by a wall in wh. cock-fights formerly took place. 2) (Naut.) Cabin below deck, formerly used by junior officers, and for wounded during sea-fight; in small yachts, etc., well in wh. steersman sits. 3) (Aeron.) Compartment in fuselage of an aeroplane containing controls and pilot's seat.

**Cockroach**, insect of order *Orthoptera*; winged and wingless forms; nocturnal; omnivorous; Cockroach many outdoor species, while some inhabit houses, where they are known commonly as *black-beetles*. Eggs contained in a purse-like capsule.

**Cockscomb**, flowering tropical plant of order *Amaranthus*; *Celosia cristata* is cultivated ornamental variety; also yellow rattle, *Rhinanthus crista-galli*, meadow plant, 18 in. high, with loose spike of yellow flowers; ripe seeds rattle in the capsule, hence its second name.

**Cocktail**, mixed "short" drink or appetiser; mixt. of spirits, bitters, fruits, etc., with ice.

**Cocles**, Horatius: see HORATIUS COCLES.

**Cocoa tree**, properly cacao; tropical Amer. evergreen. The ripe seeds, when roasted, crushed, and freed from the oil wh. they contain, produce cocoa and, mixed with sugar, etc., produce chocolate. The oil or fat is known as *cocoa butter* and is used in medicine as a basis for suppositories, etc., and in toilet preparations. Cocoa contains the alkaloid theobromine, similar in its action to caffeine (q.v.).

**Coconut palm**, *Cocos nucifera*, large tree cultivated in Malay Archip., India, and Ceylon for the inner "meat" from the nuts, wh., when dried as copra (q.v.), are a commodity of great econom. importance. Nuts are covered with coarse fibre (*coir*), used in making cordage, mats, etc.

**Cocoon**, silken outer covering protecting the pupa of various moths and other insects. Cf. SILK.

**Cocos-Keeling Island**, Brit. archipelago,

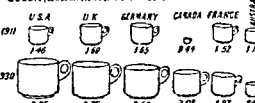


Cocoa-Tree  
On left, opened fruit



Coconut-Palm

COCOA (CONSUMPTION PER HEAD IN LBS.)



World total production 1928 more than double 1913, mainly owing to Br. Emp.'s incr. (in 1931 reaching 323,000 tons), and in partic. to enormous rise of Gold Coast and, to lesser extent, of Nigerian production. In general, consumption has increased greatly since 1914, being partic. marked in Canada and U.S.A. As with coffee, consumptn. of cocoa in Canada has increased at expense of tea

Ind. Ocean, dependency of Singapore; 1,100 Malay inhab.; cable sta.; exports coconuts and copra; Ger. cruiser *Emden* surrendered 9 Nov., 1914.

**Cocytus**, (Gr. myth.) riv. of the underworld.

**C.O.D.**, abbr. cash (or collect) on delivery.

**Cod.**, abbr. codex (biblio.)

**Cod**, a genus of bony marine fishes, and type of the family Gadidae (which includes ling, hake, burbot, haddock, pollack, coal-fish, whiting, etc.), distributed in cold and temperate seas of northern part of world. C. attains to fully 4 ft. in length and 100 lbs. in weight. **C. liver oil**, obt. from fresh livers of various species of cod-fish; has great tonic properties and is one of best known sources of anti-rachitic vitamin (vitamin D); also contains vitamin A. See VITAMINS.

**Coda**, (mus.) finish or supplement in verse and music; an amplified conclusion.



Cod



**Code**, a system, body of laws; key to cipher. **C. civil**, or *Code Napoléon*, French collection of Laws promulgated by Napoleon I (1804).

**Codeine**, alkaloid of opium; has mild hypnotic action and often forms ingredient of sedative cough-mixtures; unlike morphine, is believed not to be habit-forming. See DANGEROUS DRUGS.

**Codex**, anc. manuscript in book form, developed from hinged wax tablet after introd. of vellum; esp. MSS. of the N.T. and of certain class. authors. Mexican and Mayan rolls on deerskin are also known as codices. **C. Alexandrinus**: see ALEXANDRIAN. **C. Argentens**, MS. in Uppsala, of Ulfila's Gothic Bible trans. (in silver letters); **C. Juris Canonici**, Book of Laws of the Cath. Ch. (1918). **C. Vaticanus**, a 4th-cent. Gr. MS. of N.T., in the Vatican Library.

**Codicil**, addition to a will or testament.

**Codlin moth**, *Grapholitha pomonella*, small moth, the larvae of wh. bore into growing apples.

**Cody, Sam. Franklin** (1861-1913), Brit. inventor and aviator; 1st man to fly in Gt. Britain; constructed 1st practical Brit. flying machine; killed in accident while flying, 1913. **C., Wm. Fredk. Buffalo Bill**, (1845-1917), Amer. scout and showman.

**Co-education**, instruction of boys and girls in same school or institution, either together (*mixed schools*), or in separate depts. (*dual school*); organized co-educ. developed early in 19th cent. under influence of Pestalozzi (*q.v.*), esp. in U.S.A.

**Coefficient**, a number expressed or symbolized by which another quantity is multiplied as  $4ab$  (*i.e.*,  $4 \times a \times b$ ).

**Coelenterata** a group of invertebrate animals of aquatic habit; incld. the Hydrozoa (so-called sea-fire polyps) and the Actinozoa (corals and sea-anemones).

**Coenurus**, type of bladder-worm (*q.v.*) forming the intermediate stage of a tape-worm of dogs.

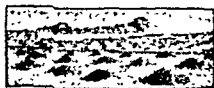
**C. cerebri** is found in central nervous system of sheep and other herbivores and causes staggers.

**C. of E.**, abbr. Church of England.

**Coffee**, ever-green shrub orig. indigenous to Abyssinia, now cultivated in tropical regions of Asia, Africa, and America; white flowers; berries contain hard aromatic seeds (**C. beans**), wh. are roasted, ground and infused to make the beverage. Chicory (*q.v.*) is sometimes

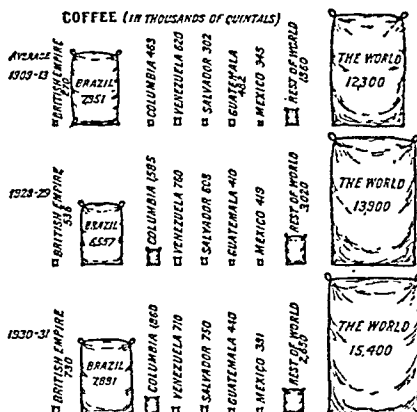


Coffee: Flower, Fruit



Coffee-drying Ground

added to ground C., giving a bitter flavour. Coffee contains the alkaloid caffeine (*q.v.*),

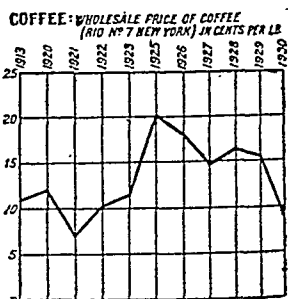


World production 1930-31 25% higher than pre-war period, over 40% of rise being due to Colombian increase; Brazil still contributes over 50% of the total, and the Brit. Emp. c. 2½%. U.S.A., France, and Germany make up for small consumption of tea by heavy consumption of coffee. Since 1914 France and U.S.A. show large increase, but German consumption has declined. Brit. consumption remains small, though Canadian taste is changing from tea to coffee

used in medicine as a nerve stimulant and to relieve nervous headache and migraine.

**Coffin**, receptacle or case, formerly of stone or metal, now usu. of wood (elm), in wh. the bodies of the dead are buried. In

Eng., they were used only by the richer classes until the end of the 17th cent. In Continental Europe they are not, as in Eng., hexagonal but have the sides parallel. **C. bone**, phalanx bone in horse's hoof; **c. joint**, that betw. 2nd and 3rd phalanges in horse's hoof. **C. ship**, ship so unseaworthy as to make it seem probable that those who sail in her will perish at sea.



Price of coffee in 1932 so low that drastic attempts were made to reduce supply—e.g., by using it as fuel on Brazilian railways

**Cog**, warship of the 13th-15th cents. with high freeboard.

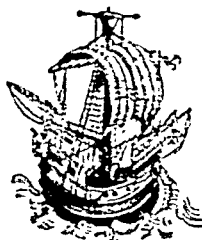
**Cogito, ergo sum** (Lat., I think, therefore I am), theory of pure consciousness of self as indubitable basis of all philos.; formulated by Descartes (*q.v.*).

**Cognac**, 1) tn. on Riv. Charente, in dépt. Charente, France; pop. 17,500; brandy distilleries. 2) Brandy distilled at C. **Holy League of C.** against Charles V., 1526.

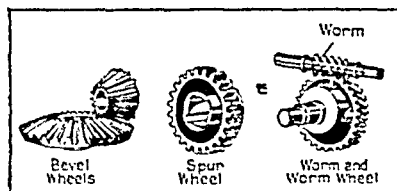
**Cognates**, in Rom. law, blood-relat. of 2nd generation (brothers and sisters and their children, etc.). Cf. **AGNATES**.

**Cognition**, mental comprehension of an existing event, either thr. immediate perception (intuition) or conceptually thr. inference and demonstration. **Theory of c.**, doctrine of validity and conditions of knowledge (epistemology). See **ONTOLOGY**.

**Cog-wheels, gear-wheels, toothed wheels** apparatus for transferring motion and power from one shaft to another, the teeth of 2 wheels fitting together so that one moves the other, the rates of revolution of the 2



Cog



Cog-Wheels

wheels being inversely as the no. of teeth; in the case of parallel axes *spur w.* which may also gear with a *rack*, or straight toothed bar; in the case of cross axes *bevel w.*; for large gear ratios *worm w.*; wheels with teeth pointing inwards are also made.

**Coherer**, glass tube with 2 electrodes connected by metallic powder rendered conducting by elec. waves; 1st sensitive detector of wireless waves, now obsolete.

**Cohesion, coherence**, (phys.) mutual attract. of the smallest particles (molecules) of a solid or liquid body, due to the electric forces betw. the atoms. See also **ADHESION**.

**Cohort**, (Lat.) old Rom. mil. formation of 600 infantry, 10th part of a legion (*q.v.*).

**Coil**, (elec.) insulated conductor carrying current once or, gen., many times around nearly closed path, e.g. field coil, armature coil of dynamo. See also **INDUCTION C.**; **CHOKING COIL**.

**Colimbra**, cap. prov. Beira, Portugal,

on Riv. Mondego; pop., 21,000; earliest Portug. univ. (fndd. 1200).

**Coin**, piece of metal or alloy of given composition and weight, stamped for use as money by public authority. First known in 7th cent. B.C. Modern coins are struck (*i.e.*, prepared dies are impressed on blank sheets of metal) or cast (*i.e.*, molten metal is poured into moulds); coins of greater value (gold, silver) have milled edges; weight given in Eng. by troy weight, elsewhere by metric. In U.K. *gold coins* are not now in circulation; by Act of 1920, fineness of **silver c.** reduced (owing to high cost of silver) from .925 fine to .500 fine; **copper c.** are mixture of copper, tin and zinc; silver and copper money is **token coinage**, *i.e.*, value of metal content is less than face value, or legal value; silver is legal tender (*q.v.*) only to extent of 40s, and bronze only to 1s. **C. clipping**, debasing of coins by clipping edges and so reducing value (weight); as safeguard, edges of coins are now milled or engraved. **Counterfeit coins** are made of base metal by casting and electroplating; will not ring, softer than genuine coin, and not so sharp in contour.

**Colintreau**, orange flavoured liqueur.

**Coinr**: see **COCONUT PALM**.

**Coire**: see **CHUR**.

**Coitus**, act of copulation, sexual act.

**C. interruptus**, incomplete intercourse.

**Coke**, Sir Edward (1552-1634), Eng. jurist; prosecuted Sir Walter Raleigh.

**Coke**, solid residue after abstraction of gases from coal; used in blast furnaces and as fuel in central heating, as it has high calorific value and burns without any flame-jets. **Mine c.** (7-15% ash, abt. 15% moisture) obtained direct from coal-mine; **Gas c.** (*q.v.*) from gas-works; **c. breeze, semi-c.** (15-25% ash, 15-25% moisture; cal. 6,000-7,000), obtained from brown coal. **Coking**, transformation of coal (*q.v.*) into coke.

**Col**, depression in mountain range or chain, affording pass from one vall. to another.

**Colander**, perforated kitchen basin for draining water from vegetables.

**Colbert**, Jean Baptiste (1619-83). Fin. Min. of Louis XIV of France. 1601-83.

**Colchester**, Rom. **Camulodunum**, co. bor. and mkt. tn., on Riv. Colne, Essex, Eng.; pop., 48,600; oyster-fisheries, agric. produce; city walls; castle.

**Colchicum, meadow saffron**, (*Colchicum autumnale*), crocus-like plant grows in meadows; flowers (purple) do not appear until leaves have withered away. Used in med. for gout and rheumatism.

**Colchis**, in antiquity, a district on E. coast of Black Sea, bounded N. by the Caucasus; land of the Golden Fleece (*q.v.*);

visited by the Argonauts (*q.v.*); home of Medea.

**Cold**, (med.) common "cold in the head," acute inflammation of mucous membrane of throat and nose caused frequently by exposure to sudden change of temperature, or through getting wet. Treatment: warmth, rest, promotion of sweating, quinine, aspirin, etc. For recurrent colds, treatment with vaccines and hardening by gradual exposure to all climatic conditions. **C.-blooded**

**animals**, animals (*poikilotherms*) the temperature of whose bodies varies according to that of their surroundings: fish, amphibians, reptiles. Ant.: *warm-blooded animals* (*q.v.*). **C. storage**: see REFRIGERATOR.

**Col di Lana**, mtn. in S. Tyrol, betw. Sugana and Cismone valls.; heavy fighting in World War, 1915-17. **C. di Tenda**, fortified pass (6,150 ft.) betw. France and Italy, with road and rly. tunnel  $2\frac{1}{2}$  m. long.

**Coldstream Guards**, 2nd regiment of Brit. Foot Guards, orig. Monk's regt. of Foot Gds., raised, 1650, pres. title since 1670, derived from **Coldstream**, police burgh. Berwicksh., Scot., on Riv. Tweed; tn. once noted for irregular marriages; pop., 1,200.

**Colens**, tropical plants with coloured foliage, for wh. they are cultivated for decorative purposes.

**Colenso**, John Wm. (1814-83), Eng. bp. of Natal; published works on Zulu language; Comment. on the *Epistle to the Romans* (1861), the *Pentateuch and Book of Joshua* (1862-79), etc.; writings were strongly criticised; the Metropolitan of Cape Town excommunicated him, but the action was decl'd. void.

**Colenso**, vil., Natal, S. Africa, 70 m. N. Pietermaritzburg. **Battle of C.**, 15 Dec., 1899; defeat of Brit. attack on Boers, under Botha, in attempt to relieve Ladysmith.

**Coleoptera**, order of insects, known as *beetles*, having fore-wings wh. form sheaths for hind-wings when folded.

**Coleridge**, John Duke C., 1st bn. (1820-94), Eng. lawyer; solicitor-general, 1865; conducted case for Crown in Tichborne trial; chf. justice of Court of Common Pleas, 1873; ld. chf. justice, 1880-94.

**Coleridge**, Samuel Taylor (1772-1834), Eng. poet and philos.; with Wordsworth pubd. *Lyrical Ballads*, 1798, to wh. he contributed *The Ancient Mariner*.



Coleridge

**Coleridge-Taylor**, Sam. (1875-1912), Brit. composer; *Hiawatha*; incidental music for *Herod*, 1900; *Ulysses*, 1902; *Faust*, 1908.

**Colet**, John (c. 1467-1519), Eng. divine, classical scholar and educationalist; dean of St. Paul's, 1505; friend of Erasmus and Sir Thos. More; promoter of Renaissance

learning in Engl.; fndd. St. Paul's Sch., 1512.

**Colewort**, **collet**, name given to cabbage (*q.v.*) eaten young, before heart is firm.

**Coli bacilli**, (med.) normally present in large intestine, where harmless; abnormally in bladder, where C.B. cause catarrh.

**Colic**, gripping, cramp-like, severe pain of the large intestine (*colon*) or other abdominal organ; may be caused by cramp, intestinal obstruction, lead poisoning, etc. **Gallstone c.**, due to presence of gall-stone in bile-duct; **renal c.**, due to presence of stone in ureter.

**Coligny**, Gaspard de (1519-72), Fr. adm.; Huguenot leader; victim of Massacre of St. Bartholomew (*q.v.*).

**Colitis**, **mucous**, inflammation of mucous membrane of large or small intestine due to various causes; produces diarrhoea, passage of mucus in stools, and often abdominal pain.

**Collagen**, substance present in bones and connective tissue wh. is converted into gelatin by boiling.

**Collapse**, (med.) sudden failure of heart's action; symptoms: pallor, fainting, weak pulse.

**Collar-bone**, **clavicle**, S-shaped bone uniting breast-bone and shoulder-blade.

**Collate**, to compare one text with another; to place sheets of book in order; to make items or totals in one ledger agree with entries in another. **Collation**, light repast betw. meals.

**Collateral line**, issue of a younger child and family as compared with main line through the eldest son. **C. security**, (finan.) gives creditor security agst. failure of 1st security.

**Collect**, prayer said in the Mass after the Gloria and before the Epistle; short prayer at the close of the office in the Roman Breviary, and in various parts of the Eng. Bk. of Com. Prayer; perhaps so called because it forms a "collection" or summing up of the prayers of the whole congregation appropriate to a specified occasion.

**Collective fruit**, aggregation of fruits of several flowers to form one mass; e.g. blackberry. **C. note**: see NOTE. **C. noun**, generic term, comprising a number of things or ideas, e.g., crowd, dozen.

**Collectivism**, (econ.) princ. of common ownership of all means of production in order to secure equitable distrib. of wealth; the econ. basis of Socialism (*q.v.*).



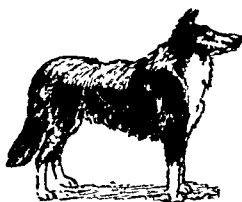
Colleoni

**Colleoni**, Bartolomeo (1400-75), It. condottiere (leader of

mercenaries); equestrian statue by Verrocchio, at Venice.

**Collie**, Scot. sheep-dog, with long-haired coat and sharp muzzle.

**Collier, Jeremy** (1650-1726), Eng. nonjuring divine; supported Stuart cause; imprisoned, 1688, 1692; outlawed, 1693 for absolving Sir John Friend and Sir Wm. Parkyns on scaffold; wrote numerous controversial pamphlets; *Short View of the Immorality and Profaneness of the English Stage*, 1698; *Eccles. Hist. of Great Britain*, 1708-14, etc. **C., John Payne** (1789-1883), Eng. lawyer, journalist, and critic; on staff of *The Times*, 1809-21; *Morning Chronicle*, 1821-47;

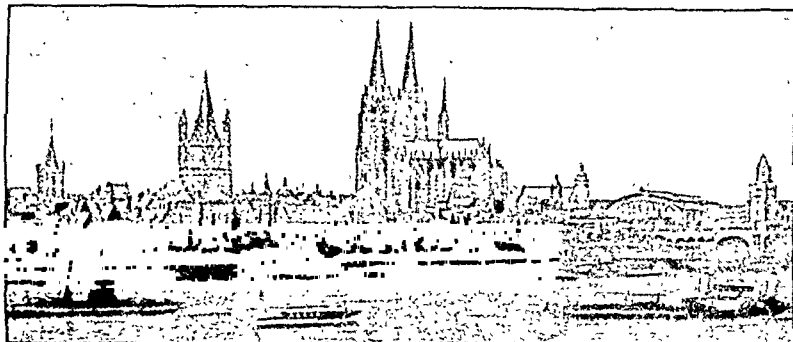


Collie

(1824-89), Eng. novelist; *Woman in White*, 1848; *The Moonstone*, 1868, etc.

**Collodion**, solution of gun-cotton in alcohol and ether; used as dressing for wounds and abrasions, also as remedy for corns; 2-3 parts of C. with 1 part camphor produce celluloid (q.v.).

**Colloid**, state of matter in wh. it is divided or "dispersed," generally in liquid, into molecular aggregates small enough to pass ordinary filters, but not the pores of animal membranes or collodion, through wh. truly dissolved substances pass. Colloidal "solutions" or sols. of insoluble substances (e.g., gold, silica), usually prepared by precipitating substance chemically and removing dissolved products by dialysis (see DIFFUSION) leaving only colloid particles. These show Brownian motion (q.v.), visible only in ultra-microscope (q.v.). Sols. of metals in water



Cologne

perpetrated Shakespearean forgeries on which were based *Notes and Emendations to the Text of Shakespeare*, 1852; *Old Man's Diary*, 1871-72.

**Collimator**, optical device used in spectro-scope and other instruments for obtaining a pure parallel beam of rays.

**Collings, Jesse** (1831-1920), Brit. politician; mayor of Birmingham, 1878; lib. M.P. for Ipswich, 1880; connected with slogan: "Three acres and a cow"; under-sec. Home affairs, 1895-1902; wrote *Land Reform*, 1906; *Autobiography*, 1920.

**Collingwood, Cuthbert**, 1st bn. (1750-1810), Brit. adm.; succeeded Nelson when he d. during battle of Trafalgar.

**Collins, Michael** (1890-1922), Irish polit.; commanded Republican army, 1919; £10,000 offered by Brit. Govt. for his capture; negot. and signed London Treaty under wh. Irish Free State was fndd., 1921-22; killed in Civil War in skirmish near Cork.

**C., Wm.** (1721-59), Eng. poet, forerunner of the Romantic Revival; wrote *Persian Eclogues*, 1742; *Odes*. **C., Wm. Wilkie**,

are brilliantly coloured, as also in glass (red glass coloured with colloidal gold and copper). Sols. of many substances when cooled or acted on by reagents form gels, jelly-like solid masses formed of network of colloid particles containing liquid in meshes. When dried, these shrink and become extremely hard; on immersing in liquid they swell with very great expansive force (e.g., gelatine, wood). Life largely depends on colloid phenomena.

**Colloidal fuel**, mixture of finely ground coal with fuel oil, with or without chem. stabilizer to prevent settling-out of coal. Can be sprayed into furnaces in same way as pure oil.

**Collotype**, print made direct from hardened gelatine surface; used for fine facsimile work and reproductions where perfect detail is necessary. Other names for the process are *aquatone*, *phototype*, and *heliotype*.

**Colmar**, cap. of dept. Haut-Rhin, Upper Alsace, France, on Riv. Lauch (trib. of the Ill), 294 m. E.S.E. of Paris; pop., 43,200; textile industry.

**Colo.**, abbr. Colorado.

**Colocasia**, E. Indian plant producing starchy tubers; the taro (*q.v.*), of Pacific Isls. is obtained from a variety of this plant.

**Cologne, Köln**, 1) dist. of Pruss., Rhine Province 1,512 sq.m.; pop., 1,440,000. 2) Cap. of the dist., second largest city in Prussia, on Rhine; pop., 740,100, four-fifths Catholic; commer. and manuf. centre; cathed. (begun 1284, ht., 525 ft.); Cath. archdiocese; engineering schools, university (since 1919); school of music; pedagogic academy; important industries: eau de C., motorcars (Deutz), textiles, etc.; chf. rly. junction in W. Germany. Lat. *Colonia Agrippina*, Roman foundation, bpric. 4th cent., archbpric. 799; from 1180, the archbps. were dukes of Westphalia.

**Colombes**, N.W. suburb of Paris; stadium, race-course; pop., 43,000.

**Colombia**, republic in N.W. of S. America; 469,000 sq.m., pop., 7,993,000 (160,000 Indians, remainder whites and half-breeds); ranges of the *Andes* in W., low-lying grassy plains (*llanos*) in E.; contains headwaters of Orinoco and of tribs. of Amazon; climate varies (severe on high plateaux); mineral wealth (gold, platinum, iron, etc.) not developed; principal exports: coffee, mineral oil, bananas; cap. *Bogotá*. 1538-1813 Sp.; thereafter a republic (Great Colombia) with Ecuador, till 1825, and then with Venezuela, till 1830, when it divided into 3 States wh., in 1886, united to form an independent republic.



**Colombo**, cap. of Ceylon on W. of island; pop., 287,700 (incl. Europ. town of Mt. Lavinia); Anglican and R. Cath. bps.; univ. college; important port and coaling station.

**Colón**, port on Isthmus of Panama, Centr. America, at Atlantic entrance to Panama Canal; pop., 31,000; tourist centre.

**Colon**, 1) (Gram.) punc. sign (:) marks antithesis, quotation, or illustration; 2) (anat.) large intestine.

**Colonel**, officer, rank immed. above lieutenant-col. (battalion, etc., commander); now gen. holding a staff appointment. In foreign armies. commander of a 3-batt. regiment.

**Colonial Nat. Monument**; (1931) in Virginia, U.S.A.; incl. Jamestown Isl., tn. Williamsburg, and pt. of battle-field at Yorktown.

**Colonial Office**, dept. of Brit. Govt. charged with relat. betw. govt. in Gt. Brit. and those of Colonies, under control of Sec. of State for Colonies. See DOMINIONS OFFICE.

**Colonna**, Vittoria (1490-1547), It. poet-

ess, friend of Michelangelo; wrote chiefly sonnets.

**Colonna, Cape (Sunium)**, promontory on S. coast Attica, Greece. Temple of Poseidon.

**Colonnade**, (archit.) series of columns joined by an entablature (*q.v.*); *tetrastyle*, series of 4 columns; *hexastyle*, series of 6; C. surrounding inner side of a bldg. known as *peristyle* (*q.v.*).

**Colony**, geog. area, usu. in primitive state, settled by people from a distant country who develop its resources, build cities, etc., gen. remaining under govt. of parent country, but sometimes becoming independent or self-governing state. Traders of anc. Greece establ. Cs. wh. remained independent of parent state; Roman Cs. were acquired by conquest and remained subject to imperial authority. In mod. times, 18th and 19th cents. were greatest period of colonisation by Eur. countries, esp. of extension of Brit. Empire in Canada, India, S. Africa and Australia. Brit. self-governing Cs. now known as *Dominions*.

**Colophon**, inscription placed at end of MS. or book by the scribe or printer, giving particulars concerning its production, author, date title, etc.; often accompanied in printed books by pictorial or allegorical device, the trade mark of the printer or publisher.

**Colophony**: see RESIN.

**Colorado**, 1) ("Centennial," "Silver") W. centr. State of U.S.A.; 103,948 sq.m.; pop., 1,036,000; prairie on E., *Rocky Mtns.* on W.; watered by Rio Grande, Plate and C. rivs.; gold, silver, lead, copper, and coal; mineral springs; maize, wheat, and fruit; horse, cattle, and pig breeding; cap., *Denver*. 2) River in W. of U.S.A., rises in Wyoming Rockies; flows through Colorado and Utah, forms boundary betw. Nevada and California, and Arizona; through Mexico into Gulf of California, 2,000 m.; many canyons (Grand C., *q.v.*); lower course navigable. 3) Riv., Texas, U.S.A., 650 m., enters Gulf of Mexico through Matagorda Bay; one-third navigable. **C. beetle**, **potato beetle**, native



Colorado Beetle

of western U.S.A.; spread over N. Amer.; both larvae and full-grown beetle devour the foliage of potato plant and seriously affect the quality of the tubers; its depredations are checked by means of arsenicals. **C. Springs**, tn. Colorado, U.S.A.; pop., 33,250; C. college (1874); field laboratory in forestry; health and tourist resort; iron foundries; mining centre. Originated in gold rush, 1859.

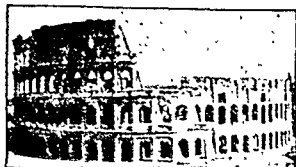


Colonel: Epaullette and Sleeve-Badge

**Coloratura, C. aria**, song adorned with brilliant runs, trills, etc.

**Colosseum**, huge Rom. amphitheatre of

Flavian emperors Vespasian, Titus, and Domitian (opened 80 A.D.); elliptical in plan; exterior measurements, 617



Colosseum

ft. x 512 ft., of arena, 282 ft. x 177 ft.; for 4 cents. chf. center in Emp. for gladiatorial exhibitions; greater part of fabric utilized for other bldgs. during Middle Ages.

**Colossians, Epistle to the**, (N.T.) issued by Paul during imprisonment in Rome (c. 61 A.D.), refuting false doctrines current at Colossae, chf. city of Phrygia.

**Colossus**, (Gr.) statue over life-size.

**C. of Rhodes**: see RHODES.

**Colour**, visual sensation produced upon retina (*q.v.*) by light waves, varying accdg. to length of wave. Light of any single wave-length exhibits one of spectrum colours; all other colours are produced by mixture of spectrum colours; different mixtures may produce the same sensation; thus white is produced by all spectrum colours mixed together, but also by mixtures of red and green and of blue and yellow. Pure spectrum colours are said to be saturated; usu. there is mixture with more or less white (of any kind). Colours of objects are due to their absorbing some of the colours in white light and transmitting the rest to eye; thus red object is black or opaque to every colour but red, and transparent or white to red. Hence red object in green, etc., light appears black; red glass is opaque to green light. Mixture of paints produces colour or mixture of colours not absorbed from white light by any of the components, e.g., blue paint absorbs all but blue and green, yellow paint all but green and yellow; hence mixture of blue and yellow absorbs all but green. No ordinary artificial light is perfectly white (*i.e.*, of same composition as sunlight), hence all colours appear different under artificial light. **C.-blindness**, defect of vision, usu. inherited, causing inability to distinguish betw. certain colours. In *dichromatism*, colours red and green are usu. indistinguishable; *monochromatism* is a rare condition in wh. power to see colour is absent and all objects appear grey. **C. filters** are coloured transparent screens standardized to transmit only light of desired range of wave-length. Used 1) in photography in monochrome of objects by day- or artificial light, to compensate for difference in colour sensitivity between human eye and

film; 2) in photography in colours by 'three-colour process' (*q.v.*); 3) in illumination for effect, e.g., stage lighting. C. fs. are usually of gelatine coloured with special dyes; glass is more durable, but very limited as to range of colour. **C. photography**, prod. of phot. pictures in natural colour. Various processes: Lippmann [on princ. of interference (*q.v.*)]; Luziere (screen divided into minute areas of 3 different colours); Jougla, Dufay, etc. (films ruled and dyed; in positive picture eye recombines colours); use of "Lenticular" film (embossed on back with minute lenses), used in three-colour process (*q.v.*). For *motion pictures*, Lumiere process is best. **C.-printing**: see THREE-COLOUR PROCESS.

**Colours**, flags carried by infantry regiments. Artillery, hussars and lancers carry no C.; dragoons carry *standards*. (Sport) Registered design of racehorse owner carried by his jockey (shirt and cap); cap and blazer awarded to those who have represented their school, coll., or univ. at cricket, etc.

**Colporteur** (Fr.), hawk, esp. of tracts, Bibles, and relig. books.

**Colt**, 1) male horse from weaning to age of 4 or 5; 2) young cricket professional before 1st. time playing for his county; 3) type of revolver, named after Amer. inventor, Samuel C. (1814-62), founder of C.'s Patent Fire-Arms Manuf. Co.

**Colt's-foot**, *Tussilago farfara*, common wild flower so called from shape of leaf; bright yellow flowers wh. appear before leaves. Domestic remedy for coughs; hence folk name *coughwort*.



**Colum**, Padraic (1881- ), Ir. author; co-fnder. Ir. Theatre movement; has written plays, *Colt's-foot* novels, and many books for children.

**Columbia**, St. (521-597), Celtic missionary to Scotland; fndd. monastery of Iona (c. 565).

**Columba**, the Dove, or C. *Noachi* (Noah's Dove), constell. containing only 3 prominent stars; see PL. ASTRONOMY, S.C.H., G.

**Columban**, St. (c. 543-615), Irish missionary in Fr., Switz., and Italy.

**Columbia**, 1) cap. of S. Carolina, U.S.A.; pop., 51,600; manuf.: cotton goods and machinery; agric. centre. 2) Largest riv. of N.W. America, 1,370 m., rises in *Rocky Mtns.* in British C., flows through State of Washington to the Pacific. **C., District of**: see WASHINGTON. 2) **C. University**, New York, U.S.A.; fndd. as King's Coll., 1754; includes law, medical, and science schools; sch. of mines; architectural department. Name of C. adopted 1784.

**Columbine**, 1) in pantomime, Pantaloon's (*q.v.*) daughter, or her maid; adored by

**AQUILEGIA**, (transport duties (ammunition &c.; wagon-train, etc.).

**1446-1508**, **disc.** the New... **circles**, (astron.) 2 great circles intersecting at rt. angles in poles of the Equator, passing respectively through equinoctial and celestial points.

**Colvin**, Sir Sidney (1845-1927), Eng. and art critic.

**Colwyn Bay**, urb. dist. and seaside resort, Denbighshire, N. Wales; pop., 21,000.

**Colza oil**: see RAPE I).

**Coma**, deep unconsciousness, as in epilepsy and intoxication; also occurs in severe diabetes.

**Coma Berenices**: see BERENICE.

**Combe**: see COOMB.

**Combes**, Émile (1835-1921), Fr. statesm.; effected separation of Church and State, 1902-05.

**Combination**, (math.) same as permutation, except that variations of order of same elements makes no difference to the total of Cs.; e.g., given 3 elements (*a*, *b* and *c*) to be combined two at a time, the possible Cs. are *ab*, *ac* and *bc*, viz., 3 in all, *ab* + *ba* counting as one C. The no. of Cs. of *m* things taken *n* at time (written  ${}_m C_n$  or  ${}^m C_n$ )

$$= \frac{m!}{(m-n)!n!} \text{ e.g., where } m = 3 \text{ and } n = 2 \text{ the}$$

$$\text{no. of C's.} = \frac{3 \cdot 2 \cdot 1}{1 \cdot 2} = 3. \text{ See PERMUTATION.}$$

**Combine**, or *amalgamation*, union of sev. undertakings; direction and business management are under centr. office; frequently undertakings manufacturing same product (*horizontal combination*); recently also combination of undertakings standing mutually in relation of customers and purveyors, e.g., coal mines, iron foundries, mechanical engineering works; the object of this *vertical combination* is simplified and cheaper purchase of raw materials and intermediate products.

**Combustion**, chem. reaction betw. 2 substances, of wh. one is gas, usu. oxygen, with evolution of heat; the process of burning.

**C., heat of**, no. of calories (*q.v.*) produced by the combustion of 1 gram of a substance.

**Comédie Française**, Théâtre Français, Fr. national theatre; orig. in fusion of Molière's troupe with 2 rival companies; inaug. 26 Aug., 1680. **C. Humaine**, La, scheme drawn up by Balzac for arrangement of his works; divided into sections: *Scènes de la Vie Privée*; *Sc. de Province*; *Sc. de la Vie Parisienne*; *Politique-Militaire de Campagne*; *Études philosophiques*.

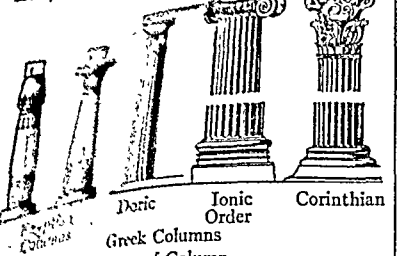
**Comenius** or **Komensky**, Joh. Amos (1592-1670), Czech theolog. and educationalist; last bp. of old ch. of Bohemian-Moravian Brethren (*q.v.*).

**Comeragh Mountains**, range Co. Waterford, I.F.S.; Knockanaffrin, 2,470 ft.



pop., wool, and grain. manufact. iron, steel, glass, shoes, and...  
...oil refinery...  
...at Norfolk...  
...Field...  
...Georgia, U.S.A...  
...machinery...  
...vertical support of marble...  
...iron, steel...  
...bearing vertical pressure;

**Column**, (archit.) round, vertical support of marble, stone, brickwork, concrete, iron, steel... bearing vertical pressure;



Greek Columns  
Forms of Column

consists of 1) bottom, or base; 2) centre, or shaft; 3) top, or capital. Columns vary widely in period; their form in class. times gave rise to *Orders of Architecture*; in Gr. temples a stone beam (*architrave*) rests on the Cs.; above this is the frieze of triglyphs (3-grooved tablets) and *metopes* (flat spaces betw.), often ornamented with reliefs; then the actual roof, with cornice (*q.v.*), whole forming the *entablature*. Orders of Gr. Cs. are: 1) *Doric*, with no base, short thick shaft and wide, sharp-edged flutings; betw. C. and entablature come the capital (*echinus*) and coping (*abacus*); 2) *Ionic*, longer, more slender; rises from characteristic base; shaft fluted, fillets betw. being half-round; capital has an egg and dart moulding (*q.v.*) and spiral volutes (*q.v.*) at each corner; 3) *Corinthian*, more delicate than Ionic but richly ornamented; *acanthus* leaves on capital. Two Roman orders are recognd., 1) *Tuscan*: variant of Doric; 2) *Composite*, developed from later Gr. orders. II (Mil.) March formation of troops; troops charged with

**Comet**, luminous heavenly body with nucleus and tail (pointing from the sun), revolving round sun in very eccentric orbit. Of those known, some have so far appeared only once, others recur at greater or less intervals, least being one of 3 or 4 years.

**Comfrey**, (bot.) *Symphytum officinale*, member of borage tribe; grows in damp places, c. 3 ft. high; pink or white flowers. Herbal remedy for pulmonary complaints; leaves also used for fomentation.



Comfrey

**Comines**, Philippe de (1445-1509), Fr. statesman and historian; relinquished service of Chas. the Bold to enter that of Louis XI; at Louis' death, banished for plotting agnst. regent, Anne of Beaujeu; *Mémoires*, 1524-28.

**Comintern**, abbr. for Communist International, *see* INTERNATIONAL.

**Comma**, punctuation sign indicating sections of sentence (,) or separating figures.

**Inverted cs.** (".....") indicate quotation. **C. bacillus**, a spirillum; causal organism of Asiatic cholera. **C. butterfly**, a species remarkable for the ragged appearance of the wings; has a comma-like white mark on the under side of the hind wings.



Comma Butterfly

**Commandant** (mil.), officer commanding a milit. post or school.

**Commander**, 1) mil. officer commanding a body of troops; 2) naval rank (*see* OFFICERS); 3) higher class of an order of knighthood. **C.-in-chief**, the supreme head of an army.

**Commander Islands**, **Kamandorski**, Russ. archipelago, Behring Sea, E. of Kamchatka; c. 800 sq.m.; pop., c. 600 (Esquimaux, Russians); sea-otter hunting.

**Commandery**, a subdivision of land of Knights Hospitallers, administ. by a commander.

**Commedia dell' Arte**, form of 15th- to 17th-cent. improvised It. comedy, descended direct from Atellan farces. Characters stock types: *Pulcinella*, foolish country lad, always in trouble; *Pantalone*, ridic. old miser always falling in love and being swindled; *Captain*, swaggering braggadoccio, ready for any dirty work; *Doctor*, swindling quack, etc.

**Comme il faut** (Fr.), as it should be; correct.

**Commensal**: *see* PARASITE.

**Commensurables**, 2 (or more) numbers divisible or measurable without remainder by a third, e.g., 12 and 16 by 4.

**Commerce**, sale, purchase, and distrib. of

goods; term embraces also transport and insur., banking, hotel-keeping, etc.

**Commercial arithmetic**, calculations of special importance in business transactions, e.g., interest, discount, and percentages.

**C. art**, art applied to advertising, publicity, etc. In recent times has attracted artists of repute and ability, some occasionally, others as their main sphere. **C. attaché**, diplomatic or consular official, charged with supplying econ. information to authorities at home, and information as to questions of trade in his country to foreign business men.

**C. causes**, lawsuits arising out of transactions of merchants and traders. **C. college**, institution for training students in commercial subjects, e.g., shorthand, typewriting, book-keeping, office routine, salesmanship, etc. **C. traveller**, representative of a firm, commissioned to make sales by calling on customers. **C. treaties**, agreements betw. States for regulating trading relations and fixing duties and rights of navigation, etc.; usu. concluded for a definite period; *see* MOST FAVOURED NATION CLAUSE.

**Commissariat**, dept. respons. for food supplies; esp. for provisioning of troops.

**Commissary**, commissaire, one entrusted with spec. commission (esp. from State). Title not customary in Eng., where its use usu. indicates official of Russ. Soviet.

**Commission** 1) board or comtee. for dealing with a spec. problem, e.g., Royal C. on Finance and Banking. 2) Fees payable to an agent for effecting of business, to a forwarding agent for consignment of goods. 3) Fees paid accdg. to amt. of turnover effected by an employé (traveller, salesman, etc.); opposite of a fixed salary. **C. agent**, one who buys or sells goods, securities, etc., for acc. of another.

**Commitment**, (Stk. Exch.) obligation wh. must be fulfilled on an apptd. day.

**Committee of Imperial Defence**, cmtee. of ministers and ex-ministers irrespective of party, with members of fighting and other services, to advise govt. confidentially on milit. and allied questions. **C. of Public Safety**, 1793-94, emergency authority during Fr. Rev.; inaugurated Reign of Terror. **C. stage**: *see* BILL.

**Commodore**, 1) naval officer, commandr. of squadron, equiv. to Brigadier in army. 2) In mercantile marine, title sometimes given to senior captain in service of a company.

**Commodus**, Lucius Aelius Aurelius (161-180-192), Rom. emp.; entrusted govt. to favourites; appeared many times in arena; commanded his worship as Hercules; notorious for his cruelty; strangled by gladiator, Narcissus, at instigation of his mistress and others.



Com-mander (R.N.)



Epaulettes and Stripe (Naval Commodore)



**Common entrance examination**, entrance exam. for public schools in Gt. Brit. controlled by board of managers appointed by Headmasters' Conference and Association of Prep. Schools; obligatory subjects: scripture, English, history, geography, elementary maths., Latin, and French.

**Common law**, that prt. of law in Eng., Brit. Dominions, and U.S.A., wh. arose from gen. custom. Sometimes contrasted with equity (*q.v.*), sometimes with acts of Parl., but term also used to include old com. law and acts of Parl. adding to it, by contrast with foreign law. **C. Pleas, Court of**, a former Eng. common law court at Westminster; created by Magna Carta in order to overcome the necessity of suitors following the kg. from place to place to ensure the hearing of their plaints; by the Judicature Act, 1873, its jurisdiction was taken over by the King's Bench division of the High Court of Justice. **C. Stock**, U.S. term for *Ordinary stock*, see STOCK. **C. Serjeant**, title of judge (junior to Recorder of Lond.) who tries cases at Old Bailey and Mayor's and City of London Courts.

**Commonwealth**, sum of national interests; literary synonym for State or nation. Designation of Eng. Govt. betw. death of Charles I and restor. of Charles II. Revived for Australia, and as synonym (Brit. Commonwealth of Nations) for Brit. Empire.

**Commune**, smallest territorial div. in Fr., govd. by a mayor. **C. of Paris**, March-May, 1871, Fr. revolut. outbreak at close of Franco-Pruss. War, involving great violence and bloodshed.

**Communication cord**, (rly.) device attached to compartments, luggage vans, etc. for stopping train in emergency, by pulling cord or handle; causes air-brakes to be applied.

**Communion**: see HOLY COMMUNION. **C. of Saints, The**, fraternal relation to each other, and common sonship of God, of all saints both living and dead.

**Communiqué**, offic. news bulletin.

**Communism**, in widest sense, common ownership of property, as in some prim. societies, the early Christian Church, and certain relig. orders in Mid. Ages. Mod. C. dates from publicn. of the *Communist Manifesto* (*q.v.*) in 1848. Since World War, C. has broken away from more orthodox forms of socialism (*q.v.*), and aims at world rev. for overthrow of capitalism, followed by dictatorship of the proletariat, as in Russia (see BOLSHEVISM). Communist party of Gt. Brit. was formed 1920 and affiliated to the Third International (*q.v.*).

**Communist Manifesto**, exposition of communism (*q.v.*) issued by Marx and

Engels (1848); starting-point of communism as conscious force. Declaring that all history consists of successive class-struggles, ending in revolutionary transformation of society, or its collapse, and rise of new dominant class, it called on wage-earners of the world to unite in a struggle to overthrow capitalist system and replace it by the *proletarian* system of common ownership.

**Community of the Resurrection, The**, Anglican Brotherhood, founded 1892, of celibate clergy living under rule and with a common purse.

**Commutator**, (elec.) switch for reversing direc. of elec. current; on dynamo, for collecting and rectifying elec. current prod.; on motor, for feeding current to armature.



Lake Como

*Brushes* of copper, graphite, or mixture of these carry current to **C. segments**.

**Como**, 1) Prov. of Lombardy, N. Italy; 800 sq.m.; pop., 457,000. 2) Cap. of prov., on Lake C.; pop., 52,700; silk industry; marble cathedral; funicular rly. to Brunate. a villa colony. 3) **Lake C.** in Upper Ital, Alps; area, 56 sq.m., max. depth 1,350 ft.; Riv. Adda flows through, depositing much sediment; fishing.

**Comorin, Cape**, S. point of India; lat. 8° 4' 20" N.

**Comoro Islands**, volcanic group, Mozambique Channel, betw. Portu. E. Africa and Madagascar (*q.v.*), of which they are a province.

**Compa.**, abbr. Compania (on Bank of England notes).

**Companies' registration**, under Brit. Companies Acts cos. must register with the Registrar of Companies at Somerset House (for England and Wales) or at the Registrar Office in Edinburgh (for Scot.). C. Acts (latest 1929) req. specific details to be registd. of different kinds of C., e.g., limited, unlimited, etc., giving balance sheet, names and addresses of directors, address of co., etc.

**Companion of Honour**, Brit. order created 1917; has only one class, limited to 50 members irrespective of sex; conferred for "conspicuous service of national importance"; membership gives no title or precedence. Badge: oval gold medallion with inscription: "In Action Faithful and In Honour Clear," hung from carmine ribbon with interlaced gold bordure.

**Company**, 1) (milit.) infantry unit of Brit. Army, of various strength at different times; before 1914, 3 officers and 120 men, eight Cs. forming a battalion; since 1914, 6 officers and 221 men divided into four platoons, four Cs., designated A, B, C and D, forming a battalion. 2) Body of persons assocd. for purposes of profit, usually with unlimited liability of members; gen. formed by registration under Companies Acts. **C. promoter**, (Stk. Exch.) pers. or firm engaged in originating limited liability cos.; often a term of reproach owing to malpractice of charging large commissions for promotion of cos. with high-sounding names but with little chance of success; there are, however, many reputable firms of company promoters.

**Comparator**, (phys.) appar. for accurately comparing any length with a standard scale; has 2 adjustable reading-microscopes.

**Comparison**, inflexion of adj. or adv., 3 grades of C., e.g., *deep* (positive), *deeper* (comparative), *deepest* (superlative).

**Compass**, 1) extent, capacity; 2) (mus.) range of score or voice; 3) (naut.) instrument for calculating position in relation to magnetic meridian (*mariners' compass*).

**Compasses**, pair of, drawing instr. for making circles; two legs of equal length hinged together or attached by stiff spring (*Spring bow*); sharp point on one leg, pencil or pen on the other. *Dividers*, C. with two sharp points for comparing lengths. **Beam c.**, straight bar with sharp point at rt.-angles, and slidable pencil or other sharp point. Sim. are *Callipers* (q.v.).

**Compensator**, (tech.) device for neutralizing some undesirable effect, e.g., in clocks, of temperature on rate of pendulum or balance wheel.

**Competition**, (econ.) condn. in wh. production and distrib. are left to private

individuals competing one against another in open market; see CAPITALISM.

**Compiègne**, cap. of dépt. Oise, France, on Riv. Oise; pop., 17,400. Capture of Joan of Arc, 1430. Armistice betw. Allies and Central Powers signed in **Forest of C.**, 11 Nov., 1918.

**Complanation**, calculation of size of a curved surface (by integral calculus).

**Compleat Angler**, **The**, work by Izaak Walton (q.v.), 1653; partly in dialogue and partly in verse, recalling scenes and atmosphere of the peaceful life of a rural fisherman.

**Complement**, (math.) C. of an angle is the diff. betw. that angle and a rt. angle; of a number, betw. that number and next higher power of 10.

**Complementary colours**, those wh., when mixed in suitable propor., produce white.

**Complex**, a totality formed from a combination of sev. interrelated parts; in psychoanalysis: a collection of ideas, chiefly emotional, repressed and therefore unconscious, resulting in an abnormal mental condition.

**Compline**: see HOURS, CANONICAL.

**Composing machines**: see TYPE COMPOSING MACHINES.

**Compositæ**, a very large order of plants, characterized by the compound flowers; i.e., composed of smaller flowers (*florets*) enclosed in an *involucre* or sheath.

**Composite order**: (archit.) see COLUMN.

**Composition**, (mus.) the art of combining and arranging musical ideas; an orig. musical work.

**Compos mentis** (Lat.), sane, of sound mind.

**Compost**, (agric.) mixed manures of earth and decayed animal and vegetable matter.

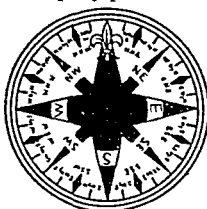
**Compound steam engine**, one in wh. steam is allowed to expand successively in sev. cylinders, one after another; e.g., high, medium and low pressure cylinders wh. may be one behind the other on a single piston rod. See COMPRESSOR.

**Compress**, pad of lint or other material, used wet or dry, and applied firmly to affected part; used to arrest hæmorrhage or reduce inflammation. **Cold c.**, term for compress in wh. cold water or other fluid is used; applied to swellings assocd. with sprains and bruises.

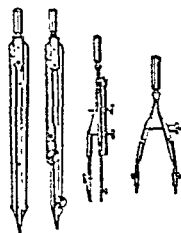
**Compressed air**, produced by compressors or pumps; used for many purposes: spraying, cleaning, etc. As source of power, works *pneumatic drills* and *hammers*, *locomotives* in mines, *postal tubes*.

**Compression**, pressing together; (tech.) condensation or liquefaction of gases or vapours; **c. members** (mech.), parts of a structure subjected to compression.

**Compressors**, machines for condensing air or gases, in form either of plunger pumps,



Mariners' Compass



Dividers Spring Bows Pen and Pencil Compasses

with direct reciprocating motion or as rotary or turbo-Cs. See PUMP.

**Compte-rendu** (Fr.), official report, esp. of a conference.

**Comptoir National d'Escompte**, Fr. bank, fndd. 1848; current and deposit accts. (31 Dec., 1932) 9,055,428,638 fr., liabilities, 10,122,407,229 fr.

**Compton effect**, (optics). A. H. Compton, discovd. (1922) that light scattered by matter is changed very slightly in wavelength; inexplicable on wave-theory; easily explained on emission (photon) theory.

**Compton Wynyates**, seat (M. of Northampton), S.W. Warwicksh., 8 m. W.N.W. Banbury; Tudor mansion, temp. Henry VIII, built round a court.

**Compulsory education**, system, first estb. in Gt. Brit. by Educ. Act, 1871, under wh. all children between 5 and 14, not receiving educ. elsewhere, must attend public elementary school.

**Comte**, Auguste (1798-1857), Fr. philos.; fndd. Positivism (*q.v.*).

**Con amore** (It.), with heart and soul; enthusiastically; often a direction on musical scores.

**Conation**, active or striving aspect of consciousness; *e.g.*, impulse, desire, instinct, will.

**Con brio**, (mus.) exuberantly, with spirit.

**Concepción**, 1) prov. of Chile; area, c. 3,310 sq.m.; pop., c. 325,000. 2) Cap. of the prov. on Riv. Biobío; seapt.; pop., 77,600.

**Concept**, idea, abstract or general, formulated about an entity or object; see IDEA.

**Conception**, (med.) fertilization of ovum by spermatozoon after copulation, causing development of foetus (*q.v.*). See BIRTH CONTROL; GESTATION.

**Concertina**, portable musical instrument, bellows with keyboard at each end and steel tongues; cf. ACCORDION.

**Concerto**, mus. composition usu. written for a solo instrument playing in conjunction with orchestra, but also for 2 (double C.) or 3 (triple C.) instr. with orchestra; generally in 3 movements.

**Concession**, grant by a State to a co. or individ. of a piece of territory for exploitation; important esp. in mining, rly., commerce, etc.

**Concessions**, Eur. and Amer. settlements, esp. in China (Eur. qurtrs.), whose members are amenable, not to national juris. and taxat., but to their own consular jurisdiction.

**Conciliation boards**: see ARBITRATION.

**Conclave**, a private assembly, esp. that of cardinals at the death of a pope, for the election of his successor.

**Concord**, 1) cap., New Hampshire, U.S.A.; pop., 25,250; state capitol; textiles, printing, and publishing; airport; home of Mary Baker Eddy, founder of Christian Science movement. 2) Tn., Mass., U.S.A.;

pop., 7,500; scene of first battle of War of Independence.

**Concord**, Book of, collected documents of Lutheran confessions of faith.

**Concordance**, (Lat.) index to all words appear. in a publicatn., arranged alphabetically; Cs. exist for Bible, Dante, Shakespeare, Spenser, Milton, Pope, Wordsworth, etc.

**Concordat**, treaty between the Holy See and a secular State regarding relations betw. Church and State; *e.g.*, those betw. Pius VII and Napoleon in 1801, and the Vatican State and the Ital. Government, 1929.

**Concrete**, (bldg.) agglutinative material, mixture of cement (*q.v.*), sand, gravel (or other hard aggregate), and water; used for walls, columns, etc.; poured, while plastic, betw. shuttering (*q.v.*), where it dries and sets hard. Increasingly used in mod. construction, = Ferro-Concrete partic. as reinforced or Ferro C., in wh. mixture is poured round and betw. steel armatures (usu. rods or perforated sheets), wh. resist tensile stress, while C. resists pressure; whole forms partic. durable mass.



**Concretion**, 1) (geol.) mass of mineral matter formed round some central body by the agency of water; common in nodular form in clay-ironstone beds; sometimes, *e.g.*, in magnesian limestone, forms continuous beds; various forms of silica are among the concretion-forming minerals. 2) (med.) Stone, *e.g.*, in bladder.

**Concubine**, woman who cohabits with a man in **concubinage** (living together without marriage); under Rom. Emp. had cert. legal rights.

**Condé**, branch of Fr. House of Bourbon (*q.v.*). **Louis I** de Bourbon, Prince de C. (1530-69), shot as leader of Huguenots. **Louis II**, "The Great Condé" (1621-86), gen.; campaigns in Spain and Bavaria, 1643-48; Netherlands, 1674; Germany, 1675.

**Condensation**, liquefaction of gases or vapours by means of cooling or pressure. In chem., a reaction in wh. a number of simple molecules unite, usu. with loss of water, to form a complex molecule, *e.g.* phenol and formaldehyde (*qq.v.*) and to form synth. resin (bakelite).

**Condenser**, appar. in wh. vapour of liquid is cooled and so liquefied; 3 main types: 1) in wh. vapour passes thr. pipes surrounded by cooling water; *Liebig's C.*, *condensing worms*; 2) in wh. vapour passes over pipes thr. wh. cooling water is flowing. *Surface C.*, used for condensing steam from engines, usu. surrounded by closed vessel connected to vacuum pump. 3) *Mixed C.*, also for engines; steam condensed by contact with cold water. **Electric c.**, 2 conductors sep. by dielectric, forming a system having large

elec. capacity (*i.e.* needing large quant. of electricity to charge to given voltage); greater the area and thinner dielectric, higher the capacity. See DIELECTRIC CONSTANT.

4) Lens for collecting light, used for illumination in projectors and microscopes.

**Condillac**, Étienne (1715-80), Fr. philos.; *Traité des Sensations* (1754); enunciated theory of Sensationism (*q.v.*).

**Conditionalism**, theory that not one cause but a *totality* of conditions determines an event, and that complete knowledge is possible only by ascertainment of this totality.

**Condor**, largest and most striking of the turkey-vultures, native of the Andes.

**Condorcet**, Marquis de (1743-94), Fr. philos. and mathematician.

**Condottiere**, (It., from Lat. conductor, "leader"), It. leader of mercenary soldiers, 14th-15th cents.

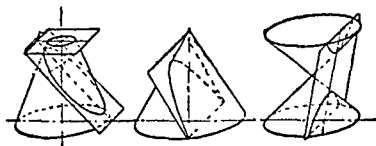
**Condouriotis**, Paul (1855- ), Greek adm., and administrator; first Pres. Gr. Repub. (1924).

**Conductors**, (elec.) substances wh. readily conduct elec. currents; metals are called conductors of the 1st class; electrolytes (water, salt solutions, etc.), of 2nd class. Ant.: *non-conductors*, *insulators* (see RESISTANCE). Conductors (non-conductors, insulators) of heat, sound, vibration, etc., analogous to above.

**Cone**, 1) geometrical body formed by the rotation of a right-angled triangle round one of the sides contg. the rt.-angle, or by the



Condor



Conic Sections

1 Ellipse and Circle 2 Parabola 3 Hyperbola

connection of all points of a circumference of a circle with a point outside the plane of the C.; the connecting lines are called *hypotenuse* or *generatrix*. The volume of a cone = one-third of the base  $\times$  the height. The **double C.** is formed by prolonging the generatrix beyond the apex. **Conic section**, the section formed when a C. or a double C. is cut by a plane, *i.e.*, a) the *circle*, formed when the cut is perpendicular to the axis of the cone (*fig. 1*); b) the *ellipse*, when oblique to the axis (*fig. 1*); c) the *parabola*, when parallel to a generatrix (*fig. 2*); a plane that cuts through both cones of a double C. forms a *hyperbola* (*fig. 3*). 2) (Bot.), Scaly fruit (male and female) of conifers (*q.v.*). **C.-pulley**, formed of sev.

pulleys of diff. diameters side by side on same axis, arrgd. in gradated series. Such a P. on driving shaft opp. sim. one on machine to be driven, enables var. speeds to be obt'd. by shifting a single belt (*q.v.*) to var. pairs of pulleys.

**Coney, cony**, trade name for low-grade fur from rabbits, etc. Cf. CONY.

**Coney Island**, seaside resort, New York, U.S.A., adjoining Brooklyn at S. extremity of Long Island.

**Confederacy, confederation**, assoc. of States closer than alliance, but looser than union. Gen. implies mutual freedom from customs barriers and common action in foreign affairs. See FEDERALISM.

**Confédération Générale du Travail** (C.G.T.), Fr. Federation of Trades Unions, formed 1886.

**Conference**, talk, session; debate on a given subject. **Diplomatic c.** betw. statesmen for more speedy solution of dipl. and polit. questions, esp. since World War (Spa, Cannes, Genoa, London, Locarno, Chequers, Paris).

**Confession**, 1) open declaration of relig. belief; 2) a partic. creed or religion; 3) Sacrament of Penance, in which penitent accuses himself of his sins to a priest who has received authority to give absolution. **General C.** made by a no. of persons together, (*e.g.*) in various forms provided in Eng. *Bk. of Common Prayer*.

**Confessional**, enclosed space, screened from rest of church, in which priest hears *confession* (*q.v.*). **Seal of C.**, obligation binding priest never to reveal secrets of C.; usu. recognised by law.

**Confessor**, (eccles.) 1) one who suffers persecution for his religion or has a reputation for great sanctity, as Edward the C. (*q.v.*); 2) priest who hears confessions and gives absolution.

**Confirmation**, (eccles.) sacrament of the Ch. in wh. grace of baptism is strengthened and increased by the Holy Ghost through the laying on of hands by the bp.; in Gr. and Rom. Ch. administered with chrism (*q.v.*); in Eng. Ch. essential to admission of baptized person to Holy Communion.

**Confucius** (551-478 B.C.), *K'ung Fu-tze*; Chinese philosopher; gave China moral and ethical teachings which were State system until Repub. 1912; Confucianism survives, with Taoism and Buddhism, as one of the religions of China.



Statue of Confucius

**Congé d'élire** (Fr. "leave to elect"), term for the nominal permission

granted to the dean and chapter of a cathedral in the C. of E. to elect a new bp. when the see becomes vacant; actually, new bp. is appointed by the Crown on nominatn. by Prime Minister.

**Conger eel**, large marine eel of the family *Muraenidae*, which also includes the common eel (*Anguilla*).

Almost cosmopolitan in distribution; found at moderate depths off rocky ground; extremely voracious; passes through a leptocephalous larval stage (see EEL).



Conger Eel

**Congestion**, (med.) stagnation of blood in an organ (esp. lungs) or part of the body.

**Conglomerate**, (geol.) rock formed of shingle or small rounded pebbles embedded in a matrix of finer material; most commonly composed of quartz, sometimes of limestone.

**Congo**, riv., Belgian Congo, Equatorial Africa; length 3,000 m.; drainage area 1,400,000 sq.m.; issues from L. Bangweulu (N. Rhodesia)

as Riv. *Lualaba*, flows through Lake Mweru, beyond which it is known as Riv. *Lualaba* as far as Nyangwe; joined by Riv. *Lukuga* from L.



Congo: Native Boatmen

*Tanganyika*; flows into the Atlantic at Banana. Principal S. trib. the Kasai. Navigable from mouth to Matadi (95 m.); thence to Leopoldville, on Stanley Pool, 235 m. of rapids and falls (avoided by rly. 250 m. long); from Stanley Pool to Stanley Falls (1,070 m.) navigable for boats drawing 4 ft. Sources explored by Livingstone in 1869; in 1876-77 Stanley followed the course to the sea. **C.**

**Belgian**, see BELGIAN CONGO. **C. Conference** (1884-85), at Berlin, to regulate trade on Congo and Niger (free trade and equal commercial rights). **C., Middle** (*Moyen Congo*), colony of Fr. Equatorial Africa (*q.v.*), 92,600 sq.m.; pop. 700,000 (1,000 whites); cap. *Brazzaville*.

**Cong. Rec.**, abbr. Congressional Record; official record of proceedings in houses of U.S. Congress.

**Congregation**, 1) assembly of persons, esp. in ch. for relig. service; 2) (R.C.) community bound by common rule, without vows, e.g., *Oratorians*, *Redemptorists* (see also ROMAN CONGREGATIONS). 3) (Oxf. Univ.) body composed of all resident holders

of Masters' and Doctors' degrees engaged in teaching or occupying certain offices in the univ.; (Camb. Univ.) a meeting of the Senate; 4) (Jewish hist.) whole assembly of the J. people.

**Congregationalism**, system of Non-conformist Ch. government in wh. each ch. and congregation is independent in the management of its affairs: see BROWNISTS.

**Congress**, 1) orig. assembly of rulers or their represent. for settlement of internat. affairs; hence assembly of Ch. dignitaries, scientists, etc. 2) in U.S.A., legis. assembly of both houses (Senate and House of Representatives) and of legis. bodies in U. States.

**Congreve**, Wm. (1670-1729), Eng. dramatist; *Old Bachelor* (1693); *Way of the World* (1700).



Congreve

**Congruent**, term applied to 2 geom. figs. in state of *congruence*, i.e., when it is possible to superpose one of them on the other so that they shall coincide throughout.

**Conic section**: see CONE.

**Conifers**, trees and shrubs, producing cone-like fruits, e.g., pine, fir, yew, cedar, juniper, etc.

**Coniston**, vill., Furness, Lancs, Lake Dist., Eng., at head of **Coniston Water** (5 by  $\frac{1}{2}$  m.); Ruskin associations. *Coniston Old Man* rises to W., highest summit in Lancashire (2,633 ft.).

**Conjugation**, inflexion of verb according to tense, mood, person.

**Conjunction**, 1) (gram.) connecting word, co-ordinating sentences or clauses, e.g., *and*, or subordinating them, e.g., *that*. 2) (Astron.) Situation of two heavenly bodies on same degree of longitude, or having same right ascension (*q.v.*), when they appear to approach or pass each other in their courses; symbol,  $\sigma$ .

**Conjunctivitis**, (med.) inflammation of conjunctiva, i.e., membrane which lines eyelids and covers white of eyes.

**Con moto**, (mus.), with animation.

**Conn.**, abbr. Connecticut.

**Connaught**, Arthur Wm. Patrick Albert, Duke of (1850- ), 3rd son of Qn. Victoria; D. of C. and Strathearn, 1874; commanded Guards' Brigade at Tel-el-Kebir, 1882; gen., 1893; com.-in-chf. in Mediterranean, 1907; Gov.-Gen. of Canada, 1911-16; Grand Master of English Freemasons; his son, **Prince Arthur of C.** (1883- ), m. Princess Alexandra, Duchess of Fife, 1913; Gov.-Gen. of Union of S. Africa 1920-24.

**Connaught, Connacht**, W. prov. of I.F.S.; area 6,611 sq.m.; pop., 552,907; mountainous and barren; watered by Riv. Shannon; sheep-breeding, agric., fisheries; chief tn., Galway.

**Connecticut** ("Nutmeg State"), State of U.S.A., S. of Massachusetts; 4,965 sq.m.; pop., 1,600,000; tobacco, Indian corn, apples; fisheries; textiles; cap., *Hartford*. New England colony, 1636.

**Connecting-rod**, (engin.) joins cross-head of piston to crank; transforms rectilinear into rotary motion.

**Connective tissue**, binding tissue of body, of wh. *cartilaginous*, *osseous*, and *fibrous* tissues are subdivisions.

**Connemara Mountains**, range Co. Galway, I.F.S.; *Twelve Pins*, 2,695 ft.

**Conon**, pope (686-87); befriended Irish St. Kilian and his companions.

**Conowingo Dam**, Susquehanna Riv., U.S.A., 105 ft. high, storage capacity, 107,000 mill. gallons (1930).

**Conrad**, 1) **C. I**, Ger. kg., 911-18. 2) **C. II**, Rom. emp., 1027-39; 1st of Salian or Franconian imper. dynasty. 3) **C. III**, Ger. kg., 1138-52; 1st of Hohenstaufen dynasty. 4) **C. IV**, Ger. kg., 1250-54; captured Capua and Naples; father of Conradin (q.v.).

**Conrad of Marburg** (c. 1180-1233), Ger. inquisitor; confessor of St. Elizabeth of Hungary; murdered. Leading character in Kingsley's *Saint's Tragedy*.

**Conrad**, Joseph (1857-1923), Eng. author of Pol. birth (orig. name, Korzeniowski); many yrs. Brit. merc.-marine officer; novels: *Lord Jim*, *Typhoon*, *The Secret Agent*, etc.

**Conradin**, (1252-68), K. of Jerusalem and Sicily, Duke of Swabia; deft. by Charles of Anjou at Tagliacozzo 1268, captured and executed. Last of Hohenstaufen dyn.; see CONRAD IV.

**Cons**, Emma (1838-1912), Eng. philanthropist; acquired *Royal Victoria Hall* ("Old Vic," q.v.) 1880, wh. she subsequently managed; elected to L.C.C., 1888. Cf. BAYLIS, LILIAN.

**Conscia mens recti** (Lat.), a mind conscious of right.

**Conscience**, Hendrik (1812-83), Flem. author: *The Decayed Gentleman*, 1851.

**Consciousness**, (philos.) knowledge formulated by the *Ego* of itself, its spiritual life, and of the external world.

**Conscription**, compulsory milit. service for a given period. Introd. in France in 18th cent. Customary in many Eur. countries and Jap. C. in Gt. Brit. 1916-19; U.S.A., 1917-19.

**Consecration**, devotion, dedication of anything to a specif. purpose; technically used for form of words in canon of the Mass when, according to Cath. doctrine, bread and wine are transformed into Body and Blood of Christ. **C. of bps.**, see ORDINATION. **C. of churches**, see DEDICATION.

**Consent**, (legal) concurrence by a competent adult in any act or contract. **Age of c.**, age at which consent is held valid by the law; esp. applied to laws governing rape and indecency, in which the age at which a young person may be held to have given his or her legal consent is fixed by Eng. law at sixteen.

**Conservatoire**, higher school of music.

**Considérant**, Victor (1808-93), Fr. author and socialist; fndd. communistic colonies in France 1832, and in Texas 1868.

**Consideration**, price or motive of a contract (q.v.) wh. must be lawful in itself. A moral C. will not support a contract.

**Consignment**, (commerc.) handing-over of an article to another, esp. for sale; the goods so handed over. **Consignee**, party to whom shipment, etc., is consigned. **Consignor**, party on whose acct. goods have been shipped or dispatched.

**Consistory Court**, 1) eccles. tribunal composed of Pope and cardinals; 2) eccles. court of a diocese in C. of E.; 3) (Presbyt. Ch.), body of presbyters; court next above Kirk-session.

**Consolation Philosophiae, De, Consolation of Philosophy**, Latin work in prose and verse by Boëthius (c. A.D. 525), translated by Kg. Alfred and by Chaucer (before 1382); printed by Caxton (1480).

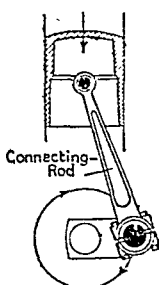
**Console**, 1) table of Louis XIV and Regency period, having elaborate supports in form of feet, ornamental balustrades, etc.; usu. attached to the wall; 2) (archit.) projection of a wall supporting moulding, balcony, etc., gen. decorated at either end with scrolls.

**Consols**, (Stk. Exch.) term applied to Brit. Govt. 2½% Consolidated Stock.

**Consommé**, clear soup made from meat.

**Consonance**, (mus.) accord of tones making harmony. Perfect C. fnd. in unison, 4ths, 5ths, and octave; imperfect in 3rds and 6ths (maj. and minor).

**Consonant**, a speech sound in which there is either complete stoppage of the



Connecting Rod



Conrad I, Hawking



From etching by W. Tittle  
Joseph Conrad

breath, or sufficient stoppage to produce audible friction; contrasted with vowel (*q.v.*).

**Consortium**, temporary union of banks or business men for purpose of carrying out a specific object, wh. requires co-operation betw. interested parties.

**Conspicuous Gallantry Medal**, (Brit.) silver medal awarded to non-commissioned ranks in R.N. and Marines, for gallantry in action. Estab. for Crimean War; re-estab., 1874; ribbon: blue with white centre.

**C. Service Cross**: see DISTINGUISHED SERVICE CROSS.

**Conspiracy**, takes place when 2 or more pers. agree to commit a crime or do an unlawful act, whether it is actually committed or not.

**Con spirito** (It.), with spirit, animation.

**Constable**, John (1776-1837), Eng. landscape painter; assoc. with N. Essex and S. Suffolk, wh. are sometimes called the *Constable Country*.

**Constable**, *i.e.*, comes *stabilii*, count of the stable, Master of Horse; highest office in Fr. roy. household in Mid. Ages; commanded army as kg.'s deputy; abol. 1627. Similar office in England abol. 1521, but revived for special occasions, *e.g.* coronations. Now official title of the wardens of the Tower of London, and Windsor and Dover castles, and designation of police officers of the lowest grade.

**Constance**, city in Baden, Germany, at outflow of Rhine from L. Constance to form Untersee; pop., 31,300; cathed. (11th cent.); tech. inst.; textiles. From 6th cent. to 1821, bpric.; 1183, treaty betw. Frederick Barbarossa and the Lombard tns.; 1192-1548, free city; Austr. 1548-1805, part of Baden since. **Council of C.** (1414-18), ended *Great Schism of West* (*q.v.*) by election of Martin V as pope; decreed condemnation and execution of John Huss and Jerome of Prague.

**Constance, Lake (Bodensee)**, in N.E. Swiss Alps, formed by Riv. Rhine, area 208 sq.m., max. depth 827 ft.; 1,300 ft. ab. sea lvl.; many islands and ports: Lindau, Constance, etc.; bordered by Baden, Württemberg, Bavaria, Austria, Switzerland.

**Constant de Rebecque**, Benjamin (1767-1830), Fr. author and politician: *On Religion*, 1824-31; *Adolphe*, 1816.

**Constantia**, district of S. Africa in Cape Province; orig. Dut. vineyard, producing wine similar to sherry.

**Constantine**, 1) **C. the Great**, Rom. emp. (306-37), gave Christians full citizenship, 313; enlarged Byzantium, seat of govt., and renamed it Constantinople, 330. See DONATION OF C. also DECRETALS. 2) **C.**

(1868-1923), Kg. of Hellenes, 1913-17; finally abd. in favour of s. George, 1920, on demand of revolutionary committee.

**Constantine**, city, Algeria, 2,130 ft. abv. sea-lvl., cap. dept. of C.; pop., 104,900; cathed.; Moorish palace; mosques; museum of antiquities; port, Philippeville.

**Constantinople, Istanbul**, 1) tn. on Golden Horn, Turkey; pop., 690,000 (Europ. qtr. *Pera*, 286,970; Asiatic qtr. *Scutari*, 124,555); former cap. of Turkey (till 1924) and seat of sultans; chf. market in Near East: silks, carpets, wool, cereals, dried fruits, opium; harbour 4 m. long. Founded A.D. 330, by Constantine the Great, by enlargement of Byzantium (*q.v.*); cap. Eastern Empire till 1453 when seized by Turks; Roman aqueduct (still in use); Ch. of St. Sophia (6th cent.), now a mosque; 172



Constantine the Great



Constable



Constantinople, The Golden Horn

churches and many ancient monuments. 2) Vilayet of Turkey, on tongue of land bounded by Golden Horn, Bosphorus, and Sea of Marmora; area, 1,280 sq.m.; pop., 1,110,000.

**Constantinus**, name of 2 popes. **C. I** (708-15); **C. II** (767-68).

**Constantius, Flavius Valerius**, called Chlorus (*c.* 250-306), Gov. of Brit. and Gaul; Rom. Emp., 305; d. at York. **C., Flavius Julius** (317-361), s. of Constantine the Gt.; Emp. of East, 337-361. **C. III**, co-emp. of West, 421.

**Constanza**, chf. port, Rumania, on Black Sea; pop., 28,500; cap. of Dobrudja; exports: grain and petroleum; ice-free.

**Constellation**, 1) (astrol.) grouping of stars at person's birth, supposed to influence his life and fortunes. 2) (Astron.) Group of fixed stars, formerly believed to have some relation to, and named after, a mythological personage or animal; part of the heavens in wh. such a group occurs. Individual stars are designated by a letter of the Gr. alphabet followed by name of C. in wh. they lie; *e.g.* α (alpha) *Ursae Minoris* is the North Star.

**Constipation**, costiveness, sluggish action

of the bowels; relieved by purgatives, enemata, and exercise.

**Constituency**, (polit.) body of electors in a given area who choose a member to represent them in Parliamt.; also district wh. elected member represents. See PROPORTIONAL REPRESENTATION.

**Constituent assembly**, assembly charged, usually in times of revol., with drawing up new Constitution; e.g. C.A. of Fr. Rev. (1789), Ger. National Assembly at Weimar (1919). See PLEBISCITE.

**Constitution**, 1) form of State gov. 2) Fundamental legal principles by which liberties of citizens are guaranteed and construction, leadership and exercise of gov. are regulated.

**Constitutional formula** (chem.): see VALENCY.

**Constitutionalism**, polit. theory or syst. wh. (usually by written fundamental law) div. functions of gov. betw. organs none of wh. can claim uncontrolled power.

**Constitutional Monarchy**, syst. in wh. head of State, usually hered., is bound by const. to act in conjunction with other organs of gov. See ABSOLUTE MONARCHY.

**Consubstantiation**, (relig.) term applied to doctrine that after consecration of the elements in the Eucharist, the substance of these exists together with that of Christ's body and blood; first formulated by Luther; also known as *impanation*. Cf. TRANSUBSTANTIATION.

**Consuetudinary**, (eccles.) book of ritual observed by a religious order.

**Consul**, 1) highest official in anc. Rome. 2) Title borne by chf. magistrates of Fr. Republic, 1799-1804; Napoleon I was First Consul. 3) Person apptd. by his state to protect interests of his countrymen in a foreign country.

**Consular invoice**: see INVOICE.

**Consumption**, 1) (econ.) using up of material for satisfaction of human requirements. In **destructive C.**, material is entirely consumed, e.g., foodstuffs; in **productive C.** material is absorbed in another, e.g., raw materials for manufacture. 2) (Med.) See PHTHISIS; TUBERCLE.

**Contact**, (elec.) union of 2 conductors of elect. so that a current can pass; any part of an elec. appar. (switch, trembler of coil, relay) at wh. contact is made or broken.

**C. process**, in chem., process depending on C. of reacting substances with solid catalyser (q.v.).

**Contagion**, 1) communication of a disease from one person to another either by direct contact or through an intermediate agent; cf. INFECTION. 2) Micro-organism or virus from which a communicable disease develops.

**Contango**, (Stk. Exch.) *verb.* to carry over a transaction until the next account; *noun*:

premium paid to seller by buyer for "carrying over" securities or delaying completion of deal.

**Contempt of court**, (legal) punishable offence of offering an insult or open defiance in face of a court of law; it may be either *criminal C.*, involving the obstruction of justice, or *C. in procedure*, by neglecting to obey an order of the court or a judge; punishable by a fine or imprisonment or both.

**Contes-dévots**, descriptive name of mediæval short tales in verse, chfly. Fr., differing from fable (q.v.) by pious tone or sacred subject; derived chfly. through Lat. from Grk., Jewish, or Arab. authorities.

**Conti**, Fr. princely fam., ynger. branch of House of Condé (q.v.); prominent in Fr. history since 16th cent.; extinct in 1807.

**Continent**, 1) a continuous stretch of land, of very large extent; mainland, as distinct from outlying isls.; one of the main divisions of land on the globe, *viz.*, Europe, Asia, Africa, America, Australia. 2) *The Continent*, the mainland of Europe as distinguished from the Brit. Isles.

	Area in 1,000 sq.m.	Pop. in millions
Europe	3,821	480
Asia	16,900	1,150
Africa	11,900	143
America	16,200	220
Australia	2,974	6.4

**Continental Blockade**: see BLOCKADE.

**Continental Shelf**, gently sloping seabed at edge of continents from shore line to depth of c. 600 ft.; sea above C.S. forms richest fishing grounds.

**Continuation school**, institution in Gt. Brit., usu. provided by local educ. authority, for continued instruction, esp. technical and commercial, beyond school-leaving age (14 yrs.); abortive attempt to establish compulsory C.S. made by Educ. Act, 1918.

**Contour lines**, (cartography) lines drawn on map connecting points of a surface having same elevation.

**Contra** (Lat.), against. **Contra bonos mores**, contrary to good morals.

**Contraband**, 1) goods smuggled over frontier so that customs are defrauded; 2) in time of war, goods wh. a neutral state may not supply to belligerents, as likely to assist them in prosecution of war.

**Contra-bass**: see DOUBLE BASS.

**Contraception**, prevention of conception, either by mechanical or chemical means; cf. BIRTH-CONTROL.

**Contract**, 1) (law) document containing terms of a deal; agrmt. betw. 2 or more parties which may be legally enforced; may be oral or in writing. 2) Card-game; var. of auction (q.v.), in wh. exact number of tricks bid (contract) must be made.



**Contracted burial**, method of burial practised by primitive peoples in anc. and mod. times, in wh. body is placed in crouching position.

**Contractor**, one who undertakes work on basis of a contract, accepting all risks and taking upon himself all responsibility regarding method of working and duration of work; his remuneration lies in the diff. betw. the costs involved and contract price, wh. is fixed before work begins; esp. in building, road construction, engineering, etc.



Contracted Burial, Mentone

**Contrast meal**: see OPAQUE MEAL.

**Contretemps** (Fr.), an awkward situation.

**Contrition**, (eccles.) genuine sorrow for sin as displeasing to God, contrasted with inferior state of attrition (*q.v.*).

**Control column**, (aeronaut.) colloq. "joystick," shaft of an aeroplane in front of the pilot, mounted on a ball-and-socket joint; controls ailerons and rudder. **C. gear**, mechanism by means of wh. machine or apparatus is controlled. In complicated machines operator is guided by instruments, *e.g.*, speed indicators, compasses, height indicators, voltmeters, ammeters, oil and steam gauges.

**Contumacy**, (legal) obstinate refusal to obey a summons of a court; see CONTEMPT OF COURT. In eccl. law, this offence is met by an issue of a writ *de contumace capiendo*.

**Con variazioni**, (mus.) followed by variations.

**Convent**, relig. community of monks or (esp.) nuns; building or buildings occupied by such a community.

**Conventicle**, meeting of Puritan Nonconformists in England, or of Covenanters in Scotland, prohibited by **C. Act** (1664), wh. was repealed by *Toleration Act* (1689); also small building used by Nonconformists for relig. services (generally a contemptuous term).

**Convention**, 1) formal meeting of delegates to discuss polit., relig. and other affairs, esp. (Eng. hist.) meetings of Parliament in 1660 and 1688 which assembled without the kg.'s writ. 2) Formal compact betw. sovereigns or States. 3) Generally accepted standard of behaviour, and the customs and usages based on such standard.

**Conventuals**, branch of *Franciscans* (*q.v.*) who separated from main order.

**Convergent**, (math.) tending to meet at a common point of intersection. **C. series** are infinite series (*q.v.*) whose sum is finite. Ant.: *divergent series*.

**Converse**, Frederick Shepherd (1871- ), Amer. composer; *Laudate Dominum*; *The Mystic Trumpeter*; *The Pipe of Desire*.

**Conversion**, 1) (theol.) changing to another faith. 2) (Law) Wrongful appropriation of goods of another. The action brought by true owner orig. called *trover*. 3) **C. loan** (finan.) may be floated by a govt. or co. in order to redeem a debt falling due for repymt; usu. at lower rate of interest.

**Convert**, one who has changed his faith or, having none, adopts one.

**Convertible securities**, term used to describe all securities readily saleable for cash.

**Conveyance**, deed by wh. freehold property is transferred to a purchaser.

**Conveyor**, apparatus for transporting material over a fixed route. *Chain, flat-belt, carrousel* (endless or roundabout), *roller* (driven or gravity); used in factories for moving goods about, for assembling, packing, and despatch. **Screw C.**, for moving bulk material such as grain, cement, coal, sand, etc.

**Convocation**, 1) the act of calling together; a formal assembly for the transaction of public business. 2) (C. of E.) Synod of clergy of prov. of Canterbury or York. 3) (Freemasonry) Chapter meeting of Royal Arch Masons.

**Convolvulus**, bindweed, *C. arvensis*, common climbing weed; handsome trumpet-shaped flowers with fragrant smell. *Great bindweed, Calystegia sepium*, is very destructive. Sea-bindweed, *C. soldanella*, is a non-climbing plant.



Convolvulus

**Convoy**, naval escort to merchant ships.

**Convulsions**, spasmodic contraction of groups of muscles, as in epileptic convulsions.

**Conway**, Moncure Danl. (1832-1907), Amer. preacher, author, and abolitionist; lectured in Engl. during Civil War on behalf of the North; minister of South Place Chapel, London, 1863-84; *Demonology and Devil-Lore*, 1878; *Autobiography*, 1904; etc.

**Conway**, munic. bor. and seapt., at mouth Riv. *Conway*, Carnarvonsh., N. Wales; castle; town walls; pop., 8,800.



Conway Castle

**Conway of Allington**, Wm. Martin, 1st bn. (1856- ), Brit. art critic and mountaineer; made 1st scientific exploration of Himalayas. 1892; raised to peerage, 1931.

**Cony**, old name for the rabbit, used in Bib. for the Syrian hyrax; cf. CONEX.

**Cooch Behar**, Indep. State, N. Bengal, India; 1,310 sq.m.; pop., 592,500; rice, jute, tobacco; cap. **Cooch Behar** (pop., 12,000).

**Cook, Arthur James** (1884-1931), Brit. Lab. leader; sec. of Miners' Feder., 1924-31; leader in Gen. Strike, 1926. **C., James**, (1728-79), Eng. circumnavigator; explored N. Zealand and E. coast of Australia, 1768-71, laying foundations of these Brit. dominions. Murd. by Hawaiian natives on 3rd voyage in Pacific.

**Cook Islands**, group isls., S. Pacific, belonging to New Zealand; largest *Rarotonga*; coffee, copra, oranges; area 280 sq.m. (incl. other isls. annexed 1901); pop., 13,900 (c. 250 Europeans). **Mt. Cook** or *Aorangi*, highest peak, New Zealand, on S. Isl.; 12,349 ft.; snow-capped. **C. Strait**, separates N. and S. Isls., New Zealand (narrowest part 13 m.).

**Coolgardie**, tn. in the S. of W. Australia; pop., 2,000; gold-fields (discovered 1891).

**Coolidge**, Calvin (1872-1933), 30th Pres. of U.S.A.; Gov. of Mass., 1919-21; elected Vice-Pres. of U.S.A., 1920; became Pres. automatically on death of Pres. Harding, 1923; re-elected, 1924; term expired, 1929. **C. Dam**, Gila Riv., Arizona, U.S.A. (1928); constructed for irrigation purposes; 391,021 mill. gallons.

**Coolie**, Chin. or Ind. hired native labourer.

**Cooling tower**, large installation for cooling and condensing hot gases and steam; vapour enters winding pipes from below; water trickles upon these from above.

**Coom, Coomb**, Brit. and U.S. dry meas., 4 bushels or 2 strikes; obsolete.

**Coombe, combe**, a deep, narrow valley on side of hill.

**Co-op.**, abbr. co-operative or co-operation.

**Cooper, James Fenimore** (1789-1851) Amer. author of tales of Red Indian life; *The Last of the Mohicans*, 1826; *The Pathfinder*, 1840; *The Deerslayer*, 1841. **C., Thos. Sidney** (1803-1902), Eng. painter; R.A., 1867; *Farm Yard: Milking Time; Cattle, Early Morning; Landscape and Cattle*.

**Cooper**, riv., Australia, rising in Queens-

land hills (Great Dividing Range) and flowing into L. Eyre.

**Co-operation**, (indus.) system of association of producers and consumers for buying and selling in common and sharing profits; first attempted by Robert Owen at his New Lanark Mills (1820). In 1821, the *Co-op. and Economical Society* of London inaugurated the first Co-operative store. See CO-OPERATIVE SOCIETIES.

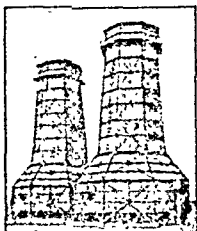
**Co-operative societies**, associations formed for purpose of buying and selling to best advantage of both purchaser and vendor; underlying idea of C. movement is that small units shall, by means of co-ordinated working, be placed in as good a position as large undertakings; 1st successful C.S. fndd. (1843) in Rochdale, Lancs, by 28 weavers (*Rochdale Pioneers*); this became the internat. model for such concerns. Development has been along 4 main lines: 1) *consumers' societies*; 2) *producers' societies* (manuf.); 3) societies for C. purchase of agric. materials and equipment; 4) societies for C. marketing of agric. produce. 3) and 4) highly developed in cert. Europ. countries, esp. Denmark, but less developed in Gt. Brit.; of some importance in U.S.A.; 2) has not reached high develop.; some societies exist in Eng. Most important is 1), as developed in Gt. Brit., where there are (1930) 1,248 retail soc. with 6,353,000 members, with a capital of £142,246,000 and total ann. sales of £216,327,406. These societies own more than half capital of 2 great wholesale C. Soc. in Eng. and Scot. respect., with capital of £59,345,000, and ann. sales amtg. to £103,007,428. These make wholesale purchases of goods and also produce such commodities as jam, tea (India), and other foodstuffs, as well as clothing and household commodities. *Membership in retail societies* contingent upon the holding of £1 in capital on wh. interest of 5% is paid. A member may invest up to £200 (legal limit); profits distribtd. at end of yr. to members in propor. to purchases. Aggregate dividends distribtd. amt. to £20,433,000, or an average of 1s. 10½d. in the £. Retail societies also engage in produc. to total value of £40,078,860, while wholesale societies produce £36,138,456 worth of goods. Productive societies produce £3,382,992 of goods and assoc. of workers £3,346,625; latter are distinct from consumers' societies, profits being distribtd. amongst capital holders and workers, and not on basis of purchases. In Gt. Brit. *agricultural societies* are grouped as: 1) *requirement societies* (purchasing requirements co-operatively), numbering 355 with 85,934 members and total sales amt. to £7,375,385; 2) *produce societies* (producing and marketing co-operatively) 286 with 9,147,036 to £5,150,036; 3) *service*



Captain Cook



Coolidge

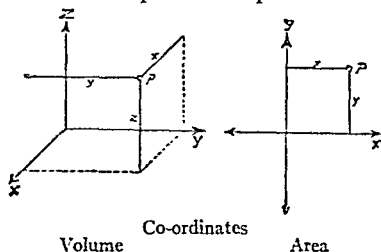


Cooling Towers

services such as threshing, credit, cattle insurance, etc.), numbering 836 with 165,536 members. **C. stores**, retail shops belonging to co-operative societies.

**Co-option**, method of filling vacancy in governing body thr. election by other members. Used in Eng. loc. government.

**Co-ordinates**, in analytic geometry: lines to determine the position of points of area or



of vol. through statement of their position in a system of C., which is triaxial for vol. and biaxial for area (see Illus.). The postn. of point P is determd. by its distances from the C. axes. Functions (q.v.) also may be graphically represented by means of co-ordinates.

**Coorg**, prov., Brit. India, Dekkan penins.; area, 1,582 sq.m.; pop., 163,100, mostly Hindus; surface mountainous, climate tropical; produces rice, coffee, tea; cap., *Mercara* (pop., 5,675.).

**Coot**, aquatic bird resembling moorhen (q.v.) in habit but of slightly stouter build, with conspicuous white frontal shield and curiously lobed toes.

**Copaiba, copaiva**, oily resin obtd. from trunk of trop. trees (*Copaifera*) of S. Amer. and W. Indies; yellow, viscous liquid used in med. in diseases of mucous membranes.

**Copal**, hard, transparent, amber-like resin, obtained from various sources, chfly. from trees of S. and Centr. America, and of E. Africa; also found in fossil state. Used in manufacture of fine varnishes.

**Co-partnership**, form of profit-sharing (q.v.) in wh. employees hold shares in the business for wh. they work and are therefore personally interested in its success.

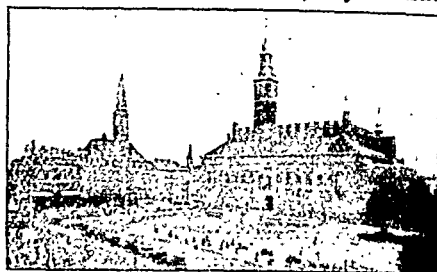
**Cope**, Sir John (d. 1760), Brit. gen.; comm.-in-chf. of army in Scotland at beginning of 1745 rebellion; retired at approach of Pretender, allowing rebels to seize Edinburgh and suffering defeat at Prestonpans; suspended in command.

**Cope**, (eccles.) vestment resembling long cloak without sleeves or armholes, worn by cathedral clergy on ceremonial occasions, and, by a bp. when visiting his cathedral. In R.C.Ch., worn by priest officiating at ceremonies other than Mass.

**C.O.P.E.C.**, abbr. Conference on Politics, Economics, Christianity, and commonly called "Copec"; movement founded at Birmingham, 1924, with obj. of promoting the Christian-

ization of all branches of human activity.

**Copenhagen**, *Kjøbenhavn*, cap. of Denmark, on the Kalveboder, an arm of the Øresund; pop., 731,500, incl. suburbs of Frederiksborg and Gentofte; royal castle,



Town Hall Square, Copenhagen

univ., high schools, science inst. (observatory), Thorwaldsen and other museums, porcelain works; largest port in country; exports butter, eggs, cattle. **Battle of C.**, victory of Brit. fleet under Nelson over Northern Confederation, 2 Apr., 1801.

**Copernicus or Koppernigk**, Nicolaus (1473-1543), Pol. astron.; fndd. *Copernican system*, wh. regards the sun as centre of planetary system, as distinct from *Ptolemaic system* wh. regarded earth as its centre.

**Copland**, Aaron (1900- ), U. S. composer who has made individ. use of jazz idiom; ballet *Groto*; *Symphonic Ode*, etc.



Copernicus

**Copley**, John Singleton (1737-1815), Anglo-Amer. portrait and historical painter; *Death of Chatham*; *Death of Major Pierson*, portraits of Samuel Adams, Joseph Warren, etc.

**Coppée**, François (1842-1908), Fr. poet and novelist; *La Bonne Souffrance*, 1898.

**Copper**, (chem.) metal; Cu; at. wt., 63.57; sp. gr., 8.95; m.p., 1085° C. Chief ores, oxides (cuprite, melaconite), carbonates (malachite, chesylite), basic chloride (atacamite), sulphides (chalcocite, chalcocite, tetrahedrite); also found native. Smelted in furnaces to impure form (matte); refined in converter and by electrolysis. Very good conductor of electricity, hence used almost exclusively for electr. mains, wiring, coils of machines, etc. Good conductor of heat, hence used for car radiators, etc. Forms two series of salts, cuprous (monovalent, colourless), and cupric (divalent, blue-green); *Cupric oxide*, CuO, used in rectifiers (q.v.) for electr. current. *Cuprous chloride*, CuCl, strong reducing agent. *Cupric sulphate*, blue vitriol, used for destroying pests. *Scheele's green*, basic copper arsenite, very poisonous green pigment. C. is constituent of great many alloys, e.g. bronze, brass, aluminium bronze, phosphor bronze (q.v.).

**Copper-engraving**, art of drawing on a copper-plate with a graving tool and producing a picture by printing from the plate.

**Copper glance**, chalcocite, sulphide of  $\text{Cu}_2\text{S}$ . **C. pyrites**, chalcopy-



World production of copper in 1919 almost twice 1913 total, but in 1930 came contraction. U.S.A. still produces nearly  $\frac{1}{2}$  total; prodn. in Canada, Chile, and Belg. Congo increasingly important.

In 2 yrs., after 1929, prices fell by half.

rite,  $\text{CuFeS}_2$  yellow pyrites, a double sulphide of copper and iron, important ore of copper.

**Copperhead**, or **moccasin snake**, deadly N. Amer. reptile of viper tribe, strikingly coloured, well marked head, thick body, length c. 3 feet.

**Copra**, dried and broken kernels of coconuts, from wh. oil is extracted; a product of great commercial value; oil largely used in manuf. of soap, candles, margarine, etc. See COCO-NUT PALM.

**Coptic**: see LANGUAGE SURVEY, *Egyptian*.

**C. Church**, native Christian Ch. of Egypt, originating in Ch. of Alexandria (Origen, etc.); doctrines much as Gr. Orth. Ch. but with a Monophysitical bias acquired through the Nestorian Schism, c. 440. Under rule (with Abyssinian Ch.) of "the Most Holy Pope and Patriarch," elected for life from one of the desert monasteries.

**Copts**, successors of Hamitic anc. Egyptians, still unmixed in Upper Egypt.

**Copula**, word linking a sentence, uniting subj. with pred.; e.g., he is good.

**Copulation**, (Lat.) pairing, uniting of sexually mature individuals for the purpose of fecundation. In mammals seminal fluid is emptied by the penis of male into vagina of female (inner C.). In many amphibia and fish, etc., the fluid is poured over the eggs as they are extruded (external C.).

**Copy**, any reproduction or facsimile, esp. of a work of art or literature; name given by authors, journalists, and printers to any MS. matter intended to be subsequently printed, also to a single example of book, newspaper, or other literary production. **Association c.**, book wh. has belonged to, or bears signa-

ture of or annotations by, some well known person. **Copying book**, one in wh. copies of outgoing letters are recorded by means of facsimiles made by a copying press. **Copying ink**, see INK. Cf. DUPLICATING, HECTOGRAPH.

**Copyhold**, form of tenure of land fndd. on custom; so-called bec. it was transf. by copy of Court-roll of the manor; **Copyholder** was reqd. to pay a fine or premium to lord of the manor on his succession. C. abolished by Law of Property Act (1925).

**Copyright**, sole and exclusive right to print or otherwise multiply copies of an orig. work or composition; duration of copyright extends (in case of most literary works) to 50 years after death of author, and (in case of gramophone records, photographs, etc.) to 50 years after making.

**Coq d'Or**, Le, opera by Rimsky-Korsakov (1910).

**Coquelin, Benoît Constant** (1841-1909), Fr. actor, known as *C. aîné*; his bro. **Ernest** (1848-1909), actor, known as *C. cadet*.

**Coquille**, 1) shell (of scallop or other mollusc), filled with minced food. 2) An iron mould.

**Coracle**, boat used in anc. Wales and Ireland, consisting of wicker frame covered with hide.

**Coraes, Korais**, Adamantios (1748-1833), also known as *Diamant Coray*; Gr. scholar; ardent supporter of Grk. independence.

**Coral**, marine polyp belonging to class *Anthozoa*, wh. inclds. sea-anemones, sea-

ferns, alcyonarians and madrepores, or stony C. The name is applied to those polyps (*zoantharia*) wh. form a skeleton of carbonate of lime. Solitary cup-cs. exist in all seas; reef-forming species are confined to tropical seas



Coral

where the water temperature varies betw. 73° and 85° Fahr. **C. snake**, *Ilysia scytale*, S. Amer. non-venomous reptile, coral-red ringed with black, insectivorous, of slug-gish habit; *Elaps corallina*, of Brazil, and *E. fulvius*, of the southern U.S.A., both venomous, are also known by this name.

**Coram**, Thomas (1668-1751), Eng. philanthropist; estab. hospital for foundlings London, 1740; promoted settlement of Georgia and Nova Scotia. See FOUNDLING HOSPITAL.

**Coram populo** (Lat.), before the people; openly.

**Cor anglais**, wood-wind instr. pitched a fifth lower than the oboe (q.v.).

**Corban**, (N.T.) gift or offering to Yahveh (Mark vii, 2).

**Corbel**, (bldg.) a stone projecting from, but firmly built into, a wall and often carved; used

gen. to support timber-work, e.g., end of beam or arch of vaulted roof.

**Corbridge**, mkt. tn., Northumberland,  $\frac{3}{4}$  m. E. Hexham; pop., 2,500; cap. Northumbria in 8th cent.;  $\frac{1}{2}$  m. W. is Rom. station of *Corstopitum* (q.v.).

**Cord**, 1) slender rope of several strands. 2) Ribbed material of wool or cotton. 3) Brit. measure of wood = 128 cu. feet.

**Corday**, Charlotte (1768-93), Girondist (q.v.); killed Marat (q.v.); guillotined.

**Cordeliers**, 1) (eccles.) Franciscan (q.v.) friars, named from their girdles of knotted cord. 2) Polit. club during Fr. Revolution, met at the Ch. of the Cordeliers in Paris; fndd. under Danton, 1790.

**Cordial Médoc**, liqueur with flavour sim. to Benedictine (q.v.).

**Cordilleras** (Sp. "chains"), name applied to mtn. ranges in various parts of the world, esp. in America (Andes, Rocky Mts., q.v.).

**Cordite**, explosive used as propellant, both for small arms and artillery, in Gt. Brit.; mixture of nitro-glycerine and gun-cotton, with a little oil.

**Cordoba**, 1) prov. in Andalusia, Spain; 5,250 sq.m.; pop., 709,000. 2) Cap. of 1), on Riv. Guadalquivir; pop., 83,300; palace of Moorish kgs. (Alcazar); seat of the emirs and caliph 756-1031; Castilian since 1236. 3) Inland prov., Argentina; 66,900 sq.m.; pop., 1,084,700; mainly pampas; mtns. in N., salt marshes and lagoons in N.E.; cattle-ranches in E. 4) Cap. of 3); pop., 253,200; cathed., univ.; wheat trading centre.

**Cordon**, (milit.) extended line of men or ships forming blockade. **C. Bleu**, (Fr.) blue ribbon worn formerly by the knights of the Holy Ghost, the highest Order in France under the Bourbons; hence a person of eminence or distinction, esp. a first-class cook.

**Corduroy**, thick cotton fabric or fustian (q.v.), with corded or ribbed surface.

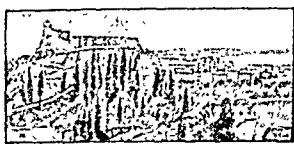
**Core**, in metal founding, forms of clay, etc., placed in the mould to make hollow spaces in the casting. **C.-box**, pattern, usu. wood, for forming the Cs. from wet plastic material; aftwds. dried unbaked.

**CO<sub>2</sub> recorder**, apparatus recording percentage of carbon dioxide contained in furnace gases; used for regulation of air supply.

**Corelli**, Marie (1864-1924), Brit. novelist: *The Sorrows of Satan*, 1895.

**Corfe Castle**, Norman castle on Saxon site, Is. of Purbeck, Dorset, Eng.; famous in Civil War (1643-46).

**Corfu**, **Kerkyra**, 1) northernmost and 2nd largest of Ionian Isles, W. coast Greece;



Corfu

area, 360 sq. m.; pop., 106,250; subtrop.,

mountainous; olive trees, wine cultivation. 2) Cap. of C. on E. coast; pop., 32,220; harbour. 1205-1797, Venetian; 1797-1815, Fr.; 1815-64, Brit.; now Greek; see *ACHILLEON*.

**Coriander**, umbelliferous plant, the aromatic fruits (known as seeds) of wh. are used medicinally as a digestive.

**Corinth**, Gr. tn. and harbour on Gulf of C.; pop., 10,000. **Gulf of C.**, almost landlocked, deeply indented sea, 78 m. long, betw. mainland of Greece and Peloponnesus, which are joined by **Isthmus of C.** **C. Canal**, cut across the Isthmus from the Gulf of C. to Gulf of Aegina, 4 m. long. C. was destroyed in war with Rome, 146 B.C.; rebuilt by Julius Caesar; under Empire of East seat of governor; later Venetian, Turk., Greek. See also *ISTHMIAN GAMES*.

**Corinthian Football Club**, a leading Eng. amateur Association F.C.; fndd. 1882 to concentrate agst. growing tide of professionalism; exempted from preliminary rounds of Association Cup competition.

**Corinthian order** (archit.): see *COLUMN*.

**Corinthians, Epistles to the**, (N.T.) 2 epistles, mainly of reproof written by Paul to Christn. community at Corinth (c. A.D. 56 and 57).

**Coriolanus**, Gnaeus Marcius, legendary Rom. hero; conqueror of Volscian Corioli; exiled for anti-democratic views; led Volscian army agst. Rome; pacified through intercession of his mother. Title and hero of Shakespearean play.

**Cork**, 1) marit. co., Munster, I.F.S.; area 2,876 sq.m., largest in Ire.; pop., 365,700; surface mountainous in W., many bogs; undulating and fertile in E.; rivs. Blackwater, Lee, Bandon; coast much indented (Bantry Bay), many islands; Cape Clear Isl. southernmost point of Ire., with Fastnet Lighthouse on a rock 4 m. S.W.; dairy-farming, agric., brewing, distilling, fisheries. 2) Cap. of co., on Riv. Lee, at head Cork Harbour; two catheds.; univ. coll.; pop., 78,500.

**Cork**, bark of the cork oak (*Quercus suber*), wh. attains a great thickness; composed of dead cells filled with air, conseq. very light; used for life belts, artificial limbs, etc.; on acc. of its elasticity as bottle stoppers, and, mixed with rubber, as floor-covering.

**Cormorant**, large sea-bird with world-wide distribution, frequenting rocky coasts. Fish-eater and diver. Cs. are trained in E. countries to catch fish.



Cormorant

**Corn**, 1) (physiol.) thickening of the super-

ficial layer of the skin, caused by continual pressure or friction. 2) General term for seeds of cereal plants (wheat, oats, barley, etc.); in Eng. usu. applied to wheat, in U.S.A. to maize. **C.-cockle**, *Lychnis githago*, field weed; purple-red flowers. **C. Laws**, Acts passed in 1804, 1815, and 1824, fixing various duties on foreign corn coming into England. Repealed by Act intro. by Peel (q.v.), 1846.

**Cornbrash**, coarse chalky soil, so called from its corn-growing qualities.

**Corncrake**, **landrail**, migratory bird frequenting open cultivated land in Britain during summer; its harsh voice sounds through the cornfields often far into the night. Winters in Africa.

**Cornea**: see EYE.

**Corneille**, Pierre (1606-84), Fr. dramatist; tragedy *Le Cid*, comedy *Le Menteur*; known as "Father of Fr. drama."

**Cornel cherry**: see DOGWOOD.

**Cornelius**, 1) Pope (251-53); opposed by Novatian; banished, 252. 2) (N.T.) Rom. centurion bapt. by Peter; 1st Gentile convert.

**Cornelius Agrippa**, see AGRIPPA VON NETTESHEIM.

**Cornelius**, 1) **Peter** (1783-1867), Ger. artist and illustrator; *Faust*, *The Nibelungen* *Carloons*. 2) His nephew, **Peter** (1824-74), poet and composer; opera: *The Barber of Baghdad*, 1858.

**Cornelius Nepos**, (1st cent. B.C.) Rom. historian, 25 biographies of statesmen and warriors, chiefly Greek, survive.

**Cornell University**, Amer. univ., Ithaca, N. Y.; fndd., 1865, by Ezra Cornell; co-educational. **C. Library**, presented to univ. (1891) by H. W. Sage, has received a no. of additional endowments.

**Corner**, (Stk. Exch.) monopoly formed by buying up all available supplies of a commodity, so as to sell at a high price to buyers who need supplies at a given time.

**Cornet**, 1) high-toned brass wind instr., with a note resembling the trumpet; also, obsolete wind instr. of horn or wood. 2) Former title of a cavalry lieutenant in Brit. Army.

**Cornflour**, finely ground meal, made from maize, rice, or other kinds of grain.

**Cornflower**, *Centaurea cyanus*, plant with narrow leaves, bright blue flower; cultivated plants also bear red, white, or dark blue flowers.

**Cornhill**, old street and Ward in the City of London.

**Cornice**, (archit.) strictly, crowning or upper member of an entablature (q.v.); gen., the moulding near ceiling of a room.

**Corniche**, Riviera coast road from Nice to Genoa, built by Napoleon; now three roads: *Grande*, *Moyenne*, and *Petite C.*, the

first climbing over Col d'Èze, (1700 ft.), the last following the coast.

**Cornish**: see LANGUAGE SURVEY, *Britannic*.

**Cornwall** (included in the *Cassiterides* of Herodotus), co. (strictly "duchy"), in S.W. Eng.; penins. stretching into Atlantic; area, 1,355 sq.m.; pop., 317,915. Includes Scilly Is., Land's End, westernmost, the Lizard, southernmost point of Eng. Fine cliff scenery, monotonous and treeless interior. The once-famous tin and copper mines are now mostly closed down; industries, china-clay (kaolin), pilchard-fishing; granite and slate quarries; cattle-breeding, corn-growing, mkt.-garden- ing; mild climate (subtropical plants); many prehistoric antiquities. Co. tn., *Bodmin*. **Duchy of C.**, group of estates, mainly in S.W. Eng. but some in London, settled to provide income for kg.'s eldest son.

**Cornwall and Devon**, or *West Country*, (wrestling) style in wh. men wear loose linen jackets and may hold anywhere above the waist. For a "fall" 3 pts. (e.g., 2 shoulders and a hip) must touch ground together. No ground-wrestling allowed.

**Corolla**, (bot.) cup-like form consisting of inner series of leaves, or of the petals of a flower.

**Coromandel**, S.E. coast of India, c. 625 m. long, many coastal tns.; few harbours.

**Corona**, 1) (astron.) luminous envelope surrounding sun, or ring round disc of moon seen during total eclipses of sun and moon respectively. 2) (Eccles.) Circlet hung from roof of church to hold tapers. 3) (Archit.) Flat, vertical part of a large cornice. 4) (Anat.) Upper surface of skull; crown of a tooth. **C. Australis**, Southern Crown, constell. near Sagittarius; see PL. ASTRONOMY, S.C.H., B. **C. Borealis**, Northern Crown, constell. containing star Gemma; see PL. ASTRONOMY, N.C.H., F.

**Coronary veins**, (anat.) veins of heart.

**Coronation**, ceremony of crowning a sovereign. Essential features in the English ritual are the taking of the oath, anointing, investiture, enthronization, and homage. Performed in Westminster Abbey by the Archbp. of Canterbury. (See DESTINY, STONE OF.)

**Coronel, Battle of**, Nov. 1st, 1914, defeat of British squadron, under Adml. Cradock, by Germans, under Adml. von Spee, off seapt. of Coronel, Chile; H.M.S.S. "Monmouth" and "Good Hope" sunk. See also FALKLAND ISLANDS.

**Coroner**, officer of a county or borough whose business is to hold an enquiry or inquest as to the cause of death occurring from other than natural causes, or in prison. He has power, in certain cases, to sit without a jury, which, when called, must consist of not

commodity or service exclud. allowance for profit.

**Costs**, all monetary outgoings in business wh. are nec. for attainment of an econ. end; *Prime C.* those expended for produc. or purchase of goods; see OVERHEAD COSTS.

**Cosway**, Richd. (1740-1821), Eng. miniature painter.

**Cot.**, abbr. cotangent, see TRIGONOMETRY.

**Côte d'Azur**, French Riviera (*q.v.*).

**Côte-d'Or**, dépt., E. France (Burgundy); 3,391 sq.m.; pop., 333,800; wines; iron mines, quarries; weaving and dyeing; cap., *Dijon*.

**Côtes-du-Nord**, dépt. N.W. France (Brittany) on Engl. Channel; 2,786 sq.m.; pop., 539,531; agric., fisheries, cotton-weaving; cap., *St. Brieuc*.

**Cothurnus**, buskin (*q.v.*), high boot of anc. Gr. actor.

**Cotillon**, Fr. figure-dance for 4 couples, with many var., in wh. toys, flowers, air-balloons, etc., are used.

**Cotman**, John Sell (1782-1842), Eng. water-colour painter and etcher of "Norwich School."

**Cotoneaster**, genus of shrubs and small trees of family *Rosaceae*; bears pink flowers and clusters of bright yellow or red berries; found in temperate regions.

**Cotopaxi**, highest active volcano in the world, in Andes, Ecuador, 19,690 feet.

**Cotswolds**, or **Cotswold Hills**, limestone range, Glos., Eng., 54 m. long, extending S.W. to N.E.; *Cleeve Cloud* 1,134 ft.; source Riv. Thames at *Seven Springs*, 3½ m. S. Cheltenham.

**Cottbus**, tn., Pruss. dist. of Frankfurt-on-Oder; pop., 50,500; textile industry.

**Cottesmore**, Eng., hunt, fndd. 1788; named after vil. in Rutland; hunts Leics. and Rutland.

**Cottian Alps**, inner chain of the W. Alps, Monte Vigo, 12,600 ft.

**Cotton**, Charles (1630-87), Eng. poet; wrote a continuatn. of Walton's *Compleat Angler*, 1676, translated Montaigne's *Essays*, 1685; pubd. *The Scarronides*, 1664, etc.

**Cotton**, vegetable fibre derived from hairy covering of fruit or boll of **C. plant** (*Gossypium*



Cotton-Grass

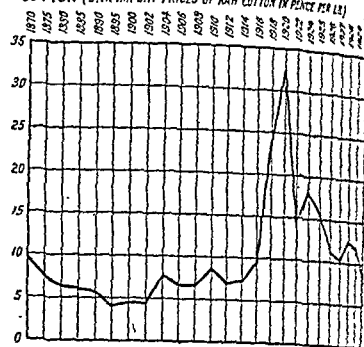


Cotton Flower Fruit

herbaceum and other varieties); raw material of world-wide importance in textile industry. The plant is subtropical, requiring both warmth and moisture; subject to damage by frost, drought, insect pests, and fungi. Cultivated mainly in Southern U.S. A., Egypt, India, S. Russia, and within Brit. Emp. (Sudan, Nigeria, Uganda). Several varieties: *Sea Island C.* produces highest

quality, the fibres being from 1-2½ in. long and having a natural "twist" wh. facilitates spinning; *American Upland* is similar. Other varieties: *Egyptian*, *Levant*, *Indian*. Seed (see COTTON-SEED) is separated from fibre, lint, by means of a machine, known as a gin.

COTTON (U.K. IMPORT PRICES OF RAW COTTON IN PENCE PER LB.)



Great rise during war reflects mainly inflation rather than cotton shortage

(*q.v.*), and **C.** is packed in bales for transport. **C. grass**, *Erophorum*, grass-like sedge d. Eur. and N. Amer., with silky cottony hairs. **C.-seed**, the seeds discarded from **C.** in the process of ginning (see GIN); yield a valuable edible oil, used as an adulterant of, or substitute for, olive oil. The residue, after-

COTTON—ESTIMATED TOTAL WORLD'S SPINNING SPINDLES IN 1913

	1913	1924	1929	1931
UNITED KINGDOM	55,652	56,750	65,917	61,904
U.S.A.	31,595	37,295	34,229	37,703
GERMANY	11,185	2,464	11,259	23,101
FRANCE	7,400	9,359	3,857	14,400
JAPAN	2,300	4,825	6,579	27,000
INDIA	6,084	7,928	6,704	12,000
REST OF WORLD	29,322	32,671	37,701	28,000
WORLD TOTAL	143,449	158,783	169,211	221,108

World total increased steadily since 1914, except for slight setback in 1932; U.K. proportion decreased, but she still owns nearly 1/3. Significant changes are in Japan, India, France (due to transference of Alsace in 1919), and "Rest of World."

have been crushed, is used as fodder in form of cattle-cakes. **C. wood**, see **ROSE**.

**Cotyledon**, (bot.) the seed-leaf, a permanent leaf of a seed.

**Couch grass**: see TWITCH GRASS.

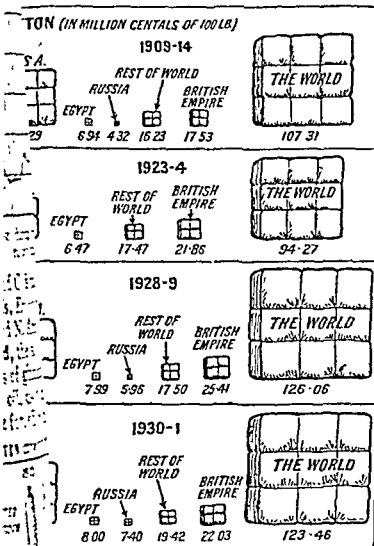
**Coué**, Emile (1857-1926), Fr. apothecary and psychotherapist; popularised suggestion (*q.v.*) as method of healing.

**ugar:** see PUMA.

**oulisse**, (finan.) the "curb market" (*q.v.*) in Paris Bourse.

**uloir** (Fr., strainer), a narrow moun-  
gorge.

**ulomb**, Charles Augustin de (1736-  
); enunciated *C's Law*; electric charges or  
netic poles of like kind repel, and of un-  
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ly propor. to product of the strengths  
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(agric.) blade of a plough (*q.v.*).

body of persons called together  
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and Emp. (see C. OF THE CHURCH).

tant consultative State body

**C. of State, C. of War**). 3)

y of representatives to transact

county, city, parish, district, etc.

**uffs**, tn., Iowa, U.S.A.; pop.,

ay and highway centre; grain

unuf.; agric. machinery. Anc.

of Indian tribes.

**the Church**, assembly of the

thers respons. for govt. of the

Ch. and for decision of eccles. questions.  
**Oecumenical C.**, one to wh. the bishops of  
the whole world and others entitled to vote  
are summoned; held under presidency of the  
Pope or his legates; 21 such councils recog-  
nised by the R.C.Ch., beginning with that of  
Nicea (325) and ending with that of the  
Vatican (1869-70). Gr. Ch. recognises only  
1st 7 of these.

**Counsel**, or **advocate**, rep. of a person in  
a legal process; only barristers are permitted  
to act in this capacity before the High Court.  
Solicitors may act as C. in county courts  
and local crim. courts.

**Counter**, 1) (boxing) similt. parry and  
return; 2) (fencing) parry with circular mo-  
tion of foil. **Counter-claim**, claim made  
by defendant in a suit agst. plaintiff. **C.-  
current principle**, (phys.) in transferring  
heat, chem. substance, etc., from one medium  
to another in continuous flow; most econ.  
result when media flow in opp. directions;  
e.g., heat in water gas being transf. to incom-  
ing gas and air of furnace; extraction of im-  
purities from gas by action of liquid, etc.

**C.-reformation**, R.C. activities in 16th and  
17th cents. for limitation of influence of the  
Reformation (*q.v.*) led in Ger. to Thirty Years'  
War.

**C.-sink**, enlargement of the hole into  
wh. a screw-head or bolt is driven, so that it is  
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ing independent "parts" to a *canto fermo*  
accdg. to certain rules, the result being  
harmonious and melodious.

**Counterpoise**, (electr.) an arrangement  
of wires which, when connected to an aerial,  
serves as earth.

**Countershaft**, (mechan.) rotating shaft  
with pulleys; driven by power and used to  
drive a machine or machines; belts of latter  
can usually be shifted, while running, by a  
fork to a loose pulley, so as to stop machine.

**Countess of Huntingdon's Connexion**,  
sect of Methodists (*q.v.*) fndd. by Selina,  
Countess of H., who estabd. her 1st regular  
chapel at Brighton, 1761.

**Country of origin**, (commer.) country in  
wh. goods have been produced, officially  
defined for customs purposes. In Gt. Brit.,  
when preferential duties (*q.v.*) apply, a cer-  
per cent. of value of product must have been  
result of Brit. labour.

**County**, geog. div. of Gt. Brit. or Ire.  
dating from Saxon times but altered in 19th  
cent., espec. by creation of smaller admin.  
countries within anc. areas. Lond. is an  
adminis. co. of itself. **C. borough**, bor.  
either named in Local Govt. Act, 1888, or  
since elevated to status created by that Act,  
entitling it to freedom from co. rates and,  
broadly speaking, to have powers of co.  
council exec. by its tn. council. New co.  
bor. must have at least 50,000 population.



less than seven or more than eleven; has power to commit for trial any person charged, as a result of his inquest, with murder, manslaughter, or infanticide. From at least early Plantagenet times he has been empowered to hold an inquest on treasure trove (*q.v.*), and in City of London is authorised to enquire into the origin of fires.

**Coronet**, lesser crown denoting various degrees of nobility (*see* Ill., CROWN); in Gt. Brit. the C. is worn with a cap of velvet and ermine. *See also* HERALDRY.

**Corot**, Camille (1796-1875), Fr. landscape painter. *Une Matinée*, 1850, in the Louvre, Paris.

**Corozo-palm**, **Ivory-nut P.**, tree of trop. Amer. (*Phytelephas macrocarpa*), the hard, white fruit of wh., when dried, is known as *vegetable ivory* and is used in making buttons, etc.

**Corporal**, 1) (R.C.Ch.) small linen cloth on wh. chalice and paten rest during Mass. 2) (Mil.) Non-commissioned officer ranking below sergeant. **C. of Horse** and **C. Major**, ranks in Household Cavalry equiv. to sergeant and sergeant-major.

**Corporate State**, **Corporative State**, State in wh. all bodies formed for econ. and social purposes are treated as organic parts of national whole.

**Corporation**, 1) artificial person, estab. by law, to perpetuate succession to certain rights. May consist of 1 person, when it is *sole*, or many persons; may also be *spiritual*, concerned with church matters. 2) Body of persons treated as legal unit, *e.g.*, municipal corporation (*i.e.* mayor, aldermen, and burgesses of bor.), trading or other co. or university. Each country has its own way of creating corporations and of applying to them laws govng. individs., essential feat. being that individ. member, or "corporator," is for legal purposes merged in composite personality. Historically, charter from kg. or pope was necessary for "incorporation." In mod. Eng., most corporations come into being through machinery prov. for gen. use in acts of Parl., espec. Companies Acts; though Royal Charter is still available. **C. loans**, funds raised by munic. auth.; in U.S., by incorporatd. or registd. limited co., hence *corporation bonds*, debentures of indus. or commerc. companies. **C. Profits Tax**, tax on the profits of limited companies (addl. to income tax); levied in Gt. Brit. betw. 1920 and 1924. Rate varied betw. 6d and 2/- in the £.

**Corps de ballet**, team of dancers taking pt. in ballet (*q.v.*).

**Corps headquarters**, (milit.) the staff of an army corps.

**Corpus Christi** (Body of Christ), R.C. feast observed on the Thurs. after Trinity Sun. in honour of the Eucharist; character-

ised by the carrying in solemn procession of the Host (*q.v.*). **C. C. College**, 1) Cambridge; fndd. 1352, by Gild of St. Mary and Gild of Corpus Christi. 2) Oxford; fndd. 1516, by Richard Fox, Bp. of Winchester. Thomas Arnold, head master of Rugby, was among its alumni. Both are familiarly known as "Corpus."

**Corpus delicti** (Lat.), body (or substance) of the offence, evidence of crime. **C. Juris**, body of Roman law wh. was the model for the codes of most Europ. States. Term used for a collection of the laws of a country.

**Corpuscle**, (biol.) minute body or cell; a constituent particle of the blood.

**Correggio**, Antonio Allegri da (1494-1534), It. painter of Lombard School; *Ecce Homo* and *Cupid, Mercury and Venus* in Nat. Gallery, London.

**Corrèze**, dépt., Centr. France; 2,272 sq.m.; pop., 264,129; watered by Riv. Corrèze, trib. of Dordogne; plateau, chfsl. pasture, agric. in valleys; mines (coal, antimony, bismuth, etc.); horse-breeding; small arms factory at cap., Tulle.

**Corrigenda**, (Lat.) errors to be corrected.

**Corrosion**, damage to and destruct. of materials by chem. influences, *e.g.*, weather, water; in case of machines, materials used in their working and products of combustion. (Geol.) stone weathering. Burning coal and gas cntg. sulphur load air of towns with sulphurous and sulphuric acids, wh. do great damage to metal, stone and other materials.

**Corrosive sublimate**: *see* MERCURY.

**Corrugated iron**, galvanized sheet-iron bent into a series of parallel and alternate ridges and grooves; used for roofing, etc.

**Corrupt practice**, commission of one of the acts of bribery defined by statute, with a view to inducing an elector to vote or not to vote for a partic. candidate. C.P. is committed when bribe is accepted.

**Corsair**, pirate-ship; Barbary privateer attacking commerce of Christian Powers in the Mediterranean from 17th cent. onwards; finally suppressed by Fr., 1830.

**Corsak**, yellow fox of the Siberian steppes.

**Corsica**, **Corse**, Fr. isl. in Mediterr.; 3,368 sq.m.; pop., 289,900; mountainous, mild climate; inhab. Italian extraction, mainly fishermen and shepherds; exports: tropical fruits, flax, wine, honey; cap., Ajaccio. Genoese 1299-1768, when purchased by France; birthplace of Napoleon I.

**Corso**, (It.) race, promenade; procession of flower-decked carriages; thoroughfare in Rome.

**Corstopitum**, Rom. station, Northumberland,  $\frac{1}{2}$  m. W. Corbridge (*q.v.*); excavations.

**Cortegiano**, II, treatise by B. Castiglione (1514) on the perfect courtier.

**Cortes**, name of Span. and Portuguese legislative assemblies of two chambers.

**Cortes**, Hernando (1485-1547), Span. soldier; conq. Mexico 1519-21.

**Cortina d'Ampezzo**, tn. in Ampezzo Vall., Dolomites, Ital. Tyrol; pop., 3,700; tourist resort; wood-carving.

**Cortona**, tn., prov. Arezzo, Italy; pop. 30,000; cathed.; cyclopean walls and other antiquities.

**Corundum**, very hard mineral, aluminium oxide; the coloured varieties include the following precious and semi-precious stones: sapphire (blue), ruby (red), also oriental aquamarine, amethyst, and emerald; granular C. is emery, used for grinding and polishing, and is now artificially produced.

**Corunna, La Coruña**, 1) maritime prov. N.W. Spain, part of Galicia (q.v.); area, 3,050 sq.m.; pop., 733,800. 2) Cap. of prov., pop. 65,000; fortified harbour; arsenal; tobacco factory; fisheries. **Battle of C.**, 1809, early engagement of Peninsular War in which Sir John Moore was killed and the Fr. under Soult repulsed.

**Corvée**, compulsory serv. due from a feudal tenant to his overlord. Abol. in Fr. 1789 but existing in many countries till mid. 19th cent.

**Corvette**, in former navies, full-rigged sloop-of-war, of not more than 20 guns, all on upper deck; next in weight of metal below a frigate (q.v.).

**Corvinus, János** (c. 1385-1456), Hung. patriot; fought agst. Hussites (q.v.) and Turks. **C., Matthias**, see MATTHIAS HUNYADI.

**Corvus**, the Crow, constell.; see PL. ASTRONOMY, S.C.H., D.

**Corybantes**, (Gr. hist.) semi-divine attendants of Cybele (q.v.); also her priests, who impersonated these in the course of wild orgies and dances in which they inflicted wounds upon themselves.

**Corypheus**, (Gr.) leader (of a chorus); **Coryphée**, (Fr.) leader of a ballet.

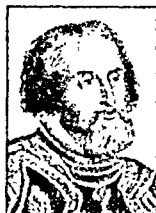
**Cos**, **Stanko**, Ital. isl. in Aegean, one of the Dodecanese (q.v.); 109 sq.m.; pop., 16,340; vineyards, olives, melons, figs, grapes; also cap., (pop., 7,500); harbour.

**Cos.**, abbr. cosine; see TRIGONOMETRY.

**Cosec.**, abbr., cosecant; see TRIGONOMETRY.

**Cosenza**, tn., and archiepis. see, Calabria, Italy, pop., 32,300; cap. of prov. of same name. Anc. *Cosentia*, supp. burial pl. Alex. of Epirus, c. 330 B.C.; cathed. consecrated 1222.

**Cosgrave**, Wm. Thomas (1886- ), Ir. statesm.; Pres. Provisional Govt. 1922; 1st Pres. Ir. Free State, 1922-31.



Cortez

**Così fan tutte** (Ital.), That is the way all women act; title of an opera by Mozart (q.v.), 1790.

**Cosimo**, Piero di (1462-1521), Ital. painter, helped in decoration of Sistine Chapel, Rome; *Death of Procris* in Nat. Gall., London.

**Cosine**: see TRIGONOMETRY.

**Cosmas and Damian, SS.**, Arabian twins venerated by Eastern churches, mart. A.D. 303; patr. SS. of physicians; commem. Sept. 27th.

**Cosmetic**, pertaining to care of the pers. appearance.

**Cosmetics**, preparations (powders, creams, dyes, pencils, etc.) used as artificial "beautifiers," for disguise, etc.

**C. operations**, surgical improvement of bodily appearance by removal of nat. or accidental defects, abnormal growths, etc.

**Cosmic**, relating to the universe. **C. rays**, recently discovd., very short and hard (i.e. penetrating) rays, coming from space outside the earth; their nature and origin not determ.; believed by some to be due to annihilation of matter in distant stars.

**Cosmogony**, theory of origin of universe and of manner in wh. it came into existence.

**Cosmography**, science of description of universe, or world as a whole, in all its parts; comprises astron., geog., and geology.

**Cosmology**, metaphys. speculation regarding nature of universe as an ordered whole, formed upon a definite plan; considers stars as organized in groups, and system of Milky Way as embracing solar system and more distant groups of stars, beyond wh. are numerous similar systems (*nebulae*). Acc. to theory of Relativity (q.v.), space is curved and finite (see SPACE). Present estimated total extent of universe: 200 milliard light-years; variable from time to time. **Cosmos**, the ordered universe.

**Cossacks**, free peasants formerly settled along frontiers of Imperial Russia who, in return for cert. privileges, rendered milit. service under their own leaders (Hetman, Ataman); renowned horsemen; since 1918 no longer disting. from gen. pop. of U.S.S.R.

**Costa Rica**, Centr. Amer. repub., 22,160 sq. m.; pop., 504,000; mountainous; in N. virgin forests, in W. savannas; products: coffee, bananas, cocoa, mother-of-pearl, gold; cap., *San José*; harbours: Limón, Punta Arenas. Discovered in 1502 by Columbus; belonged to Spain till 1821, since when independent; neutral in World War; withdrew from League of Nations, 1925.

**Coster**, Charles de (1820-79), Flem. author; *The Tale of Till Eulenspiegel and Lamme Goedzak*, 1867.

**Cost price**, total expenses for product. of a



Cosgrave



Costa Rica

commodity or service excludg. allowance for profit.

**Costs**, all monetary outgoings in business wh. are nec. for attainment of an econ. end; *Prime C.* those expended for produc. or purchase of goods; *see* OVERHEAD COSTS.

**Cosway**, Richd. (1740-1821), Eng. miniature painter.

**Cot.**, abbr. cotangent, *see* TRIGONOMETRY.

**Côte d'Azur**, French Riviera (*q.v.*).

**Côte-d'Or**, dépt., E. France (Burgundy); 3,391 sq.m.; pop., 333,800; wines; iron mines, quarries; weaving and dyeing; cap., *Dijon*.

**Côtes-du-Nord**, dépt. N.W. France (Brittany) on Engl. Channel; 2,786 sq.m.; pop., 539,531; agric., fisheries, cotton-weaving; cap., *St. Brieuc*.

**Cothurnus**, buskin (*q.v.*), high boot of anc. Gr. actor.

**Cotillon**, Fr. figure-dance for 4 couples, with many var., in wh. toys, flowers, air-balloons, etc., are used.

**Cotman**, John Sell (1782-1842), Eng. water-colour painter and etcher of "Norwich School."

**Cotoneaster**, genus of shrubs and small trees of family *Rosaceae*; bears pink flowers and clusters of bright yellow or red berries; found in temperate regions.

**Cotopaxi**, highest active volcano in the world, in Andes, Ecuador, 19,690 feet.

**Cotswolds**, or **Cotswold Hills**, limestone range, Glos., Eng., 54 m. long, extending S.W. to N.E.; *Cleeve Clond* 1,134 ft.; source Riv. Thames at *Seven Springs*, 3½ m. S. Cheltenham.

**Cottbus**, tn., Pruss. dist. of Frankfurt-on-Oder; pop., 50,500; textile industry.

**Cottesmore**, Eng., hunt, fndd. 1788; named after vil. in Rutland; hunts Leics. and Rutland.

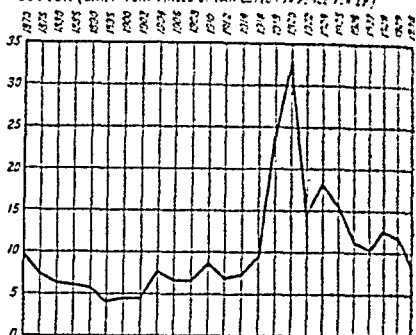
**Cottian Alps**, inner chain of the W. Alps, Monte Vigo, 12,600 ft.

**Cotton**, Charles (1630-87), Eng. poet; wrote a continuatn. of Walton's *Compleat Angler*, 1676, translated Montaigne's *Essays*, 1685; pubd. *The Scarronides*, 1664, etc.

**Cotton**, vegetable fibre derived from hairy covering of fruit or boll of **C. plant** (*Gossypium herbaceum* and other varieties); raw material of world-wide importance in textile industry. The plant is subtropical, requiring both warmth and moisture; subject to damage by frost, drought, insect pests, and fungi. Cultivated mainly in Southern U.S. A., Egypt, India, S. Russia, and within Brit. Emp. (Sudan, Nigeria, Uganda). Several varieties: *Sea Island C.* produces highest

quality, the fibres being from 1-2½ in. long and having a natural "twist" wh. facilitates spinning; *American Upland* is similar. Other varieties: *Egyptian*, *Levant*, *Indian*. Seed (*see* COTTON-SEED) is separated from fibre, or *lint*, by means of a machine, known as a gin

COTTON (U.K. IMPORT PRICES OF RAW COTTON IN PENCE PER LB.)



Great rise during war reflects mainly inflation rather than cotton shortage

(*q.v.*), and *C.* is packed in bales for transport.

**C. grass**, *Erophilum*, grass-like sedge of N. Eur. and N. Amer., with silky cottony tufts.

**C.-seed**, the seeds discarded from *C. boll* in process of ginning (*see* GIN); yield a valuable edible oil, used as an adulterant of, or substitute for, olive oil. The residue, after seeds

COTTON: ESTIMATED TOTAL WORLD'S SPINNING SPINDLES (1913-1932)

	1913	1924	1929	1932
UNITED KINGDOM	51,652	50,750	55,917	51,968
U.S.A.	31,505	37,225	34,823	31,729
GERMANY	11,435	12,454	11,250	12,233
FRANCE	7,400	9,353	9,610	10,004
JAPAN	2,300	4,225	6,530	7,738
INDIA	6,084	7,928	8,704	13,100
REST OF WORLD	22,222	32,671	37,101	39,942
WORLD TOTAL	133,449	158,733	164,211	167,016

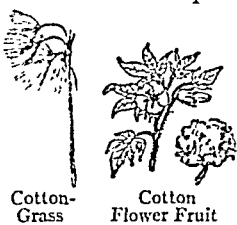
World total increased steadily since 1914, except for slight setback in 1932; U.K. proportion has decreased, but she still owns nearly 1. Most significant changes are in Japan, India, France (due to transference of Alsace in 1919), and "Rest of World."

have been crushed, is used as fodder in the form of *cattle-cakes*. **C. wood**, *see* POPLAR.

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Cotton-Grass

Cotton Flower Fruit

**Cougar**; *see* PUMA.

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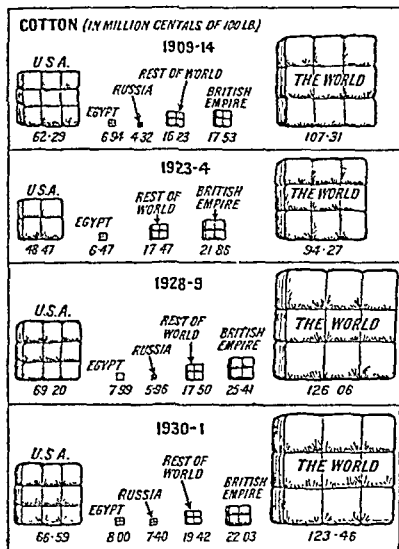
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Production has incr'd. by  $\frac{1}{2}$  since period before World War but comparative slow rate of incr. partly reflects greater competition of other textiles. U.S.A. still produces over half total, whilst cotton-growing in Brit. Emp. made good progress till 1928-29, the comparable figs. for 1931-32 and 1932-33 being—18.18 and 19.17.

propor. to square of their distance apart. Name given to the practical unit of electrical quantity, *i.e.*, that quant. conveyed by a current of 1 ampere in 1 second.

**Coulsdon and Purley**, urb. dist., Surrey, Eng., residential; pop., 37,700.

**Coulter**, (agric.) blade of a plough (*q.v.*).

**Council**, body of persons called together by authority for deliberative or executive business; esp., 1) assembly of bps. convoked by the Pope and Emp. (*see* C. OF THE CHURCH). 2) Important consultative State body (**Privy C., C. of State, C. of War**). 3) Elected body of representatives to transact business of a county, city, parish, district, etc.

**Council Bluffs**, tn., Iowa, U.S.A.; pop., 42,050; railway and highway centre; grain elevators; manuf.; agric. machinery. Anc. meeting place of Indian tribes.

**Council of the Church**, assembly of the prelates and others respons. for govt. of the

**C. council**, gov. body of an admin. co., providing many services (e.g., police, public assistance, schools) directly and supervising provis. of others by local authorities within county. **C. Courts**, cts. for enforcement of claims of limited amt. sitting freq. in most large towns. No jurisd. in crim. cases or claims for libel and slander.

**Coup** (Fr.), blow, swift act, surprise. **C. d'État**, sudden overthrow of a government by surprise and force (Napoleon, Mussolini, etc.). **C. de grâce**, blow of mercy; finishing stroke. **C. de main**, a surprise attack. **Coup de théâtre**, theatrical hit, sensational trick.

**Coupé**, (Fr.), small, closed two-seater carriage or car.

**Couperin**, François (1668-1733), great Fr. composer of harpsichord music.

**Couperus**, Louis (1863-1922), Dut. novelist: *Dr. Adrian*; *Old People and the Things that Pass*.

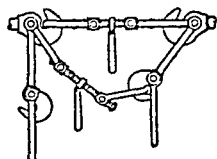
**Couple**, (mech.) two equal and opposite forces acting in a plane. Moment of C. = one of forces  $\times$  perp. distance bet. them.

**Coupler**, mechanism in organs and harmoniums, enabling several keys to be depressed simultaneously.

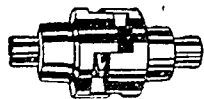
**Coupling**, (mech.) 1) relation of equal forces, acting in parallel and opposite directions, thus creating a circular motion. 2) Device for joining two parts of machine, e.g., shafts (see fig., Claw Clutch), for conveying power by means of steel cable in flexible leather or metal tube (dentists' tools, cycle brakes, etc.), or for con-



Coupling



Railway Coupling



Claw Clutch

necting rly. coaches, wagons etc., e.g., **Screw c.** (see fig.), with reserve parts in case of breakage, and the safer and more generally used **Automatic c.** 3) In *wireless*, any device or arrangement by wh. one circuit affects another, esp. in the case of one stage of amplification acting on the next; several varieties, *choke*, *resistance-capacity*, *transformer*, etc., *close*, *loose c.*, coupling by simple ironless induction. **Reaction C.** anode circuit and grid circuit of triode valve (q.v.), so coupled that vibrations in former are strengthened in latter.

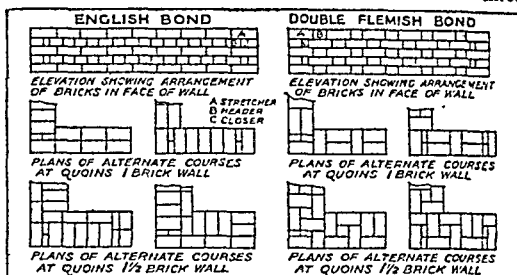
**Coupon**, (com.) warrant for right to int. on bearer bonds or debentures; cut from the (q.v.) on given date and cashed.

**Courbash**, (Turk.) heavy whip of rhinoceros or other hide.

**Courbet**, Gustave (1819-77), Fr. realist and landscape painter: *Stone-Breakers*, 1850.

**Courier**, diplom. messenger carryg. dispatches; officially sealed *courier bags* enjoy immunity from search by customs; in Mid. Ages maintained by potentates and noted for swift running; used also of any express messenger and of one who arranges the details of a journey.

**Courland**, southernmost of the three



Courses in Brickwork

former Russian Baltic Provs. (q.v.); former area, 10,240 sq.m.; now divided between Latvia on N. (prov. of *Kurzeme*) and Lithuania. Ruled by Teutonic Knights, 1237; vassal to Poland, 1561; Russian, 1795-1918.

**Course**, (bldg.) any layer of bricks or stones in a wall.

**Coursing**, pursuit of game (usually hares) by dogs (greyhounds or whippets) hunting by sight alone.

**Court-dress**, costume prescribed for Court and other State functions.

**Courteline**, Georges (1860-1929), Fr. humor. writer: *Boubouroche*.

**Courtenay**: see DEVON, EARLS OF.

**Courtesy title**, title assumed by a person without strict legal right, but conceded by custom; e.g., eldest son of duke, marquess, or earl takes father's second title: younger sons of duke or marquess prefix *lord*, and all daughters of duke, marquess or earl prefix *lady*, to Christian and family names; younger sons of earls, and all children of viscts. and bns., prefix *hon.* to Christian and family names; married daughters of peers use the titles or courtesy titles of their husbands, retaining the prefix *hon.* or *hon. lady* if they were entitled thereto before marriage. C.T. as such implies no precedence. Cf. LADY, LORD.

**Court-martial**, court for trial of members of national armed forces for offences agst. discipline, etc. A soldier (not an officer or warrant officer), or similar member of Air Force, who commits an offence may be dealt with summarily by his commanding officer, or, in serious cases, be brought before a C-m. **Regimental c-m.**, convened by C.O. of regt., may inflict max. punishment of 42

days' detention. **District c.-m.**, convened by general officer; max. punishment 2 years' imprisonment. **General c.-m.**, only tribunal which may try a commissioned officer; max. punishment death or penal servitude. **Field general c.-m.** (pop. known as *Drumhead c.-m.*) is an emergency court, convened beyond seas or on active service. **Naval cts.-m.** are similar to military in procedure, exc. that prisoner does not plead or cross-examine witnesses; court has also greater latitude of judgment.

**Courtney**, Wm. Leonard (1850-1928), Brit. journalist; lit. ed. and dram. critic, *Daily Telegraph*, 1890-1924; ed. *Fortnightly Review*, 1894; pub. *Life of John Stuart Mill*, 1889; *The Passing Hour*, 1925, etc.

**Court of appeal:** see SUPREME COURT. **C. of criminal appeal**, ct. without permanent members, formed when nec. by uneven number (usually 3) of judges of King's Bench Div. (*q.v.*) to hear appeals in crim. cases from High Ct. or from Quarter Sessions. **C. of enquiries**, (naut.) interrog. of crew after damage of ship at sea (see AVERAGE) carried out by competent marine court.

**Courtrai**, tn., W. Flanders, Belgium, on Riv. Lys, nr. Fr. frontier; pop., 38,700; 13th cent. church of Notre Dame; lace, linen. **Battle of C.**, 1302, defeat of French, under Count of Artois by inferior force of Flemings; known as "B. of the Spurs", from the hundreds of pairs of golden spurs recovered from dead Fr. knights.

**Cousin**, Victor (1792-1867), Fr. statesm. and eclectic philosopher; see ECLECTICISM.

**Cousin Pons**, novel by Balzac, 1847.

**Coutts**, Thos. (1735-1822), Eng. banker; with his bro. James fndd. banking-house of Coutts and Co., London; by his 1st wife, Elizabeth Starkey, he had 3 daughters; Susan, m. 3rd Earl of Guilford, 1796; Frances, m. Jn. 1st Marquess of Bute, 1800; Sophia, m. Sir Francis Burdett (*q.v.*), 1793 (*cf.* BURDETT-COUTTS); his 2nd wife, Harriet Mellon, the actress, m., after his death, the 9th Duke of St. Albans.

**Couvade**, custom of cert. peoples (anc. Basques, Baltic Russians, and many prim. peoples in Asia, Africa, and America). Father is put to bed and nursed, sometimes subjected to other restraints, at or prior to birth of child; obj. is to proclaim his acknowledgment of parenthood and its responsibilities.

**Covenant**, (Bib.) the promise of God to the Jews. **Covenantant**, adherent of the Solemn League and Covenant (1643) betw. Scots and English Parliament for the preservation of Presbyterianism.

**Covent Garden**, square in W. Centr. London, laid out by Inigo Jones in 1631; fashionable in 17th cent., since early 18th a

fruit and vegetable mkt. **C. G. Theatre**, Eng. home of grand opera; built 1858 on site occupied by a theatre since 1733.

**Coventry**, anc. city, Warwicksh., Eng.; centre motor and cycle industry; created a diocese (with St. Michael's as cathed.), 1918; pop., 167,100. To send to *Coventry* (phr. of uncertain origin), to ostracise, to cut off from association.

**Cover**, (finan.) used generally to imply security, e.g., protect. of lender. **C. of bank notes**, equiv. to backing, e.g., of gold and securities.

**Coverdale**, Miles (1488-1568), 1st translator of whole Bible into English, 1535; superintended new edition of Engl. Bible, known as the Great Bible, 1538; also edition of a 2nd Great Bible (Cranmer's Bible), 1540; joined reformers; Bp. of Exeter, 1551-53; possibly assisted in preparation of Geneva Bible.

**Covington**, tn., Kentucky, U.S.A.; on the Ohio Riv. (suspension bridge 2,252 ft.); pop., 65,250; R.C. cathed.; mkt. for agric. prod. and cattle; manuf.: steel, iron, X-ray apparatus and furniture.

**Cow**, female of bovine ruminants (see CATTLE); also, female of cert. deer and of elephant, seal, whale, walrus, etc.

**Coward**, Noel (1899- ), Brit. dramatist, actor, lyricist, and producer. App. on stage, 1910. *Bitter Sweet*, *Private Lives*, *Cavalcade*.

**Cowbird**, migratory bird of N. and S. America; lays its eggs in nests of other birds; bronze or glossy black plumage.

**Cowboy**, cowherd on cattle ranches of Western United States.

**Cowdray**, Weetman Dickinson Pearson, 1st visct. (1856-1927), Brit. contractor; developed family firm of S. Pearson and Co.; secured many important contracts; acquired large interests in Mexico and S. America; M.P. for Colchester, 1895-1910; in Hse. of Lords from 1910; pres. of Air Board, 1917.

**Cowell**, Henry (1897- ), Amer. composer.

**Cowen**, Sir Frederic Hymen (1852- ), Eng. composer and conduct.; operas, oratorios, symph. (including the *Scandinavian*), orchest. suites (*The Language of Flowers*), and numerous songs.

**Cowes**, seapt. and watering-place, N. coast, Isle of Wight, Eng., on Solent, sep. by Riv. Medina into E. and W. *Cowes*; yachting regattas; pop., 14,800.

**Cowl**, 1) hood capable of being drawn over the head, attached to long outer habit worn by monks; 2) metal cowl-shaped device fixed on chimney-pot to prevent smoke returning down chimney.

**Cowley**, Abraham (1618-1667), Eng. poet and essayist; supported Royalist cause; followed qn. to Paris, 1646; in exile till 1656;

*The Mistress*, 1647; *Pindarique Odes*, 1656; *Advancement of Experiment. Philosophy*, 1661.

**Cowley Fathers**, properly styled "The Society of Mission Priests of St. John the Evangelist," an Anglican Brotherhood, inaug. 1865 by the Rev. R. M. Benson; devoted to missionary and educational work, with headquarters at Cowley St. John, near Oxford.

**Cowpens Battle Ground**, nat. monument, S. Carolina, U.S.A.; British, under Tarleton, defeated here in 1781.

**Cowper**, William (1731-1800), Eng. poet: *The Task*, 1785; *John Gilpin*, 1784.

**Cow-pox**, contagious fever occurring in cattle; corresponds to smallpox in man.

**Cowries**, marine gastropods found in tropical seas; highly polished ovate shells, long, slit-like aperture on under surface; the so-called *Money C.*, a creamy white shell, is used by W. African natives as currency. Many species, varying considerably in size, some being very handsome in shape and colour.

**Cowslip**, *Primula veris*, plant of primrose family bearing sweet-smelling, yellow flowers in clusters; found in meadows in temperate regions.

**Cow-spunk**, *Boletus bovinus*, an edible fungus with reddish cap.

**Cox**, David (1783-1859), Eng. landscape painter; *The Vale of Clwyd* (1846), etc.

**Coxswain**, seaman in charge of a ship's boat and crew; also, steersman of a racing boat (*cox*). •

**Coy**, abbr. Company.

**Coyote**, or Prairie Wolf of N. Amer., small, long-haired mem. of dog family; apparently link betw. true wolves and jackals.

**Coypu**, or *nutria*, large S. Amer. rodent, with rather harsh, dull brown fur; attains length of about 2 ft.; inhabits banks of streams and lagoons.

**Coysevox**, Antoine (1640-1720), Fr. sculptor; two winged horses (*Les Renommées*) at entrance to Tuileries Gardens.

**c.p.**, abbr. candle power.

**C.P.M.**, (mus.) abbr., common particular metre (hymns).

**C.P.R.**, abbr. Canadian Pacific Railway.

**Cr**, (chem.) symbol of chromium.

**Cr**, abbr. credit or creditor.

**Crab**, generic name for any of the short-tailed decapod crustaceans, e.g., shore-crab, hermit, edible, fiddler crab, etc. **C.-apple**, *Pyrus malus acerba*, small, sour wild apple from wh. cultivated A. mainly derived. Raw fruit very acid, but used in making preserve or jelly.



Cowper

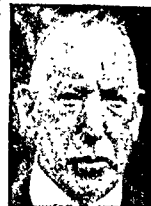
**Crabbe**, Geo. (1754-1832), Eng. poet of domestic life; *The Village*, 1783.

**Cracow**, Pol. *Kraków*, Germ. *Krakau*, province (6,734 sq.m.; pop., 1,992,810) and fortified city, W. Galicia, Poland, on left bank Riv. Vistula; pop., 205,260; Gothic cathed. (coronation and burial of Pol. kgs.), castle; univ. (1364); academy of science; trading centre. Formerly cap. of Little Poland; Austr. 1795-1809; repub. 1815-46; Austr. 1846-1918; Polish after World War.

**Craddock**, Sir Christopher (1862-1914), Brit. rear-adml., d. in Brit. naval defeat at battle of Coronel.

**Craig**, Edw. Gordon (1872- ), son of Ellen Terry (g.v.), actor and theatrical designer; fndd. Sch. of Art of Theatre, Florence, 1913; *The Theatre Advancing*, 1921; *Books and Theatres*, 1925.

**Craigavon**, James Craig, 1st visct. (1871- ), Brit. statesm.; Unionist M. P. (Imp. Parl.), 1906-21, (Ulster Parl.), 1921-27; 1st Pr. Min. Northern Ireland, 1921; raised to peerage, 1927.



Lord Craigavon

**Craigie**, Pearl Mary Teresa (1867-1906), Anglo-Amer. novelist and dramatist; wrote under pseud., "John Oliver Hobbes," *Some Emotions and a Moral*, 1891; *The School for Saints*, 1897; *The Ambassador*, 1898.

**Craiova**, cap. prov. Oltenia, Rumania; pop., 63,100; salt mines. Former cap. of Little Walachia.

**Crambe repetita** (Lat.), "twice-cooked cabbage"; nauseous repetition.

**Cramer**, Johann Baptist (1771-1858), Eng. musician and pianist of Ger. extraction; pioneer of modern school of piano-playing; *Studies for Piano*.

**C r a m p**, painful contraction of muscles, e.g., of abdomen or leg; often due to cold.

**Cran**, Scot. dry meas., 34 gallons; cran of herrings = 37½ gallons.



Lucas Cranach

**Cranach**, Lucas (1472-1553), Ger. painter and engraver; *Rest during the Flight into Egypt*; *Luther*. His s. **Lucas** (1515-86), also a painter, whose work is difficult to distinguish from his father's.



Crab

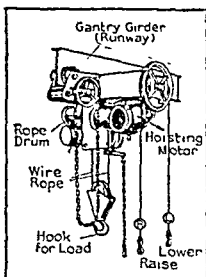
**Cranberry**, the fruit of *Vaccinium oxycoccus*; small shrubby plant with bright red edible berries.

**Crane**, Walter (1845-1915), Eng. painter, chfly. water colours; illust. children's books; designed house decorations.

**Crane**, 1) (ornith.) large, stately bird with long legs and bill. Widely distribtd. in temperate zones; Brit. species extinct. Migratory, flying in flocks in V or Y formation. 2) (Tech.) Contrivance for raising, lowering, and shifting of loads. Used in

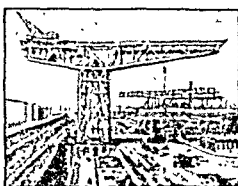


Crane



Crane

workshops, in loading and unloading plants, for rlys. and ships, new construction, etc. Simplest is *overhead travelling C.* wh. can raise and lower load and move it along in straight line. *Derrick* or *jib C.*, if fixed, can raise and lower and slew and also travel, often with steam engine on rly. line. Ill. shows large hammer-head transporter crane which can raise and lower load, and convey it in 2 directions at rt. angles. Power, steam or hydraulic; now almost exclusively electric. **C. fly:** see DADDY-LONGLEGS.



Hammer-Head Transporter Crane

**Crane's bill**, wild flowers of the geranium tribe. Meadow crane's bill, *Geranium pratense*, grows abt. 2 ft. high, with large purple-blue flowers. Several other varieties.

**Cranford**, novel by Elizabeth Gaskell (q.v.), 1853, describing feminine society in suburbs of big commercial town.

**Craniology**, science of the skull. **Cranio-tabes**, affection of bones of skull, caused by syphilis or rickets; both terms derived from **cranium**, the skull.

**Crank**, (engin.) L-shaped piece used to convert straight-line motion into rotary and vice versa. In steam engine, *piston-rod* is linked at *cross-head* to *connecting-rod* which drives C. on *fly-wheel shaft* or *C.-shaft*.

**Cranmer**, Thomas (1489-1556), Abp. of

Canterbury; abjured allegiance to Pope, 1535; head of commission for preparation of 1st Eng. prayer book, 1548; committed to Tower for treason at accession of Qn. Mary; tried for heresy, and executed.

**Cranwell**, vil., Lincs, 4 m. N.W. Sleaford; R.A.F. cadet college.

**Crape**, thin, gauze-like crimped matl.

formed by irregular interlacing of thread during weaving, or by use of overspun yarn wh. crinkles when watered and finished; used esp. for mourning garments and bands.

**Crashaw**, Richd. (c. 1616-49), Eng. mystical poet.

**Crassula**, S. African flowering plant, cultivated for ornamental purposes.

**Crassus**, M. Licinius (c. 105-53 B.C.), Rom. soldier and statesm.; member of 1st Triumvirate with Caesar and Pompey, 60; deftd. by Parthians at Carrhae, Mesopotamia, 53.

**Crater**, 1) (geol.) funnel-shaped mouth of volcano, often, when extinct, filled with water. 2) (Astron.) Southern constell.; see Pl. ASTRONOMY, S.C.H., E.



Crater

**Crater Lake**, national park (1902) in Oregon, U.S.A.; 249 sq.m.; lava formations; sides 1,000 ft. high; fishing.

**Craters of the Moon**, nat. park (1924) in Idaho, U.S.A.; 51,200 acres; volcanic craters, cones, caves, etc.

**Craven**, limestone dist., W. Riding, Yorks, Eng., extending from sources rivs. Wharfe and Aire to Lancs border; chf. tn. Skipton.



Crawfish

**Crawfish**, large marine crustacean without claws; common on rocky coasts of Gt. Brit., Eur., and Asia.

**Crawford**, Francis Marion (1854-1909), Amer. novelist; *Mr. Isaacs*, 1882; *A Roman Singer*, 1884; *A Cigarette-Maker's Romance*, 1890.

**Crawl**, (swim.) fastest racing stroke, intro. into championship swim, 1907; legs are kicked out alternately from knee; arms move as in trudgeon (q.v.).



Crayfish

**Crayfish**, small lobster-like crustacean inhabiting streams in Eur.; giant species also found in Australia.

**Cream**, fatty element in milk wh. rises to surface when milk is allowed to stand; foun-



Cranmer



dation of butter and cheese. **C. of tartar**, acid potassium tartrate,  $C_4H_5O_6K$ , obtd. from argol, the crude tartar deposited from grape-juice; used in med. as laxative; commercial source of tartaric acid.

**Crease**, (cricket) the 2 white lines at either end of the pitch; the **bowling c.** (8 ft. 8 in.) in line with the stumps, with a "return crease" at each end, and the **popping c.** a line 4 ft. in front of the wicket.

**Creation**, oratorio by Haydn (q.v.), 1798.

**Creationism**, name given to two distinct theol. doctrines, viz., 1) that the origin of species and of matter is due to special acts of creation by God, and 2) that a new soul is created for every human being. Cf. TRADUCIANISM.

**Crébillon, Prosper Jolyot de** (1674-1762), Fr. tragic dramatist: *Pyrrhus*; *Catilina*. His s., **Claude Prosper J. de C.** (1707-77), novelist: *The Sophia*, *a Moral Tale*, 1740.

**Crécy**, tn. in dépt. Somme, France; victory of Edward III. of England with bowmen over chivalry of France, 1346; battle in wh. the Black Prince (q.v.) "won his spurs."

**Credat Judaeus Apella**, (Lat.), "Let the Jew Apella believe it"; quot. from Horace (q.v.), used as equiv. to Eng. "Tell that to the Marines."

**Credence**, in R.C.Ch., small table by side of altar on wh. vessels contg. water and wine are placed for use during Mass. Use of C. Table revived in Ang. Church.

**Credit**, (finan.) voluntary authorization to a person, based on confidence, to dispose of goods or funds in consid. of an undertaking that equiv. value will be remitted at future date; C. may be: 1) *Personal*, depending on confid. in pers. of debtor; 2) requiring dep. of security, e.g., bonds, shares, mortgage, etc.

**C. balance**, excess of amts. credited over amts. debited to a pers. or firm. **C. banks**, mainly concerned with assisting in mainten. of industr. concerns by granting C. on security of works and plant. In Gt. Brit. co-operative societies (q.v.) perform function of C. banks. **C. economics**, mod. capitalistic form of exch., caused by developmt. of gold exch.; depends on fact that exch. of goods is mainly effected with help of C. machinery, e.g., bills of exch., cheques, etc., coinage or currency not actually being handled. **C. Insurance**, made by creditor agst. failure of debtor to pay. In recent yrs. specly. important for export C.; effected by insur. cos. and govts. **C. system** increases circulation of money (the credit issued in a modern community being far more important than note issue). Tends to make capital available where it can be most profitably employed. *Frozen c.* inability to obtain repayment of loan, owing to debtor being unable to pay on agreed date. In book-keeping C. denotes balance to the good (ant.: *debit*).

**Crédit Lyonnais**, Fr. Bank (fndd. 1863); deposits and current accts., 13,643,164,370 fr., liabilities, 15,492,408,918 fr. (28 Feb., 1933).

**Creditors' Committee**, body apptd. during bankruptcy proceedings by the creditors' meeting; superintended by liquidator.

**Credo quia absurdum est** (Lat.: I believe it because it is absurd), variant of *certum est quia impossibile* (q.v.).

**Creed**, brief summary of articles of faith; 3 in common use in Christian Ch.: 1) **Apostles' C.**, the oldest and simplest; 2) **Nicene C.**, origin. framed at Council of Nicea (325), final clause after "I believe in the Holy Ghost" added in 374, *Filioque clause* (q.v.), 589; 3) **Athanasian C.**, of uncertain origin and less universally used than the first two. R.C.Ch. recognises a 4th: that of Pius IV (1564).

**Creepers**, (bot.) any plant which trails along the ground or climbs by means of tendrils, e.g., Virginia c., *Parthenocissus quinquefolia*.

**Crefeld, Krefeld**, tn., Rhineland, Prussia; pop. (with Verdingen), 165,739; silks and velvets, dyes; port on Riv. Rhine.

**Creighton**, Mandell (1843-1901), Eng. divine and historian; vicar of Embleton, 1875-84; Dixie prof. of Eccles. Hist., Cambridge, 1885; fndd. *Eng. Historical Review*, 1886, wh. he edited till 1891; Bp. of Peterborough, 1891, and of London, 1897; *Hist. of the Papacy during Reformation*, (5 vols.), 1882-97 and, *From Great Schism to Sack of Rome* (6 vols.), 1897.

**Cremation**, act or practice of disposing of dead bodies by burning; in Gt. Brit. declared legal, 1884, and regulated, 1902, by the Cremation Act. Two death certifs. signed by indep. doctors are nec. before cremation can take place. **Crematorium**, bldg. designed for cremations; inclds. chapel, with the crematory furnace annexed.

**Crème de cacao**, brandy cordial flavoured strongly with cocoa bean and vanilla. **C. de cassis**, liqueur made of black currants. **C. de menthe**, Fr. liqueur flavoured with peppermint; coloured emerald green.

**Cremona**, 1) Prov. of Lombardy, N. Italy, (686 sq. m.; pop., 360,500); 2) cap. prov., on Riv. Po; pop., 63,300; silk industry; home of famous violin makers in the 17th cent. (Amati, Stradivarius, etc.); cathed. 12th-15th centuries. Fell to Austria 1814; became Italian, 1859.

**Creole**, term used for persons of Eur. origin born in Sp. S. America or W. Indies; also applied to Negroes native to these places.

**Creon**, in Gr. tragedy uncle of Oedipus (q.v.) and Kg. of Thebes.

**Creosote**, oil extracted from beechwood tar; mixture of various phenols (cresol, guaiacol); poisonous; medic. used in affections of respiratory organs. C. extracted

from brown coal tar used for impregnating wood to prevent growth of organisms producing rot.

**Crêpe**, crinkled matl. (*see* CRAPE); **C. de Chine**, silk fabric showg. uneven weave when held agast. light. **C. georgette**, thin silk matl. with rough surface, having warp and weft tightly twisted. **C. marocain**, silk fabric with slightly wavy warp.

**Crescendo**, (mus.) gradually louder; with increasing volume of tone.

**Crescent**, Islamic symbol; figures on the national flags of Turkey and Egypt. In Eng. heraldry mark of cadency (*see* HERALDRY) for 2nd son.

**Cresilas** (5th cent. B.C.), Cretan sculptor, contemp. Phidias (*q.v.*); portrait of *Perides* survives.

**Cresols**, hydroxytoluenes,  $\text{CH}_3\cdot\text{C}_6\text{H}_4\cdot\text{OH}$ , contained in creosote (*q.v.*) from coal tar; antiseptic and sim. in action to carbolic acid, wh. they replace in many commer. preparations.

**Cress**, plants of order *Cruciferae*. 1) *Lepidium sativum*, garden plant, used as a salad, gen. combined with white mustard-plant. 2) **Water c.**, *Nasturtium aquaticum*, aquatic plant with edible leaves and roots.

**Crest**: *see* HERALDRY.

**Cresta Run**, toboggan-track 1,350 yds. long at St. Moritz, Switzerland.

**Crested grebe**, large water bird, widely distribtd.; has two upstanding tufts of feathers on head and a ruff; fnd. on lakes and reedy pools in Gt. Britain; when alarmed dives beneath surface. **C. lark**: *see* LARK.

**Cretaceous system**, (geol.) uppermost strata of Mesozoic Period; *see* GEOLOGICAL FORMATIONS.

**Crete**, **Candia**, modern Gr. *Kriti*, largest Gr. isl. in Mediterr.; 3,180 sq.m.; pop., 386,450; almost entirely chalk mountains, resembling Karst region (*Mt. Ida*, 6,000 ft.); S. coast barren, N. coast populous; olive groves in fertile mountain valleys; cap., *Canca*. Seat of oldest Gr. civilisation known (Minoan-Mycenaean), 3rd-2nd millennium B.C., *cf.* KNOSSOS.

**Cretin**, child or adult affected by cretinism. **Cretinism**, disease freq. caused by affections of thyroid gland, characterized by goitre and retarded mental and phys. devel. often amounting to idiocy.

**Cretonne**, strong, unglazed cotton cloth, havg. printed pattern; used in upholstery.

**Creuse**, dépt., Centr. France; watered by Riv. Creuse, left trib. of Vienne; barren soil; 2,163 sq.m.; pop., 207,882; pig and sheep-breeding; woollens, glass; cap., *Guéret*.

**Creusot**, Le, tn. in dépt. Saône-et-Loire, France; pop., 32,400; iron foundries (machinery, guns, etc.), coal mines.

**Crevasse**, crevice, deep cleft; esp. in ice of glacier.

**Crewe**, Robt. O. A. Crewe-Milnes, 1st marq. of (1858- ), Eng. statesm., son of Ld. Houghton; Ld.-Lieut. of Ireland, 1892-95; Ld. pres. of the Council of Liberal Govt., 1905; Sec. for the colonies, 1908; Liberal leader in Hse. of Lords until 1916; Sec. for India, 1910; responsible for removal of capital of India from Calcutta to Delhi and reunion of both Bengals; Brit. Ambassador in Paris, 1922-28; Sec. for War, Aug.-Nov., 1931.

**Crewe**, mun. bor., Cheshire, Eng.; rly. town; L.M.S. locomotive works; rly. junction; pop., 46,000.

**Cribbage**, card-game for 2-4 players, in wh. score is marked with pegs on a board.

**Criccieth**, seaside resort, Carnarvonsh., N. Wales; pop., 1,500.

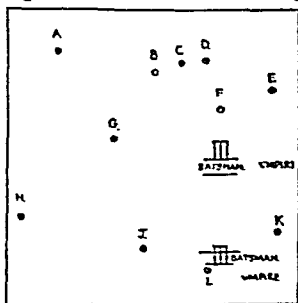
**Crichton**, Jas., "the Admirable" (1560-c. 1585), Scot. adventurer; accomplished in art, science, and war; killed famous swordsman in duel at Mantua; successfully disputed with professors of Padua Univ.; slain in a street brawl.

**Cricket**, 1) (entomol.) active, nocturnal insect of the order *Orthoptera*; posterior legs formed for leaping; many species with functionable wings. Stridulate by rubbing together the base of the wing covers. The omnivorous **house c.** is sometimes a nuisance in kitchens. The male cricket has spade-like front legs, and digs long tunnels in damp soil; it is occasionally injurious to root crops.



Cricket

2) English national summer game played with bats, balls, and wickets between 2 teams of 11. The batsman defends the wicket, which the bowler endeavours to hit with the ball. The game is decided by the runs scored.



Cricket: the Field

A) Third Man F) Wicket Keeper  
B) Third Slip G) Point  
C) Second Slip H) Cover-Point  
D) First Slip J) Mid-Off  
E) Long Leg K) Mid-On  
L) Bowler

**Crieff**, police burgh, S. Perthsh., Scotland, on Riv. Earn; pop., 5,350; summer resort; 3½ m. S. is *Drummond Castle* (E. of Ancaster).

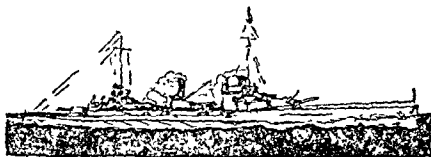
**Criffel**, hill (1,866 ft.), Kirkcudbrightsh., Scotland.

**Crime**, offence committed in violation of

**Crueger, Johannes** (1598-1662), Ger. organist; composed chorale: *Now Thank We All Our God*.

**Cruikshank, Geo.** (1792-1878), Eng. artist and caricaturist; illustrated works by Dickens, Ainsworth, Thackeray, etc.; early and ardent supporter of total abstinence.

**Cruiser**, fast warship, chfly. used for protecting trade routes and scouting (light C.); for action in conjunction with main fleet



Cruiser

against enemy cruising force (battle C.); heavy armoured C. proved of little service in World War; now almost obsolete.

**Crusades**, 7 attempts to win Palestine for Eur. Christendom. Summoned by Peter the Hermit, St. Bernard of Clairvaux, and other

preachers, the armies assembled and raised the cross: 1) Crusade of 1096-99, foundation of kingd. of Jerusalem. 2) 1147-49, unsuccessful. 3) 1189-92, Acre capt. by Richard I of Eng.; Frederick Barbarossa drowned. 4) 1202-04, Latin empire in Constantinople. 5) 1228-29, Emp. Frederick II obt. Jerusalem by treaty (lost permanently in 1244). 6, 7) 1248 and 1270, under Louis IX of Fr., unsuccessful.



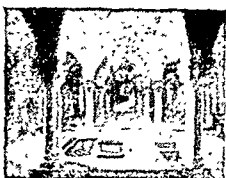
Crusaders

**Crustacea**, the class of invertebrate animals which includes the crabs, lobsters, shrimps, prawns, and barnacles.

**Crusted**, term used of wine, partic. of port; filmy deposit of tartrates; regarded as measure of age.

**Crux**, a cross; hence, a difficulty, puzzle, problem. **C. Australis**, the *Southern Cross*, cruciform constell. of 4 bright stars; S. celest. pole is slightly N. of pt. abt. halfway btw. north-south axis of C.A. and star Achernar (q.v.); see PL., ASTRONOMY, S.C.H., D.

**Cryolite**, a fluoride of sodium and aluminium found in Greenland; much used in preparation of aluminium, and of soda as a by-product.



Crypt

**Crypt**, (archit.) vault under the altar, sometimes under the whole of a church or (esp.) of a cathedral.

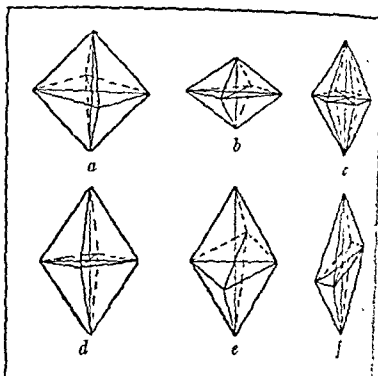
**Cryptogams**, flowerless plants, e.g., fungi, algae, mosses, ferns.

**Cryptorchism**, condition in wh. there is retention of the testicles in the abdomen or inguinal canal.

**Crystalline rocks**, granite, marble, etc. in wh. the crystals or particles form a solid mass and are not separate grains or fragments.

**Crystal Palace**, Sydenham, London, glass and iron structure, 1,600 ft. long, designed by Sir J. Paxton; orig. Great Hall of (1851) exhibition, Hyde Park; moved to pres. site 1854; great organ; used for classified exhib. of sculpt. and archit., concerts, dog shows, etc.

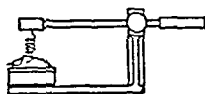
**Crystal**, 1) body of definite chem. composition, of regular shape bounded by a certain number of smooth and symmetric



Forms of Crystals

disposed plane surfaces, and possessing definite internal structure and properties; 2) particles (atoms) are so arrgd. that any fragment, large or small, is composed of blocks of the same shape as the parent crystal itself. Acc. to kind and number of axes and planes of symmetry there are 7 possible groups (or systems) of C. a) *Cubic System*, 3 axes of equal length at rt. angles to each other; b) *Tetragonal S.*, 2 axes of equal length and at right angles to each other, with a 3rd axis also at rt. angles but of a different length; c) *Rhombohedral S.*, 3 axes of equal length intersecting each other every 60°, with a 4th main axis at rt. angles and of a diff. length; d) *Rhombohedral S.*, 3 axes of diff. lengths at rt. angles to each other; e) *Monoclinic S.*, 2 axes of diff. lengths intersecting each other at an oblique angle with a 3rd axis at rt. angles; f) *Triclinic S.*, 3 axes of diff. lengths intersecting each other at oblique angles. See also X-RAYS. Crystals are formed through the separation of bodies from solution by evap. or cooling of saturated solutions, when molten substances solidify on cooling; by condensation of vapours of solid bodies (sublimation).

(Glass) **English c.**, glass composed of lead, potash, and silica, used for cut-glass, as high refractive index gives brilliance. **C. detector**, for wireless reception, wire lightly touching conducting crystal (e.g., galena); rectifies waves received so that they become audible in ear-phones.



Crystal Detector

**Cs**, (chem.) symbol of caesium.

**C.S.A.**, abbr. Confederate States 1) of America or 2) Army (U.S.A.).

**C.S.I.**, abbr. Companion, Order of Star of India.

**C.S.N.**, abbr. Confederate States Navy (U.S.A.).

**C.S.S.R.**, abbr. *Congregatio Sanctissimi Redemptoris* (Lat.), the Redemptorist Fathers.

**Ct.**, abbr. 1) *centum* (Lat.), 100; 2) carat.

**C.T.C.**, abbr. Cyclists' Touring Club.

**Ctenophora**, or comb jellyfish, generally obular in shape, transparent, with longaments armed with stinging cells; some, such as the Girdle of Venus, are phosphorescent.

**Ctesiphon**, anc. city, Mesopotamia (Iraq), 25 m. S.E. Bagdad, on E. bank River Tigris, opp. Seleucia, which it eclipsed as cap. of W. Asia after A.D. 165; declined after removal of cap. to Bagdad. Battle of Ctesiphon, Nov. 21st, 1915, betw. British, under Gen. Townshend, and Turks (limit of 1st Brit. advance).

**cti.**, abbr. cental.

**Cu**, (chem.) symbol of copper (*cuprum*).

**Cuba**, largest isl. of Greater Antilles, W. Indies; 44,164 sq. m.; pop., 1,000,000 (2,500,000 whites); fertile country; tropical clim.; sugar, coffee, and tobacco plantations; copper and iron mines; manu. and exports: metals, cigars, and fruit products; cap., *Havana*. Span. colony, 1492-1898; republic under U.S. supervision since 1901.



Cuba, Arms

**Cube**, geometrically and crystallographically, a body surrounded by 6 squares; cubic contents equals third power of the length of edge, i.e., cubic cont. of solid fig. 2 ft. sq.  $2 \times 2 \times 2 = 8$  cubic feet. **C. root**, number which, multiplied into itself and then into product, produces a certain cube; e.g., the cube root of 27 ( $3 \times 3 \times 3 = 27$ ). **Cubeb**, tailed pepper; dried full-grown, ripe fruits of a plant indigenous to Malay ship; contains a volatile oil; used in med. as a urinary antiseptic or stimulating expectorant.

**Cubic**, relating to a cube (q.v.); in the name of a die; **C. equation** contains the unknown factor in the 3rd power ( $x^3$ ). **C.**

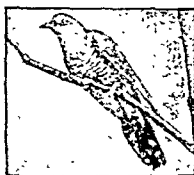
**measure**, measure of volume; e.g., cube with sides each 1 ft. square = 1 cu. ft.

**Cubism**, art movement, started c. 1910 by Picasso and Braque, in revolt against representational art, especially Impressionism, its object being to convey ideas through abstract forms based on architecture and three-dimensional geometry; claiming, as the antithesis of Romanticism and Realism, to be a new classicism.

**Cubit**, anc. Hebr. linear meas., as taken from elbow to tip of middle finger; 18 in. (2 spans).

**Cú Chulainn**, mythical Ir. hero, son and incarnation of Sun-God, Lug; defended Ulster, single-handed, from the hosts of Con-nacht; slain by Lugaid, son of Cu-Roi MacDaire of Munster.

**Cuckoo**, migratory bird, deriving its name from its peculiar call. Distribtd. over Eur. and N. Asia; fre-



Cuckoo

quents woods, lays its eggs in nests of other birds. Eur. species, grey and white with black bars, resembles hawk.

**Hawk c.**, Asiatic species, native to India, similar to sparrow-hawk.

**Crested c.**, named after its crested head; varieties found in Africa and India. **Great spotted c.**, native to S.W. Eur. and Asia Minor, migrating to Africa. **C. pint**, plant of arum family, also known as *lords and ladies*, *wake-robin*; common in woods and fields of Gt. Britain. **C. spit**, frothy secretion produced on plants by larvae of spittle insects or *frog-hoppers* (*Cercopidae*).

**Cu. cm.**, abbr. cubic centimetres.

**Cucullus non facit monachum** (Lat.), the cowl does not make the monk; i.e., one should not attach too much importance to outward appearances.



Cucumber

**Cucumber**, the fruit of a vine (*Cucumis sativus*) cultivated as a salad or for pickling.

**Cudbear**, purple dye made from lichens; name derived from Cuthbert Gordon, who patented the dye in 18th century.

**Cuddesdon**, vil., Oxon, on Riv. Thames, 6 m. S.E. Oxford; theol. college.

**Cudweed**, *Gnaphalium*, plant of order Compositae, growing wild in temperate regions.

**Cue**, 1) closing words of actor's speech as signal for another actor's entry or speech; any signal for action. 2) (In billiards, etc.) Tapering stick with wh. balls are struck, usu. having cork tip.

**Cui bono?** (Lat.: To whose advantage is it?) Maxim in criminology to the effect that

public law. **C. and Punishment**, novel by Dostoevsky (1866).

**Crimea** (Russian, Krym), Soviet repub. on penins. of same name, betw. Black Sea and Sea of Azov, joined to mainland by Perekop Isthmus; 9,780 sq. m.; pop., 714,100 (Russians, 42.2%, Mohammedan Crim. Tartars, 25.1%); many summer bathing resorts; salt wastes in N.W. and lakes cover four-fifths of penins.; *Yaila-dagh Mtns.* with subtrop. veget. in S. and S.E., pines, cypresses, palms, fruit-trees (apricots, peaches, figs, olives, lemons), vineyards, tobacco; cap., *Simferopol*.

**Crimean War**, 1853-56, undertaken in defence of Turkey against Russia by Eng., Fr., Aus., and Sardinia. Resulted in victory of the allies and the Peace of Paris (1856), neutralizing Danube and Black Sea and depriving Russia of her Danubian provinces.

**Criminal Appeal, Court of**, Eng. court of law, establd. 1907, before which date no appeal could be made from a jury's verdict on a criminal trial; composed of Lord Chief Justice and all the judges of the King's Bench Division, not more than three or five of whom usually sit; a person convicted on indictment may apply for leave to appeal to it agst. his conviction on a question of law or of fact, and in certain cases agst. his sentence, if this is not one fixed by law.

**Crinan Canal**, canal (9 m., 15 locks), Argyllsh., Scotland, across neck of penins. of Kintyre from Loch Gilp to Sound of Jura; opened 1801.

**Crinoidea**, (zool.) name of a group of sea-urchins, members of family *Echinodermata* (q.v.).

**Crinoline**, 1) stiff material woven with horsehair. 2) Frame or hoop worn by women (esp. in mid. 19th cent.) to make the skirt stand out.

**Crinum**, tropical lily-like plant, with handsome red or white flowers.

**Cripplegate**, ward of City of London, divided into C. *Within* and C. *Without*; name (prob. derived from A.-S. *crepel*, an underground passage) of a City gate in N. wall, demolished 1760. John Milton lived near by and is buried in St. Giles's Church, Cripplegate.

**Crisana**, prov. W. Rumania; 8,038 sq.m.; pop., 1,317,000.

**Crisis**, (med.) a sudden fall of body temperature; popularly regarded as the turning-point of an illness.

**Crispi**, Francesco (1819-1901), It. statesm.; Pr. Min. 1887-91, 1893-96.

**Crispin**, St., Martyr, c. 286, patr. St. of shoemakers; day Oct. 25th.

**Cristóbal**, Amer. port adjoining Colón, at N. end Panama Canal.

**Criterion**, recognised standard with which anything may be compared in order to test its truth or value.

**Critic**, one who forms and expresses a reasoned judgment on a subject, e.g., on works of art or literature; one whose profession is to write reasoned accounts of books, dramatic and musical performances, etc.

**Critical**, pertaining to criticism, censorious; (med.) pertaining to a crisis, dangerous; (math.) marking a transition point of a character or property, e.g., critical angle; (phys.) **c. temperature**, temp. above wh. gas cannot be liquefied.

**Criticism**, principles governing methods of a critic; a reasoned judgment. *Higher C.*, name given to modern critical study of Bible. **Textual C.**, criticism and emendation of Biblical or other anc. MSS.

**Crivelli**, Carlo (c. 1430-95), Ital. painter; a primitive (q.v.); *Annunciation* in Nat. Gall., London.

**Croatia and Slavonia**, since 1919 N.W. prov. of Yugoslavia (excludg. Fiume), betw. rivs. Kulpa, Unna, Sava, and Drava to confluence of latter with Danube; 1,682 sq.m.; pop., 2,850,000 (Croats, Serbs, Germans, and Magyars); mountainous region, S. of the Kulpa barren dist. except oak forests and arable land in valleys; cornfields, orchards, and vineyards, mulberry-tree cultivation; cattle-rearing, pig-breeding; cap. *Zagreb*.

**Groce**, Benedetto (1866- ), Ital. philos., identifies concrete philosophy with actual history, and is exclusively concerned with philosophic interpretation of history.

**Crochet**, handwork in silk or cotton thread; meshed patterns are made by means of a hooked needle.

**Crockett**, Sam. Rutherford (1860-1914), Brit. novelist, writer in Scot. dialect and leader of the "Kailyard School"; *The Slickit Minister*, 1893; *Mad Sir Uchtred*, 1894; etc.

**Crocodile**, large aquatic carnivorous reptile, distinguished from the caiman and alligator by the interlocking of the upper teeth with the lower; the 4th lower tooth generally bites into a notch in upper jaw. Under surface of body is devoid of armour plates. About eleven species spread over S. Asia, Africa, Madagascar, N. Australia and trop. Amer.; haunt sandbanks in rivs., where they lie basking in the sun for hours. Reach 12 to 14 ft. in length.

**C. bird**, small plover frequenting banks of rivs. in Africa, where it associates with the crocodiles, walking fear-



Crinoline



Crocodile

lessly over them, picking off insects, ticks, and leeches from their bodies, heads, and jaws.

**Crocus**, large family of spring-flowering bulbous plants; white, yellow, purple flowers; the dried stigmas of *Crocus sativus* yield saffron (*q.v.*).

**Croesus**, proverbial rich Kg. of Lydia (560-546, B.C.). De-feated and dethroned by Cyrus.

**Croft**, William (1678-1727), Eng. composer and organist. *Musica sacra*, a collection of anthems, pub. 1724.

**Croix de guerre**, (Belg.) bronze cross awarded to mem-bers of armed forces mentioned in despatches; also for gallant conduct on the field. Estab. 1915; ribbon: scarlet with three narrow green stripes in centre and one towards either edge; (Fr.) bronze cross, awarded to officers and others of the Fr. or allied navies and armies mentioned in Fr. despatches. Estab. 1915; ribbon: green with narrow vertical red stripes.

**Cromagnon**, rock-shelter in limestone cliff, vall. of Vézère, Dordogne, France, where human skeletons of a tall, possibly negroid, prehist. race, corresponding to Aurignacian Culture (*q.v.*), were discovered in 1868.

**Cromarty**, 1) Scot. co.; see ROSS AND CROMARTY. 2) Parl. bor. and seapt., Ross and Cromarty, Scotland, at entrance to C. Firth; pop., 800; former cap. of Cromarty-shire. **C. Firth**, inlet of Moray Firth, on E. coast Scotland; 18 m. by 2-5 m.; base of Grand Fleet in World War.

**Crome**, J. (1768-1821), Eng. landscape painter and etcher of "Norwich School"; known as "Old Crome"; collectn. of his etchings in Brit. Museum.

**Cromer**, Evelyn Baring, 1st E. (1841-1917), Brit. statesm.; Brit. Controller-Gen. in Egypt, 1879; identified with hist. of Egypt from 1883; auth.: *Modern Egypt*, 1908.

**Cromer**, tn. and seaside resort, Norfolk, Eng.; pop., 4,200.

**Cromlech**, anc. prehistoric structure, consisting of a large flat stone laid as roof across two or more upright stones; a sepulchral monument; also known as *dolmen*.

**Crompton**, Saml. (1753-1827), Eng. cotton operative; invented the *Hall in the Wood* spinning wheel; Parliament granted him £5,000 in 1812, with which he entered business but was unsuccessful. Presented with annuity in 1824.

**Cromwell**, Oliver (1599-1658), Eng. Puritan statesm. and soldier; led Parliam-entary Army in Civil War to restore liberty of Parl., and ordered exec. of Charles I, 1649. Suppressed civil wars in Ireland and Scotland. Became Lord Protector of England, Scotland and Ireland, 1653; fnder. of Eng. supremacy at sea; his *New Model* army

foundation. of mod. Brit. Army. 2) **C., Thom-as**, E. of Essex (c. 1485-1540), Eng. statesm.; Chan-celler of Exchequer, 1533; had charge of suppres-sion of monasteries; Ld. High Chamberlain, 1539; attainted by Parl. for trea-son, and beheaded.

**Cronje**, Piet Arnoldus (c. 1840-1911), Boer gen. in Boer Wars, 1881, 1899; surrendered to Ld. Roberts at Paardeberg, 1900; prisoner in St. Helena until conclusion of peace, 1901.

**Cronos**, **Kronos**, (Gr. myth.; Rom. Saturnus) a Titan, father of Zeus.

**Crookes**, Sir William (1832-1919), Eng. physicist and chem.; invented **C. tube**, an elec. gas discharge tube with very high vacuum, found (accidentally) by Röntgen to emit X-rays. Crookes was 1st to get free electrons (in his tube) and call them "radiant matter."

**Crop**, 1) produce of plants (wheat, fruit). 2) (Ornith.) Reservoir for food formed by a dilation of the gullet of birds at the lower end of the neck.

**Croquet**, a lawn game; wooden balls are hit with long-handled mallets through wire hoops and against wooden posts. The player whose ball first passes through the hoops and strikes the post is the winner.

**Crosby Hall**, orig. part of man-sion built in 15th cent. by Sir John Crosby on E. side of Bishopsgate (*q.v.*), the re-mainder of wh. was destroyed in Great Fire (1666); home of Sir Thomas More (1518-23). Re-moved 1908 and re-erected in Cheyne Walk, Chelsea. Now clubhouse and hotel of Brit. Federation of University Women.

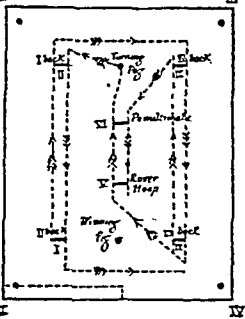
**Cross**, very early sacred and mystic symbol, commonest pre-Christian forms being **Tau cross** and **Swastika** (or fylfot); esp. emblem of the Christian relig., first openly used in time of Constantine, adopted in various forms by different Churches, also by Orders of Knighthood. **Latin c.**, lower limb longer than others; **Greek c.**, 4 equal arms; **St. Andrew's c.**, diagonal like letter X; **St. Anthony's c.**, a Tau cross (like letter T); **Maltese c.**, 8 points as emblem of Knights of Malta (see HOSPITALERS), white on black ground; **St. George's c.** (Eng.), red on



Crocus



Cromwell



Croquet

white ground; **St. Andrew's c.** (Scotland), diagonal, white on blue; **St. Patrick's c.** (Ireland), diag., red on white. *See also* CRUCIFIX and various *Orders of Knighthood*. **Exaltation of the C.**, Christian feast (Sept. 14th) in commem. of the recovery of the True Cross by Emp. Heraclius (629), after its capture by the Persians.

**Invention of the C.**, Christian festival, May 3rd; commem. the discovery of the True Cross by St. Helena, 326.

**Crossbill**, migratory bird of finch family; crossed upper and lower mandibles. Feeds on seeds of larch, pine, spruce-fir; also on berries and insects. An



Crossbill

**Crossing**, (biol.) producing an organism by mating parents of different breeds; mating of individuals of different species or races to produce variation (*hybrid*).

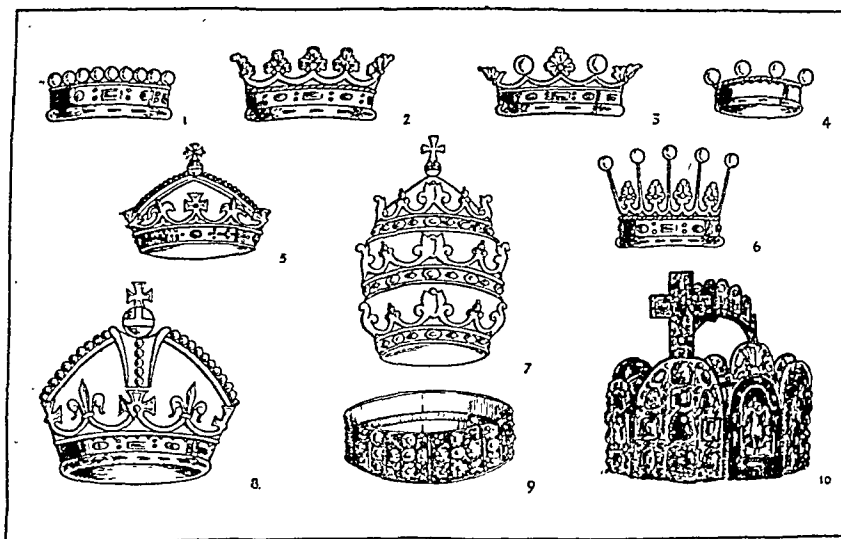
**Crosskill roller**, (agric.) implement with revolving serrated rings, for breaking up heavy land.

**Crossword puzzle**, problem based on a diagram div. into numbered squares into wh. letters of words have to be inserted, after having been discov. by means of the clues given.

**Crotch**, William (1775-1847), Eng. composer and organist; auth.: *Styles of Music of All Ages*, 1807-18.

**Crotchet**, (mus.) note having half the time-value of a minim (*q.v.*).

**Croton**, (bot.) genus of strong-scented plants of order *Euphorbiaceae*, found in sub-

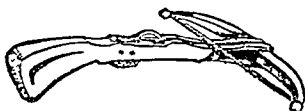


Crowns and Coronets

1) Viscount's Coronet, 2) Duke's Coronet, 3) Earl's Coronet, 4) Baron's Coronet, 5) Coronet of Prince of Wales, 6) Marquess's Coronet, 7) Papal Tiara, 8) English Royal Crown, 9) Iron Crown of Lombardy, 10) Charlemagne's Crown

autumn and winter visitor to England, often arriving in large flocks.

**Cross-bow**, **arbalist** (Lat. *arcubalista*), old missile weapon, cons. of a strung bow mounted on a shaft with a groove for the quarrel (*q.v.*).



Crossbow

**Cross-country race**, from point to point across country, not on a running track.

**Cross Fell**, Cumb., Eng.; highest summit of Pennine Chain; alt., 2,930 ft.

**Cross-head**, (engin.) cross-piece at outer end of piston rod of steam engine, etc.; ends are guided in straight slots, the connecting rod being pivoted in the middle C.-head.

trop. regions. **C. oil**, obtnd. from the seeds, is used in med. as a strong purgative.

**Croton Lake Dam**, C. Watershed, N. Y. State, U.S.A.; N.Y. City water supply; 297 ft. high; storage capacity: 33,815 mill. gallons (1905).

**Crownland**, **Crown Land**, one of the 17 provs. into which Austria was divided before the World War, *viz.*: Up. and Low. Austr., Carinthia, Salzburg, Styria, Tyrol, Vorarlberg (wh. partly survive as *Länder* of the Austr. Repub.), and Bohemia, Bukovina, Carniola, Dalmatia, Galicia, Gorz-Gradisca, Istria, Moravia, Silesia, Trieste.

**Croup**, (med.) disease of children, characterised by harsh cough and difficulty in breathing; may be due to spasm in muscles of larynx or to diphtheria.

**Croupier**, assistant at gaming tables who rakes in losers' stakes, pays out gains, etc.

**Croûte**, slice of fried bread on wh. small birds and entrées are dished.

**Croûtons**, small squares of fried bread, served with soup.

**Crow**, member of the family *Corvidae*, wh. includes, for the most part, birds of black or sombre plumage, such as hooded and carrion C., rook, jackdaw, raven; but members of brighter plumage are the various species of jays and magpies (*qq.v.*).

**Crowbar**, long iron bar with curved end; enables great leverage to be exerted when curved end can be introd., e.g., betw. ground and heavy object.

**Crowberry**, *Empetrum nigrum*, small heath-like shrub; grows in N. of Eng.; black berries, largely eaten by moor-fowl.

**Crowborough**, vil., Sussex, 3½ m. S.W. Tunbridge Wells; pop., 6,000; *C. Beacon*, 800 feet.

**Crowfoot**, name of a number of plants of buttercup class. See RANUNCULUS.

**Crowland**, **Croyland**, market tn., Lincs, Eng.; pop. 2,700; Benedictine abbey fndd. by King Aethelbald, 716; plundered by Danes, 870; burnt, 1091; rebuilt, 1113 and later; N. aisle (restored) now parish church.

**Crown**, 1) symbol of royalty, or (anc. Rome) reward of special merit; early form a fillet or circlet, plain or decorated. Eng. crown at Norman Conquest, a gold circlet set with pearls; later a radiated diadem; present coronation crown was made for Charles II. The earliest used crown was the tiara (*q.v.*) of the Parthian kings. See also CORONET; IRON CROWN. 2) (Numis.) Orig. Eng. gold coin of 16th cent.; later silver coin equiv. to 5s. **C. colony**, Brit. colony not enjoying self-government and controlled by Crown through Colonial Office. **C. glass**, optical glass composed of lime, soda, potash, and silica; used for lenses for producing achromatic combinations. **C. land**, 1) land belonging to Brit. Crown or sovereign, revenues of wh. were surrendd. to the State in return for a civil list in reign of Geo. III. 2) See CROWNLAND. **C. of Belgium**, **Order of**, Belg. order in five classes; fndd. 1897; ribbon: purple-brown. **C. of India**, **Imperial Order of**, Brit. order conferred upon wives, or other female relatives, of princes, viceroys, governors-general, or governors of India; fndd. 1878; badge is hung from bow of blue watered ribbon edged with white. **C. of Italy**, **Order of**, Italian order fndd. 1868, in five classes; scarlet watered ribbon with broad white centr. stripe. **C. prince**, heir apparent to a reigning kg. or emp. (exc. in Gt. Brit., cf. PRINCE OF WALES).



Carrion Crow

**Crow's nest**, position on ship's mast for look-out purposes; often in telephonic communication with bridge.

**Croydon**, co. bor., Surrey, residential part Greater London; airt.; pop., 233,100.

**Croyland**: see CROWLAND.

**Crozier**: see PASTORAL STAFF.

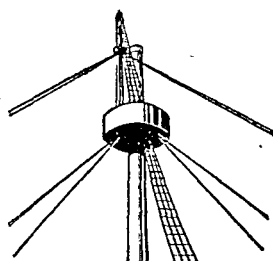
**C.R.P.**, abbr.

*Calendarium Rotulorum Patentium* (Calendar of the Patent Rolls; see ROLLS).

**Crucible**, vessel of fire-clay, graphite, silica, alumina, magnesia, or other refractory substance, for heating substances to high temp., partic. for melting metals, glass, etc.

**C. steel**, steel refined by re-melting in small pots, often with addition of suitable reagents for obtaining required composition.

**Cruciferae**, a very large order of plants, flowers of wh. are cruciform with four petals



Crow's Nest



Crucifixion, after Durer

placed cross-ways. Many are cultivated as vegetables: cabbage, turnips, cress, sea-kale, radish, etc.

**Crucifix**, representation in art of Christ upon the Cross.

**Cruden**, Alexander (1701-70), Brit. book-seller and auth.; *Concordance of the Holy Scriptures*, 1737.

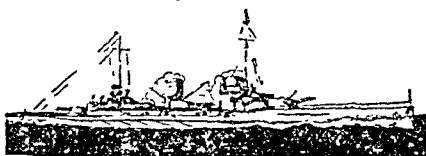
**Crude oil**: see PETROLEUM. **C. o. motor**: see DIESEL MOTOR; INTERNAL COMBUSTION ENGINE.



**Crueger, Johannes** (1598-1662), Ger. organist; composed chorale: *Now Thank We All Our God*.

**Cruikshank, Geo.** (1792-1878), Eng. artist and caricaturist; illustrated works by Dickens, Ainsworth, Thackeray, etc.; early and ardent supporter of total abstinence.

**Cruiser**, fast warship, chfly. used for protecting trade routes and scouting (light C.); for action in conjunction with main fleet



Cruiser

against enemy cruising force (battle C.); heavy armoured C. proved of little service in World War; now almost obsolete.

**Crusades**, 7 attempts to win Palestine for Eur. Christendom. Summoned by Peter the Hermit, St. Bernard of Clairvaux, and other preachers, the armies assembled and raised the cross: 1) Crusade of 1096-99, foundation of kingd. of Jerusalem. 2) 1147-49, unsuccessful. 3) 1189-92, Acre capt. by Richard I of Eng.; Frederick Barbarossa drowned. 4) 1202-04, Latin empire in Constantinople. 5) 1228-29, Emp. Frederick II obt. Jerusalem by treaty (lost permanently in 1244). 6, 7) 1248 and 1270, under Louis IX of Fr., unsuccessful.



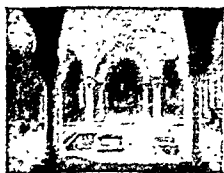
Crusaders

**Crustacea**, the class of invertebrate animals which includes the crabs, lobsters, shrimps, prawns, and barnacles.

**Crusted**, term used of wine, partic. of port; filmy deposit of tartrates; regarded as measure of age.

**CruX**, a cross; hence, a difficulty, puzzle, problem. **C. Australis**, the *Southern Cross*, cruciform constell. of 4 bright stars; S. celest. pole is slightly N. of pt. abt. halfway btw. north-south axis of C.A. and star Achernar (q.v.); see PL., ASTRONOMY, S.C.H., D.

**Cryolite**, a fluoride of sodium and aluminium found in Greenland; much used in preparation of aluminium, and of soda as a by-product.



Crypt

**Crypt**, (archit.) vault under the altar, sometimes under the whole of a church or (esp.) of a cathedral.

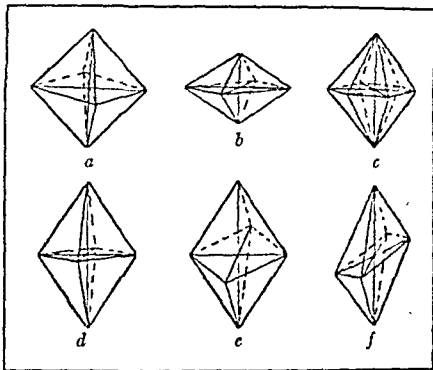
**Cryptogams**, flowerless plants, c.g., fungi, algae, mosses, ferns.

**Cryptorchism**, condition in wh. there is retention of the testicles in the abdomen or inguinal canal.

**Crystalline rocks**, granite, marble, etc. in wh. the crystals or particles form a solid mass and are not separate grains or fragments.

**Crystal Palace**, Sydenham, London, glass and iron structure, 1,600 ft. long, designed by Sir J. Paxton; orig. Great Hall of (1851) exhibition, Hyde Park; moved to pres. site, 1854; great organ; used for classified exhib. of sculpt. and archit., concerts, dog shows, etc.

**Crystal**, 1) body of definite chem. composition, of regular shape bounded by a certain number of smooth and symmetrically

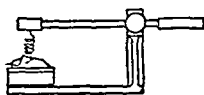


Forms of Crystals

disposed plane surfaces, and possessing definite internal structure and properties; its particles (atoms) are so arrgd. that every fragment, large or small, is composed of blocks of the same shape as the perfect crystal itself. Acc. to kind and number of axes and planes of symmetry there are 6 possible groups (or systems) of C. a) *Regular System*, 3 axes of equal length and at rt. angles to each other; b) *Tetragonal S.*, 2 axes of equal length and at right angles to each other, with a 3rd axis also at rt. angles but of a different length; c) *Hexagonal S.*, 3 axes of equal length intersecting each other every 60°, with a 4th main axis at rt. angles and of a diff. length; d) *Rhombit S.*, 3 axes of diff. lengths at rt. angles to each other; e) *Monoclinic S.*, 2 axes of diff. lengths intersecting each other at an oblique angle, with a 3rd axis at rt. angles; f) *Triclinic S.*, 3 axes of diff. lengths intersecting each other at oblique angles. See also X-RAYS. Crystals are formed through the separation of bodies from solution by evap. or cooling of saturated solutions, when molten substances solidify on cooling; by condensation of vapours of solid bodies (sublimation). 2)

(Glass) **English c.**, glass composed of lead, potash, and silica, used for cut-glass, as high refractive index gives brilliance. **C. detector**, for wireless reception, wire lightly touching conducting crystal (e.g., galena); rectifies waves received so that they become audible in ear-phones.

**Cs**, (chem.) symbol of caesium.



Crystal Detector

**C.S.A.**, abbr. Confederate States 1) of America or 2) Army (U.S.A.).

**C.S.I.**, abbr. Companion, Order of Star of India.

**C.S.N.**, abbr. Confederate States Navy (U.S.A.).

**C.S.S.R.**, abbr. *Congregatio Sanctissimi Redemptoris* (Lat.), the Redemptorist Fathers.

**Ct.**, abbr. 1) *centum* (Lat.), 100; 2) carat.

**Ct.C.**, abbr. Cyclists' Touring Club.

**Ctenophora**, or comb jellyfish, generally globular in shape, transparent, with long filaments armed with stinging cells; some, such as the Girdle of Venus, are phosphorescent.

**Ctesiphon**, anc. city, Mesopotamia (Iraq), 25 m. S.E. Bagdad, on E. bank Riv. Tigris, opp. Seleucia, which it eclipsed as cap. of W. Asia after A.D. 165; declined after removal of cap. to Bagdad. Battle of Ctesiphon, Nov. 21st, 1915, betw. British, under Gen. Townshend, and Turks (limit of first Brit. advance).

**ctl.**, abbr. cental.

**Cu**, (chem.) symbol of copper (*cuprum*).

**Cuba**, largest isl. of Greater Antilles, W. Indies; 44,164 sq. m.; pop., 3,600,000 (2,500,000 whites); hilly country; tropical clim.; sugar, coffee, and tobacco plantations; copper and iron mining; manuf. and exports: metals, hats, cigars, and fruit products; cap., *Havana*. Span. colony, 1492-1898; republic under U.S. supervision since 1901.



Cuba, Arms

**Cube**, geometrically and crystallographically, a body surrounded by 6 squares; cubic contents equals third power of the length of the edge, i.e., cubic cont. of solid fig. 2 ft. sq. is  $2 \times 2 \times 2 = 8$  cubic feet. **C. root**, number which, multiplied into itself and then into the product, produces a certain cube; e.g., 3 is the cube root of 27 ( $3 \times 3 \times 3 = 27$ ).

**Cubebs**, tailed pepper; dried full-grown, unripe fruits of a plant indigenous to Malay Archip.; contains a volatile oil; used in med. as a urinary antiseptic or stimulating expectorant.

**Cubic**, relating to a cube (*g.c.*); in the form of a die; **C. equation** contains the unknown factor in the 3rd power ( $x^3$ ). **C.**

**measure**, measure of volume; e.g., cube with sides each 1 ft. square = 1 cu. ft.

**Cubism**, art movement, started c. 1910 by Picasso and Braque, in revolt against representational art, especially Impressionism, its object being to convey ideas through abstract forms based on architecture and three-dimensional geometry; claiming, as the antithesis of Romanticism and Realism, to be a new classicism.

**Cubit**, anc. Hebr. linear meas., as taken from elbow to tip of middle finger; 18 in. (2 spans).

**Cú Chulainn**, mythical Ir. hero, son and incarnation of Sun-God, Lug; defended Ulster, single-handed, from the hosts of Con-nacht; slain by Lugaid, son of Cu-Roi MacDaire of Munster.

**Cuckoo**, migratory bird, deriving its name from its peculiar call. Distribtd. over

Eur. and N. Asia; frequents woods, lays its eggs in nests of other birds. Eur. species, grey and white with black bars, resembles hawk. **Hawk c.**, Asiatic species, native to India, similar to sparrow-hawk. **Crested**



Cuckoo

**c.**, named after its crested head; varieties fnd. in Africa and India. **Great spotted c.**, native to S.W. Eur. and Asia Minor, migrating to Africa. **C. pint**, plant of arum family, also known as *lords and ladies*, *wake-robin*; common in woods and fields of Gt. Britain. **C. spit**, frothy secretion produced on plants by larvæ of spittle insects or *frog-hoppers* (*Cercopidae*).

**Cu. cm.**, abbr. cubic centimetres.

**Cucullus non facit monachum** (Lat.), the cloak does not make the monk; i.e., one should not attach too much importance to outward appearances.

**Cucumber**, the fruit of a vine (*Cucumis sativus*) cultivated as a salad or for pickling.



**Cudbear**, purple dye made from lichens; name derived from Cuthbert Gordon, who patented the dye in 18th century.

**Cuddesdon**, vil., Oxon, on Riv. Thames, 6 m. S.E. Oxford; theol. college.

**Cudweed**, *Gnaphalium*, plant of order Compositae, growing wild in temperate regions.

**Cue**, 1) closing words of actor's speech as signal for another actor's entry or speech; any signal for action. 2) (In billiards, etc.) Tapering stick with wh. balls are struck, usu. having cork tip.

**Cui bono?** (Lat.: To whose advantage is it?) Maxim in criminology to the effect that

the person who stands to benefit from a crime is probably its author; also used in the sense "What's the good of it?"

**Cuirass**, steel or leather body-armour, worn by heavy cavalry (cuirassiers).

**Cuius regio, eius religio** (Lat.), Of whom the land, of him the religion; legal maxim that the ruler of a country determines the religion of his subjects; put into effect in Germany by the Treaty of Augsburg, 1555.

**Culdees**, monastic order wh. arose in Ireland, 8th cent., and fl. there and in Scotland till absorbed by Augustinians and others in 14th cent.; a branch still existing in Armagh early 16th century.

**Culebra**, watershed betw. Atlantic and Pacific oceans, on isthmus of Panama; cut by Panama Canal.

**Cullinan**, Sir Thomas (1862- ), Brit. mine-owner; disc. Premier Diamond Mine, S. Africa; *Cullinan Diamond* (1905), 3,025 $\frac{3}{4}$  carats, more than 3 times larger than any other known diamond, cut into 9 large and many small stones, 1908.

**Culloden**, dist., Inverness-sh., Scot.; battle of **C.**, 1746; defeat of Jacobite rebels under Young Pretender.

**Culm**, 1) (bot.) jointed, hollow stem of grasses. 2) (Tech.) Slack, dust of anthracite coal. 3) (Geol.) Form of shale or sandstone.

**Culmination**, highest point attainable or attained; (astron.) highest point reached by heavenly body; zenith (*q.v.*).

**Cult** (Lat., "worship"), 1) system of relig. belief and observance; 2) homage or devoted attention to a person, idea, or thing; a fad or craze.

**Cultivator**, (agric.) implement on wheels used to break up furrows and prepare land for sowing.

**Culture**, 1) (archaeol.) phase or period of human development as exemplified by prehist. industries (*q.v.*). 2) (Bacteriol.) Growth or cultivation of micro-organisms in an artificial medium, e.g., bouillon, milk, gelatine, agar, etc.

**Culverin**, (mil.) cannon of 16th cent., largest gun then used; firing 15 - 20 lb. shot.

**Cumae**, oldest Gr. colony in Italy, 12 m. W. of Naples; became Rom. 334 B.C.; home of the Cumaean Sybil.

**Cumb.**, abbr. Cumberland.

**Cumberland**, Dukes of, 1) **William Augustus** (1721-65) Eng. gen., s. of George II. 2) **Ernest Augustus** (1771-1851), Kg. of Hanover 1837, annulled constitution; see SEVEN OF GÖTTINGEN. 3) **Ernest Augustus** (1845-1923), s. of Geo. V. of H. and g.-s. of above; excluded, 1885, from Brunswick succession because he declined to give up Hanover, wh. he resigned in 1913.

**Cumberland**, co. in N.W. Eng., bordering

on Scot. (Solway Firth); flat in W. and N.W., mountainous in S.E., where it forms part of *English Lake District*. Area 968,598 acres; pop., 262,900. Highest peaks are: *Scafell Pike* (3,210 ft.: highest in England), *Scafell* (3,162 ft.), *Helvellyn* (3,118 ft.: partly in Westmor.), and *Skiddaw* (3,054 ft.). Principal lakes: *Ullswater*, *Derwentwater*. Climate wet (at *Scalhwate* 130 in. per annum); cattle- and sheep-breeding; dairy-farming; iron, lead, copper, and coal mines: co. tn., *Carlisle*.

**Cumberland and Westmorland**, (wrestling) style in wh. combatants grasp each other round the body, right arm above, left below opponent's arm; touching ground with any part of the body except feet constitutes a "fall."

**Cumberland Plateau**, W. part of Appalachian system (*q.v.*); extending from Pennsylvania to Alabama, U.S.A., and rising to 4,000 ft.; marble, coal. **C. River**, left trib. of Ohio Riv., Tennessee and Kentucky, U.S.A.; 715 miles.

**Cumbria**, alternative name for Strathclyde (*q.v.*) Name survives in "Cumberland."

**Cumbrian Mountains**, mtns. of Cumberland and Westmorland, Eng. Lake Dist. (*q.v.*); highest peak *Scafell Pike* (3,210 ft.).

**Cum dividend**, (abbr. *cum. div.*), term used in ref. to sale or transf. of securities, indicating that dividend just paid or due is incldd. in purchase price; see EX-DIVIDEND.

**Cum grano salis**, (Lat.) with a grain of salt, applied to a statement that can be accepted only with mental reservations.

**Cummin**, **cumin**, *Cuminum cyminum*, plant of family *Umbelliferae*, native of Egypt; cultivated for its aromatic seeds.

**Cunmor**, vil., Berks, 3 $\frac{1}{2}$  m. S.W. Oxford; Amy Robsart associations.

**Cumont**, Franz Valéry (1868- ), Belg. scholar; auth: *Mysteries of Mithras* (Eng. trans., 1903).

**Cum. pref.**, abbr. cumulative preference (Stock Exchange).

**Cumulo-nimbus**, **cumulus**: see CLOUD.

**Cunard Steamship Company**, Brit. Transatlantic coy., with world-wide connections; "Mauretania," 30,690 tons, held Blue Riband of Atlantic 1907-29; "Berengaria," 52,226 tons. Fndd. as Brit. and N. Amer. Royal Mail Steam Packet Co. (1839) by Samuel Cunard.

**Cunaxa, battle of**, 401 B.C., betw. the younger Cyrus (killed) and Artaxerxes; named after place in Mesopotamia, c. 75 m. N.W. Babylon. See ANABASIS.

**Cuneiform writing**, script formed of wedge-shaped strokes, used by anc. Persians, Medes, Elamites, Armenians, Assyrians, and Babylonians, 1st deciphered by Grotefend (1802); sometimes termed "arrow-head writing."



Culverin

**Cunigunde**, St. (d. c. 1040); consort of Emp. Henry II; said to have safely undergone ordeal by fire to disprove charge of conjugal infidelity.

**Cunningham**, Allan (1784-1842), Scot. poet; trained as stone-mason; employed by sculptor, Chantry, 1814-41; *Traditional Tales of the Peasantry*, 1822; *Songs of Scotland*, 1825.

**Cuno**, Wilhelm, (1876- ) Ger. statesman; director of Hamburg-America Line, 1917; chancellor of Reich, 1922-23.

**Cup**, iced beverage made with wine to wh. are added juice and slices of fruits (oranges, grapes, strawberries), vegetables and herbs (cucumber, juniper, borage, etc.).

**Cupar**, co. tn. and royal burgh, Fife; pop., 4,600.

**Cupellation**, (metall.) operation in separation of gold and silver from base metals; consists in fusion with excess of lead in strongly oxidizing atmosphere; base metals oxidize and dissolve in litharge (lead oxide), which soaks into the absorbent vessel (*cupel*) used, usually shallow dish of boneash.

**Cupid** (Lat.), god of love equiv. to Gr. Eros. See AMOR.

**Cupola**, (archit.) hemispherical structure finishing a roof, e.g., as covering for a belfry, or termination of a dome (q.v.). **C. furnace**, blast furnace used in iron foundries for smelting cast-iron; steel plates, lined with fire-brick.

**Cupping**, (med.) 1) dry c., method of drawing blood to a part by application of *cupping-glasses* (bell-shaped glass containers from wh. most of the air can be exhausted); 2) wet c., method of blood-letting in wh. cupping-glasses are applied to scarified skin.

**Cuprite**, ruby copper, red oxide of copper, occurring naturally and containing abt. 89% copper.

**Curaçao**, Dut. colony (404 sq.m.), West Indies, comprising isls. of *Curaçao* (210 sq. m.; pop., 49,500; cap., *Willemstad*), *Bonaire* (95 sq.m.; pop., 15,700), and *Aruba* (70 sq. m.; pop., 6,100), off N. coast Venezuela; and *Saba* (5 sq.m.; pop., 1,700), *St. Eustatius* (7 sq.m.; pop., 1,000), and S. half of *St. Martin* (17 sq.m.; pop., 2,400), in Leeward Islands (q.v.).

**Curaçao**, sweet liqueur flavoured with orange peel, cinnamon, and mace; deriving name from Isl. of Curaçao, where it was first made.

**Curare**, powerful poison obtained from certain plants of the *Strychnos* family; used by S. Amer. Indians as an arrow-poison; contains the alkaloid *curarine*, used in treatment of tetanus (q.v.).

**Curassow**, group of gallinaceous birds of S. and Centr. America; large, crested bird with strong beak, resembling a turkey.

**Curate**, (eccles.) orig. the incumbent, to whom the *vicar* or *rector* was subordinate; now C. of E. clergyman licensed to assist incum-

bent, more correctly called the **assistant-c.; c.-in-charge**, or **perpetual c.**, one in permanent charge of a parish but not receiving tithes; since 1868 styled "vicar" (q.v.).

**Curator**, custodian, person apptd., usu. by trustees, to superintend organistn. of an estab., esp. of museum or library.

**Curb**, (vet.) swelling on horse's hock. See also KERB.

**Curd**, white cheese made from milk soured naturally or with help of rennet (q.v.); basic ingredient of all cheeses. Used indust. in glazing of cloth or paper. See GALALITH; CASEIN.

**Curé**, designation of a parish priest in France. Cf. CURATE.

**Curette**, surgical instrument for scraping away tissue; used most frequently in the operation of curetting the uterus.

**Curfew**, (Fr. *couvre-feu*) mediaev. practice of intimating by means of a bell that all lights and fires are to be extinguished, as protectn. agst. fire; enforced in Eng. by Wm. I and II (sunset in summer, 8 P.M. in winter). Var. regulations for economising in coal and elect. light during World War were known as **C. orders**.

**Curia Romana**, institn. by wh. the govt. of the Rom. Ch. is carried on, consisting of congregation of cardinals, tribunals and offices.

**Curie**, Pierre (1859-1906), Fr. physicist; began researches into radio-activity, 1898 and disc. polonium, jointly with wife, **Marie** (1867- ), Pol. physicist, *née* Sklovowska. Jointly awarded Nobel Prize (Chem.), 1903.

**Curiosa felicitas** (Lat.), careful felicity, happiness in literary expression, due to deliberate care; phrase orig. used by Petronius with reference to the style of Horace.

**Curlew**, handsome, slender-legged, long-billed bird of sub-family *Numeniinac*, breeding on high moorlands in Gt. Britain, and repairing to the seashore with their families in winter, where they mingle with flocks of their own species that have come from N. Europe. Widely distribtd. over N. and Centr. Eur. and N. Asia, migrating in winter to Mediterranean area, Africa, S. Asia, and Japan.

**Curling**, Scot. game played on the ice; round flat stones (34-44 lb.) fitted with a handle are thrown along a "rink" (38 yd.) at a fixed mark (tee).

**Curly kale**, **borecole**, plant of cabbage family with loose, leafy heads; winter vegetable.



Madame Curie



Curlew



Curling Stone

**Curragh, The**, stretch ( $7\frac{1}{2}$  sq.m.) of level country, Co. Kildare, I.F.S.; milit. camp; horse-racing; race-meetings, Apr.-July and Sept.-November. *The Curraghs*, fen country in N. of Isle of Man.

**Currants**, 1) small, black, dried grapes, extensively exported from the Levant; name derived from Corinth, the first place from wh. they were exported; also cultivated in Australia, California, etc. 2) The clustered acidulous fruits, black, white or red, of *Ribes nigrum* and *R. rubrum*, deciduous shrubs cultivated in N. Eur. and America; edible in raw state and when made into pies, jams, jellies, etc. Black C. also used in lozenges and, as an infusion, for colds, coughs, etc.



Currants

**Currency**, general term covering circulating media of exchange: money, cheques, bills of exch., bank-notes, etc. **C. notes**, for £1 and 10 shillings, were issued by Brit. Treasury from 1914 to 1928, when they were consolidated with B. of Eng. note issue. They were legal tender for any amt. until 1920. Early notes sometimes called *Bradburys*, because they carried signature of John Bradbury, Secretary of the Treasury. **C. of a bill**, period a bill of exch. (*q.v.*) has to run before due for payment.

**Current, electric**, consists in a stream of electrons (*q.v.*) moving like a gas betw. the atoms of a metal; or in liquids and gases in the movement of chemical ions (*q.v.*). **Direct c.** always in same direction, essential for charging accumulators and working electro-magnets, better for arcs and motors than **alternating c.**, which changes direction rapidly (usu. 50 periods per sec.) and is better for long-distance transmission operating wireless sets. **C. limiter**, elec. instrument fixed to domestic supply, wh. prevents user taking more than a certain agreed current. When more than this is taken flickering occurs. **Current account**, (banking) acct. kept at bank by an individ. or firm, etc., to credit of wh. bank places sums paid in and to debit of wh. it places amts. drawn out by cheque or otherwise. May be withdrawn at any time, thus differing from *Deposit acct.* In U.S.A., city banks must, by law, retain 13% cash agst. current deposits, and country banks 7 per cent.

**Corrente calamo**, (Lat.) with running pen; applied to a fluent, ready writer.

**Curricule**, light, open two-wheeled carriage, drawn by two horses abreast; very popular, early 19th century.

**Curriculum**, orig. a race-course; hence a prescribed course of study or work. **C. vitae** (Lat.), course of life.

**Currie**, Sir Donald (1825-1909), Brit. shipowner; fndd. Castle Line, 1862; took

part in negotiations regarding Kimberley diamond mines, 1877-78.

**Curry**, Indian dish; stew of fowl, fish, or meat in sauce made with **C. powder**, condiment of cayenne pepper, coriander-seed, black pepper, mushroom powder, and cum-in.

**Cursive script**, writing in wh. letters or characters are joined; distinguished from *uncial (q.v.)* and *majuscule (q.v.)* in class. MSS.; hieratic and demotic styles in Egyptn. hieroglyphics.

**Cursor Mundi**, M.E. poem (c. 1320) relating course of the world from creation to doomsday.

**Curtain lectures**, homily by wife to husband, orig. *Mrs. Caudle's C. L.*, by Jerrold (1846). **C. raiser**, short one-act play presented bef. dramatic *pièce de résistance* of the performance.

**Curtius, Marcus**, Rom. legendary hero of 4th cent. B.C.; said to have leapt into chasm formed in Forum by earthquake, to appease gods by sacrifice of Rome's greatest treasure, after wh. the chasm closed. **C., Rufus Quintus** (1st cent. A.D.), Rom. histor. *History of Alexander the Great*.

**Curule chair**, chair of office of a Rom. magistrate (*curule*) of highest rank.

**Curve**, (geom.) any path traced by a point moving continuously as to both position and direction, except at special points of discontinuity; in this wide sense, straight line is merely particular case of curve, though, in narrower sense, the two are usu. distinguished. In general, bend in a street or track, etc.; rly. and racing track curves, raised on the outside.

**Curzon** of Kedleston, George Nathaniel, 1st marq. (1859-1925), Eng. statesm.; in Hse. of Com., 1886-98 (For. Sec., 1895-98); raised to peerage (Irish), 1898; Viceroy of India, 1899-1905; raised to earldom, 1911, and marquessate, 1921; For. Sec., 1919-24



Lord Curzon

**Cusanus**, Nicolaus: see NICHOLAS OF CUSA.

**Cush**, (O.T.) regions of Abyssinia, incl. Nubia and Kordofan; Cushites frequ. in alliance with Egypt and Libya.

**Custard apple**, W. Indian fruit with soft, yellowish pulp.

**Custom**, (in law) unwritten rule wh., being estbd. by long use and consent, has obt'd. legal force.

**Customs duties**, dues payable when certain goods cross a frontier, usu. import D. assessed by value (*ad valorem* D., *q.v.*), weight (specific D.) or number; object of D., protection of home productn. (protective tariff) or incr. of State revenue (revenue tariff); D. now fixed for both purposes; *Safeguarding D.*, imposed in Grt. Brit. since World War, to

protect establ. indus. threatened by unfair competition from abroad; *Key Industry D.* are intended to foster indus. of mil. importance; *see* TRADE POLICY.

**Customs and excise**, portion of Brit. national revenue raised by taxes on imports or exports (customs) or upon home manufacture (excise). Collected by commissioners, with officials at ports, distilleries, etc. **C. tariff**, list of dutiable goods and rates of duty thereon. **C. union**, union of sev. States for customs purposes, e.g., that betw. Luxembourg and Belgium (1921).

**Custos**, (Lat.) guardian, keeper. **C. morum**, guardian of morals, magistrate. **C. rotulorum**, keeper of the rolls.

**Cut**, (text.) measure for yarns; linen = 230 yards; woollen = 300 yards.

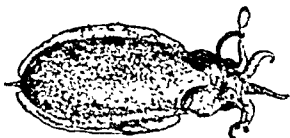
**Cutch**, peninsular Ind. State, W. India States Agency, betw. *Gulf of C.* and the marshy *Runn* or *Rann of C.*, Bombay, India; 7,620 sq.m.; pop., 484,500; interior mountainous and barren; cap., *Bhuj*.

**Cutlet**, slice of meat, gen. from neck, or loin; *see* MEAT, JOINTS OF.

**Cutter**, small sailing ship with one mast; small naval boat.

**Cut-throat competition**, competition betw. firms, esp. those with large overhead costs, wh. results in such severe price-cutting that it endangers them; sometimes to public interest to regulate such services as rlys. through rate regulation; competitors freqtly. come to an agrmt. to prevent cut-throat competition, e.g., in Atlantic shipping services.

**Cuttlefish**, ten-armed Cephalopod of family *Sepiidae*. Eight of the arms surround the mouth, are short, tapering and provided with a double row of suckers. Within the circle, placed



Cuttlefish

on each side, are the two long tentacular arms, which have suckers or hooks grouped on their expanded ends and can be completely withdrawn into special pouches. The common *squid* is typical of the cuttlefish, the different species varying greatly in size from less than an inch to over 50 ft. in length, the latter being the giant *Calamansi* on which the sperm whales feed. World-wide distribution. The *C.* secretes a dark fluid (ink), wh. it can emit in self-defence and wh. is used in the pigment *sepia* (q.v.).

**Cuvier**, Georges, Baron (1766-1832), Fr. zoologist and anatomist; auth: *The Animal Kingdom*, 1817.

**Cuxhaven**, port, Germany, at mouth Riv. Elbe, belonging to Hamburg; pop., 15,000; sea-fishing, bathing.

**Cuyp**, Albert (1695-91), Dut. landscape and animal painter.

**Cuzco**, tin., S.E. Peru; pop., 37,000; many religious buildings; old cap. of the Incas; university.

**C.V.O.**, abbr. Companion, Royal Victorian Order.

**C.W.**, abbr. Canada West.

**Cwt.**, abbr. hundredweight.

**Cyanamides**, derivatives of cyanamide  $NC \cdot NH_2$  (white crystals, readily soluble in water). **Calcium c.**, made by heating calcium carbide (q.v.) in pure nitrogen; is very important as source of ammonia from atmospheric nitrogen, for explosives and manure.

**Cyanic acid**,  $HNCO$ ; very unstable body forming stable salts, the cyanates; made by oxidation of cyanides (q.v.).

**Cyanides**, salts of hydrocyanic acid,  $HCN$ ; gen. resemble corresponding chlorides, but even weak acids, e.g., carbonic acid, decompose most of them with evolution of  $HCN$ . **Potassium cyanide**,  $KCN$ , very poisonous, white, very soluble in water. Made by fusing dry *pot. ferrocyanide*,  $K_4FeC_6N_6$  (see below) with *pot. carbonate*,  $K_2CO_3$ . Used on enormous scale to dissolve gold in ore-dressing (q.v.), the metal being recovered by electrolysis or contact with metallic zinc. **Pot. ferrocyanide,  $K_4FeC_6N_6$ , yellow prussiate of potash, and **Pot. ferricyanide**,  $K_3FeC_6N_6$ , red prussiate of potash, are much less poisonous. Used in making *ferric ferrocyanide*,  $Fe_4(FeC_6N_6)_3$ , prussian blue, and *ferrous ferricyanide*,  $Fe_3(FeC_6N_6)_2$ , Turnbull's blue; important pigments.**

**Platinocyanides** are salts of the corresponding acid  $H_2PtC_6N_4$ . Barium platinocyanide fluoresces brightly with X-rays (q.v.) and is used to make screens for X-ray examination.

**Cyanogen**, comp. of nitrogen and carbon  $C_2N_2$ ; colourless, very poisonous gas; forms acids and salts similar to those of halogens (q.v.), e.g., *Hydrocyanic acid*  $HCN$  (q.v.) and cyanides.

**Cyanosis**, blue tinge of skin and lips indicative of bad circulation of the blood, e.g., in heart disease.

**Cybele**, (Gr. myth.) goddess of fertility (of Asiatic orig.), worshipped as the "Great Mother."

**Cycas**, genus of tropical palm-like trees. A kind of sago is obtained from pith of certain species, such as *Cycas revoluta*.

**Cyclades**, group of c. 60 Gr. isls. in S. Aegean (Amorgos, Andros, Naxos, Paros, Syros, etc.), c. 1,020 sq.m.; pop., 120,710; fruit, vegetables; fishing; shipping; pumice stone quarries; cap., Hermoupolis, on Isl. of Syros.

**Cycladic**, name given to that div. of Aegean civilization (q.v.) which flourished in the Cyclades.

**Cyclamen**, plant of primrose tribe, native

to mountain regions of Centr. Eur. and Medit. Wild variety, or *sow-bread* (*C. europæum*), is fnd. in woods of S. England. Flowers on long stalks vary from white to pink or red; variegated leaves; sweet-scented and used in S. Fr. to make perfume. Many cultivated varieties.

**Cycle**, 1) (astron.) period of time occupied by the regular recurrence of a series of celestial phenomena. **Solar c.**, a revolution of 28 years, at the end of wh. the sun's apparent position returns to the same signs and degrees of the ecliptic (*q.v.*) on the same month and day, so that the days of the months return to the same days of the week, and the same order of leap years and Dominical Letters (*q.v.*) recurs. **Lunar c.**, period of 19 years, at end of wh. the various aspects of the moon agree with those on the same days of the month 19 years before. The product of these two cycles, *i.e.*, 532 years, is called the **Paschal c.**, because it fixes the date of Easter (*q.v.*). 2) (Phys.) Series of recurring operations. 3) (Lit.) Group or series of romances in verse or prose having a central theme, *e.g.*, *Homeric Cycle*. 4) A bicycle (*q.v.*). **C. racing**, racing on bicycles on track or road; records: (unpaced, standing start), 1 mile (F. Southall, 1929, Herne Hill), 2 min. 2½ sec.; 1 hour (O. Egg, 1914, Paris), 27 m. 870 yds.; (motor paced) 1 hour (Vanderstuyft, 1928, Montlhéry), 76 m. 504 yds.

**Cycloid**, (math.) curve made by a point in the plane of a circle when it is rolled in a straight line until it has completed a circumference.



Cycloid

### C. pendulum

swings on a thread and describes a cycloid, duration of swing independent of angle of deflection.

**Cyclone**, storm of wind rotating with violence round a calm centre; tornado. **Cyclonic centre**, warm place of lowest atmospheric pressure surrounded by anti-clock-wise winds. **Anti-cyclonic centre**, cold place of highest atmos. pressure surrounded by clock-wise winds.

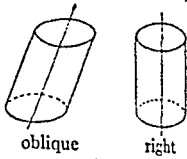
**Cyclops**, one-eyed giant of Gr. legend; see POLYPHEMUS. **Cyclopean walls**, walls made of huge blocks of stone without mortar; *e.g.*, at Tiryns, Greece.

**Cyclorama**, theatrical scenic device consisting of semicircular curtain of white material hung without folds around back of stage. Sky and distance effects produced by coloured lights; moving clouds by projection of photos of clouds.

**Cyclostomata**, lancelets; primitive creatures distinguished from the higher classes of vertebrates by the complete absence of jaws, single aperture to the nostrils, rasping

tongue, and the backbone represented by a primitive notochord; include lampreys, hag-fishes, and lancelets.

**Cylinder**, (geom.) solid figure prod. by rotation of a rectangle about one of its sides, wh. is *axis* of cylinder. In engin., tube in wh. piston of an engine slides; closed at one end by *C. head*, at the other by *C. cover*, thr. wh. *piston rod* (*q.v.*) passes.



Cylinder

**Cymbals**, (mus.) percussive instr.; two metal plates struck one against the other.

**Cynics**, school of anc. Gr. philosop., deriving their name from *Cynosarges*, bldg. in Athens in wh. they assembled. Regarded virtue, esp. poverty and self-control, as sole good. In mod. sense, **cynicism** implies contempt for finer feelings of others, and **cynic**, a captious, snarling person.

**Cypress**, coniferous tree of genus *Cupressus*, with scale-like, evergreen leaves. Very symmetrical in their growth. Often planted in cemeteries, and for this reason, and possibly because of their sombre hue, are regarded as the emblem of grief. Provide a useful timber.



Cypresses at Frascati

**Cyprian**, St., Bp. of Carthage; martyred, 258; repres. with grid-iron and sword; comm., Sept. 16.

**Cyprus**, island (third largest) in N.E. Mediterranean, Brit. crown colony; area, 3,584 sq.m.; pop., 348,000 (mainly Cypriot Greeks belonging to indept. Ch. of Cyprus; 18% Mohammedans); mountainous in N. and S.W. (*Troödos*, 6,406 ft.), elsewhere fertile plains; products include grains, fruits, wine, flax, silk, cotton, gypsum, terra-umbra, asbestos; once famous for copper. Cap., *Nicosia*; pop., 23,500; harbour at Famagusta. C. was captured by Richard I in 1195, who sold it to Guy de Lusignan; Venetian from 1489; Turkish from 1571; occupied by British in 1878, annexed 1914, and crown colony, 1925. **Church of C.**, in communion with but independent of other orthodox Eastern churches (*q.v.*), subject to no patriarch. **Knights of C.**; see HOSPITALIERS.

**C. grass**, family of reed-like plants (*Cyperus*); some have edible starchy roots. Egyptian papyrus (*q.v.*) was obtained from the species *Cyperus papyrus*.

**Cyrano de Bergerac** (1619-55), Fr. soldier; fought many duels, chiefly on acct. of his abnormally large nose. Auth. *Comic History of the States of the Sun*. Hero and title of play by Rostand (*q.v.*).

**Cyrenaica**, coastal region of Libya, N. Africa (Ital. col.); cap. and chf. port, *Ben-gasi*.

**Cyrenaics, Cyrenaic School**, Gr. philos. which esteemed positive pleasure, rather than

merely tranquil enjoyment, to be the chief purpose of life; cf. *EPICURUS*; *HEDONISM*.

**Cyril, St., 1** patriarch of Alexandria, 412; d. 444. **C., St., 2** (c. 820-69), apostle of the Slavs; formerly named Constantine, bro. of Methodius (*q.v.*); introd. Cyrillic alphabet modelled on Gr. Liturgical Uncial of 9th cent. into Slav language.

**Cyropaedia**, work by Xenophon, describing education, deeds, and dying exhortations of Kg. Cyrus.

**Cyrus the Great**, (559-529 B.C.), fndd. Persian Empire and ended Jewish Babylonian captivity, 537. **C. the Younger**, Kg. of Persia; rebelled agst. bro. Artaxerxes with help of Xenophon's 10,000 Greeks; d. in battle of Cunaxa, 401 B.C. See *ANABASIS*.

**Cyst**, vesicular tumour filled with liquid or semi-solid material. **Cystitis**, (med.) inflammation of the bladder. **Cystoscope**, apparatus for inspecting the interior of the bladder.

**Cythera** (Ital. *Cerigo*), Greek isl. in Mediterr. Worship of Aphrodite in antiquity.

**Cytoblast**: see *CELL*.

**Cytology**, study of structure, functions, growth, and life-history of cells, or microscopic units of animal bodies.

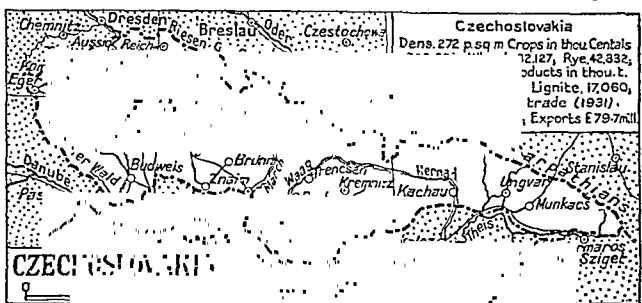
**Czar**, title of Russ. ruler, 1547-1917; of Bulgaria since 1908. **Czarina**, the wife, **Czarevitch**, the son, **Czarevna**, the daughter of a Czar; latter title also held by wife of *Czarevitch*.

**Czardas**, Hungarian dance, 2/4 time.

**Czartoryski, Adam Casimir** (1734-1823), Pol. statesm.; F.-M., Austr.; fought for Pol. independence, 1788-91. His s., **Adam Georg** (1770-1861), Pol. statesm.; Russ. min., 1801-07; fought for Pol. independence, 1830.

**Czech**: see *LANGUAGE SURVEY, Slavonic*.

**Czechoslovakia, (Československa Republika)**, inland repub., Centr. Europe, bounded by Germany on W. and N., by Poland on N. and E., and by Rumania, Hungary, and Austria on S.; area, 54,210 sq. m.; pop., 14,726,000 (R.C. 76.3%, Lutherans 7.3%; Czechs 43.2%, Slovaks 22.3%, Germans 23.4%, Hungarians 5.6%, Ruthenians 3.4%, Poles 0.6%). Comprises Bohemia, Moravia, Czech Silesia, Slovakia, and Carpathian Ruthenia. Country extends generally in W.-E. direction; length c.



620 m., width tapers from 185 m. in W. (Bohemia) to less than 30 m. in E. (Ruthenia). *Bohemian-Moravian Mtns.* (passes at 1,650 ft.) separate uplands of Bohemia from the rest of Czechoslovakia; Carpathians from N. frontier of Slovakia and Ruthenia. Plains follow beds of the rivs. (Elbe, Vltava or Moldau, Morava or March, Vah or Waag, etc.). Riv. Danube forms part of S. frontier; rlys. 8,578 m.; chf. tns: *Prague* (cap.), Pilsen (Plzen), Bratislava, Moravska, Ostrava. Constitution of 29 Feb., 1920. *Nat. Assembly* elects President (7 yrs.); *Senate* (150 members; 8 yrs.), *Chamber* (300 members; 6 yrs.). Repub. formed during World War (declaration of independence 18 Oct., 1918).

**Czechs**, W. Slav. Cath. race in Bohemia and Moravia; united with Slovaks (whose dialect and culture are distinct; 29% Protestant) in Czecho-Slovakia. **Czech language**: see *LANGUAGE SURVEY*.

**Czernin**, Ottokar, Ct. (1872-1932), Austro-Hun. statesm.; For. Min., 1916-18.

**Czernowitz**: see *CERNAUTI*.

**Czerny**, Karl (1791-1857), Austrian pianist and composer; pupil of Beethoven, teacher of Liszt. His *Educational Studies* still greatly valued.

**Czestochowa**, tn., Kielce, Poland, on Riv. Warta; pop., 117,700; Pauline monastery, with painting of the Virgin (visited by pilgrims).



# D

**D.**, Rom. numeral 500; abbr., 1) *Deus* (Lat.), God; 2) doctor (in M.D., LL.D., etc.).  
**d.**, abbr. *denarius* (Lat.), penny.

**D.A.**, abbr. (commerc.) documents against acceptance; see DOCUMENTARY CREDIT.

**Dab**, fish of family *Pleuronectidae*, similar to plaice and flounder; fnd. in waters of N. Europe. *Sand D.* is a species indigenous to N. America.

**Dabchick**, popular name for the little grebe, a small waterbird.

**D'Abernon**, Edgar Vincent, 1st visct. (1857- ), Brit. diplomatist and financier; repres. Gt. Brit., Holland, and Belgium on council of the Ottoman Public Debt, 1882, pres., 1883; financial adviser to Egyptn. Govt., 1883-89; M.P. 1899-1906; ambass. to Germany, 1920-26; helped in drafting of Dawes Plan (q.v.). Cr. baron, 1914; visct., 1926.

**Dabradian**, (geol.) name applied to metamorphic rocks occurring in highlands which flank the Great Glen of Scotland; consist of various schists, greywacke, limestone, etc.

**Dabrowa Gornicza**, indus. tn., Polish Upper Silesia; pop., 41,685.

**Da capo**, (mus.) repeat from the beginning; *al fine*, to the end.

**Dacca**, 1) distr., Bengal, India, in the Ganges delta; area, 2,780 sq.m.; pop., 3,100,000. 2) Cap. of dist., once famous for muslins; manuf. silver work, embroidery; univ.; pop., 138,500.

**d'accord** (Fr.), in harmony or agreement.

**Dace**, small river-fish of genus *Leuciscus*, belonging to the carp family.

**Dachshund**, small, long-bodied dog, long ears, very short legs; used in Ger. for badger-hunting.

**Dacia**, anc. Rom. prov., betw. rivs. Theiss, Danube, and Pruth.

**Dacoit**, name used in India and Burma for a robber or bandit. **Dacoity**, robbery by armed bands.

**Dactyl**, (pros.) Gr. met. foot: - ~ ~.

**Dadaism**, movement in art and lit., started about 1920, named from a child's first essays in speech ("da-da") and carrying the theory that art should be the direct expression of sensation, without intellectual interference, to its logical conclusion in the inarticulate and meaningless.

**Daddy-longlegs**, the crane-fly; dipterous insect with long, slender legs and filmy wings.

**Daño**, protective or decorative covering—wood-panelling, leather (real or artificial), etc.—applied to lower part of wall of room.

**Daedalus**, (Gr. myth.) bldr. of Labyrinth at Crete; invented wings in order to escape from Minos's prison; father of Icarus (q.v.).

**Daffodil**: see NARCISSUS.

**Dagenham**, urb. dist., Essex, on R. Thames; Ford motor works; pop., 89,400.

**Daghestan**, auton. Soviet repub. on Caspian Sea; c. 20,200 sq.m.; pop., 789,000 (Caucasians, Turks); mtns; sheep-breeding; horticult.: apricots, peaches, vines; glass works; cap., *Makach-Kala*: pop., 27,000.

**Dagobert I**, (c. 602-39), Kg. of the Franks; unified and extended Frankish empire.

**Dagon**, (O.T.) fish-god, chief deity of Philistines, struck down in temple at Ashdod (I Sam. v).

**Daguerreotype**, photog. process invented by L. J. M. Daguerre (1789-1851) and C. M. F. Niepce (1805-70) in 1838. The sensitive surface consisted of silver iodide and bromide upon a silver or copper plate, and this, after long exposure, was developed with mercury vapour.

**Dah**, Burmese single-edged sword; slightly curved.

**Dahabeah**, native travelling houseboat on the Nile; propelled by lateen sails; **steam d.**, used for tourist traffic.

**Dahlia**, genus of herbaceous tuberous plants named after Swed. botanist Dahl. Natives of Centr. Amer., introduced into Eng., 1789. Now cultivated to produce numerous varieties.

**Dahomey**, Fr. colony, Gulf of Guinea, betw. Togoland and Nigeria; 42,100 sq.m.; pop., 1,080,447; cap., *Porto Novo*.

**Dail Eireann**, parl. of the Ir. Free State.

**Daimio**, former feudal fams. of Japan wh., though they lost their hereditary rights in 1869, still constitute governing class of country.

**Daimler**, Gottlieb (1834-1900), Ger. engin., pioneer of automo. industry; inv. D. motor-cycle 1886, motor car 1887.

**Dairen, Tairend**; formerly **Dalny**, cap., dist. of Kwantung, S. part of Liaotung penins., leased to Japan, 1905; pop., 262,650; terminus S. Manchurian Railway.



Dahlia

**Dairy**, 1) bldg. or room in wh. milk and cream are kept and made into butter and cheese; 2) shop for retail sale of D. produce. **D. farming**, branch of agric. devoted to prodn. of milk, and to butter- and cheese-making. **D. farm**, usu. mainly grass-land, but root crops, etc., often cultivated also for cattle.

**Daisy**, name given to a large variety of flowers; common field daisy is *Bellis perennis*. See also ON-EYE.

**Dakar**, cap. of Senegal, Fr. W. Africa; pop., 40,000; naval station; comm. harbour.

**Dakin**, Henry Drysdale (1880- ), Brit. chemist; **D.'s solution** (Carrel-D. Solution), antiseptic preparation of chlorinated lime for irrigating wounds; see EAU DE JAVELLE

**Dakota (Sioux)**, tribe of N. American Red Indians, on Missouri (c. 45,000); before confinement to reservations, nomadic hunters and warriors; famous for sun dance.

**Dakota, North and South**: see NORTH DAKOTA, SOUTH DAKOTA.

**Dalai Lama**, the Grand Lama, chief Buddhist priest of Tibet; see LAMA.

**Dalcroze**, Émile Jacques (1865- ), Swiss musician; fndd. D. method of rhythmical physical education (Eurythmics, q.v.), 1911.

**Dalecarlia**, **Dalarne**, mountainous dist., Centr. Sweden, drained by E. and W. Dal-Elf rvs.; cap., *Folun*; pop., 13,300.

**Dal-Elf**, E. and W. *Dal-Elf*, Swed. rvs.; rise Norw. frontier mtns., flow into Gulf of Bothnia.

**D'Alembert**, Jean le Rond (1717-83), Fr. philos. and mathematician; assoc. with Diderot (q.v.) in the *Encyclopédie*.

**Dalen**, Nils Gustav (1869- ), Swed. engineer and inv.; awarded Nobel Prize (Physics), 1912.

**Dalhousie**, Jas. And. Brown Ramsay, 10th earl and 1st marq. (1812-60), Brit. statesman; Gov.-Gen. of India, 1848; annexed the Punjab; improved condition of Europeans in India; annexed Oudh, 1856; in same year returned to England, where attacks on his policy followed outbreak of mutiny, 1857.

**Dalkeith**, police burgh, Midlothian, Scot., 7 m. S.E. Edinburgh; pop., 7,500; agric. centre. **D. House** (Duke of Buccleuch), built by Vanbrugh, 1700; picture gallery, park.

**Dallas**, largest tn. in Texas, U.S.A., on Trinity Riv.; pop., 260,000; univ. (1911); cotton mkt.; iron and timber indust.; petroleum refineries; publishing; Texas State Fair (ann.) largest in United States.

**Dalmatia**, coastal dist. Yugoslavia, E. Adriatic Sea; 4,918 sq.m.; pop., 625,500,

chiefly. Croats, Italians; mountainous (*Dinara*, 6,010 ft.); many rivers, harbours, islands; shipping, sea fishing; pasture, vines, olives; liqueur manufacture; ports: Kotor, Split, Dubrovnik. Roman, 33 B.C.; occupied by Croats and Serbs, 622; Austrian, 1797; Yugoslavian, 1919.

**Dalmatian**, or "Coach dog," white breed with black spots, resembling lightly built pointer (q.v.); formerly kept to run with carriages.

**Dalmatic**, loose vestment worn by deacons at celebration of Mass, by bps. under the chasuble (q.v.), and by a kg. or emp. at his coronation.

**Dalny**, former name of Dairen (q.v.).

**Dal segno**, (mus.) repeat from the sign onward.

**Dalsland**, dist., S. Sweden, betw. Lake Wener and Norweg. front.; timber. *Dalsland Canal*, betw. Lake Wener and Northern Lakes; 157 m. long: 28 locks.

**Dalton**, John (1766-1844), Eng. chem. and physicist; propounded atomic theory, 1810; formulated **D.'s law**: the pressure of a mixture of gases is the sum of the pressures wh. would be exerted separately by the several constituents if each alone were present.

**Dalton Plan**, mod. educational method (name derived from Dalton, Mass.), orig. by Miss H. Parkhurst, principal, Children's Univ., N.Y., by wh. children arranged own time-tables and perform allotted tasks, in own way, at own speed.

**Dam**, any artific. constructr. (masonry, earth, iron, concrete) to divert or prevent flow of water. *Aswan Dam* conserves water of the Nile (over 500,000 mill. gals.) so that it can gradually be released for irrigation.

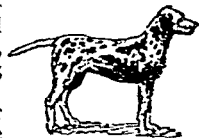
**Damages**, compensation accord. by the court to plaintiff for wrong done to him.

**Damão, Daman**, Portug. terr. on Gulf of Cambay, 95 miles N. of Bombay, 146 sq.m.; pop., 48,100; cap., *Damão Grande*, pop., 7,000.

**Damaras, Hereros** (or Ova-Hereros), Bantu tribe in S.W. Africa (c. 65,000); **D.-Land**, centr. part of former Ger. S.W. Africa; div. into 2 sections, one with Hottentot admixture, Hottentot-speaking hunters and collectors; one with Bantu-speaking pastoralists.

**Damascening**, inlaying iron, copper, or bronze with gold or silver, for decoration.

**Damascus**, cap. Syria, sit. at base Anti-



Dalmatian



Aswan Dam

*Lebanon Mtns.* on Hejaz Rly. and road to Bagdad; pop., 250,000; Gr. Orthodox patriarch; Armenian abp.; many mosques; chapel of St. John the Baptist. Indept. State in time of Solomon; Arab., 635; seat of Seljuks after 1100 (flourished under Saladin, 1174-93); Turk., 1516. "Road to Damascus" means conversion (St. Paul's Vision). **D. steel**, made by welding together small pieces of steel to form sword-blades, gun-barrels, etc., very hard and resilient. The surface exhibits a wavy pattern when etched with acids.



Damascus  
Blade

**Damask**, matl. of linen, cotton, or silk with raised or flat pattern; for table and bed linen, furniture and wall coverings.

**Damasus**, name of 2 popes of whom the most important, historically, is **D. I**, St. (366-84), opposed Arianism; entrusted revision of Latin text of Bible to St. Jerome.

**Dame**, legal title of wife or widow of a baronet or knight, also of a woman who has been awarded either of the first two classes of the Order of the British Empire, *viz.*, Dame Grand Cross (G.B.E.) or Dame Commander (D.B.E.).

**Dame d'honneur** (Fr.), maid of honour; lady-in-waiting.

**Damian**, St.; *see* COSMAS.

**Damiani**, Pietro, St. (c. 1007-72), card. bp. of Ostia, 1057; eccles. reformer; denounced vices of clergy, simony, etc.

**Damien, De Veuster**, Jos. (Father) (1840-89), Belg. R.C. missionary; devoted life to lepers on Molokai Isl., Hawaii, dying of disease.

**Damietta**, riv. port, Egy., at E. mouth of Nile delta; pop., 36,000; silk and wool.

**Dammar**, name given to a number of Indian resins, used princ. to prepare varnishes, but occas. in med. as a plaster base.

**Damnosa hereditas** (Lat.), an inheritance bringing loss instead of benefit.

**Damnum absque injuria** (Lat.), loss without legal injury, *e.g.*, by flood or lightning, or by legitimate competition.

**Damocles**, (Gr. myth.) favourite of Dionysius of Syracuse, who caused a sword to be suspended over his head by a single horsehair. **Sword of D.**, allegorical phrase, applied to perils wh. threaten those who hold high positions.

**Damon and Pythias**, (more correctly *Phintias*) two Pythagoreans of 4th cent. B.C., whose names are proverbially synon. with true friendship. Cf. "David and Jonathan."



**Dampier**, Wm. (1652-1715), Eng. explorer and navigtr.; **D. Archip.**, Australia; **D. Isl.**, Papua; **D. Land**,

Australia; **D. Strait**, Papua, named after him.

**Damper**, valve for regulating draught in flue or chimney.

**Damping**, (phys.) causing vibratory motion to die out rapidly or to be completely abolished (*Aperiodic D.*), as in instrs. The rolling of ships is *damped* by gyroscopes or special tanks.

**Damson**, small, sour-tasting purple plum.

**Dan**, (O.T.) son of Jacob; forefather of *Tribe of D.*; northernmost limit of Canaan.

**Danae**, (Gr. myth.) beloved of Zeus, who approached her as a golden shower; mother of Perseus.

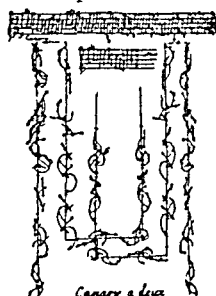
**Danäi, Danaans**, name used by Homer for the Greeks. From *Danaus*, Kg. of Argos.

**Danaïdes**, (Gr. myth.) the fifty daughters of *Danaus*; all except one murdered their husbands on the wedding night and were condemned in Hades perpetually to pour water into sieves.

**Danakil**, Hamite tribes, nomads and fishers, living on shore of Red Sea.

**Dance of Death**, allegor. representations, pop. in Mid. Ages, of omnipotence of Death over all human beings; esp. Holbein's series of woodcuts; also called *Danse macabre*.

**Dance-script**, notation used in comp. of ballets (*q.v.*), etc., with convent. signs showing steps, figures, etc.



Canary a la

Dance-script, 18th Cent.

**Dancing**, rhythmical bodily movements and steps, usu. accompd. by music; mode of expression employed by primitive peoples, closely connected with relig. and tribal customs, incitement to warlike spirit, etc. Mod. dances are largely adapted for the ballroom from peasant or Negro dances.

**Dandelion**, *Taraxacum officinale*, herb with deeply cut leaves and single yellow flower; edible leaves used in salad; root, roasted and ground, is used as substitute for coffee.

**Dandie Dinmont**, small rough-haired breed of terrier.

**Dandolo**, Enrico (c. 1120-1205), Doge of Venice; fndd. Venetian supremacy in Mediterr.; establd. Lat. Empire at Constantinople, 1204.

**Dandruff, scurf**, small scales of dead skin wh. form on the head among the hair.

**Danebrog**, Danish State flag (*see* FLAGS), the oldest now existing. Also a Dan. order of knighthood, instituted 1671.

**Danes Island**, isl., Spitsbergen group; whence Andrée (*q.v.*) started on his balloon ascent in 1897.

**Dangerous drugs**, those drugs coming within scope of Dangerous Drugs Acts, outcome of internat. agreement made by members of League of Nations and U.S.A., in endeavour to suppress illicit traffic in drugs of addiction. Drugs concerned are opium, morphine, and certain of their preparations; cocaine; heroin and its preparations; and Indian hemp (hashish). Licences are reqd. to import, export, and manuf. the drugs, and trade is subj. to strictest govt. control. The drugs may be supplied to a patient only on prescription of duly reg. med. practitioner. Dentists and veterinary surgeons are allowed to prescribe the drugs only for the purposes of their profession. No unauthorised per. is allowed to be in possession of or to deal in the drugs. Any person contravening the

pop., 1,450; centre of famous iron-field (c. 50,000 tons iron ore annually).

**Danse macabre:** see DANCE OF DEATH.

**Dante Alighieri** (1265-1321), It. poet; exiled from Florence for polit. reasons. In his epic, *La Divina Commedia* ("Divine Comedy"), which reflects his times, the poet is led by Virgil (q.v.) through Hell (Inferno), by St. Bernard through Purgatory, and by Beatrice, the beloved of his youth, to Paradise. Confessed his love in Sonnets, and in *La Vita Nuova* (The New Life). Strongly influenced formation of mod. It. language.



Dante



Greek Dance: Vase-painting



Quadrille, 18th Cent., after Lancelotti

Anna Pavlova:  
The Dying SwanArgentina:  
Spanish Dance

Waltz, 19th Cent., after Menzel

Isadora Duncan:  
Grecian Dance

Dangerous Drugs Acts in any way, whether a manuf., a med. man, a pharmacist, or a patient, is liable to very heavy fines and to imprisonment. It is an offence to attempt to obtain possession of the drugs unlawfully.

**Dangla**, mtn. range, Tibet; 16,400 ft.; pass, 16,000 ft.

**Daniel**, (O.T.) major prophet, 6th cent. B.C.; interpreter of dreams of Nebuchadnezzar and Darius; hero and traditional author of *Bk. of Daniel*, supplemented in fragments of Apocrypha.

**Daniell cell**, constant primary cell giving 1 volt; zinc in sulphuric acid and copper in copper sulphate solution, invntd. by Eng. scientist J. F. Daniell (1790-1845).

**Danish:** see LANGUAGE SURVEY, Scandinavian.

**Dannemora**, indust. tn., Uppsala, Sweden,

**Danton**, Georges (1759-94), Fr. lawyer and revolutionary; as Min. of Justice ordered *September Massacres*, 1792; overthrown by Robespierre (q.v.), and guillotined.

**Danube, Donau**, second largest riv. in Eur., 1,776 m. long; rises Black Forest, Germany, at Donaueschingen (alt., 1,600 ft.); navig. from Ratisbon; leaves Germany at Passau; flows through Austria (Linz, Vienna); forms S. frontier betw. Czechoslovakia (Bratislava) and Hungary; crosses Hungary (Buda-Pest) from N. to S., into Serbia (Belgrade); trends S.E. and E., forming boundary betw. Rumania and Serbia; pierces *Banat Mtns.* at Iron Gates; flows betw. Rumania and Bulgaria into Black



Danton

Sea (delta). Chf. tribs.: Lech, Inn, Drava (Drave), Tisa, Sava (Save), Seret, Prut. Below Ulm (Germany) navign. controlled by *Internat. Danube Commn.*, near mouth (Galatz) by *Eur. Danube Commission*.

**Danzig**, free city, under League of Nations, in Free State of D. (730 sq.m.; pop., 407,517), 3 m. from Baltic, at confluence of Riv. Mottlau and left arm of Vistula; pop., 238,000. Tech. coll., shipb., engineering, liqueur manuf.; trade in timber and coal. Mentioned, 997; Teutonic Order 1310; Hanseatic tn., 1360; Polish, 1466; Russian, 1734; Free City, 1772-93; Prussian, 1793-1919. Constitution (14 June, 1922) provides for Diet of 72 elec. members, and Senate wh. includes presd. and vice-presd. Senators elec. for indef. period. Foreign relatns. controlled by Poland; offic. language, German; League repres. by high comsnr.; customs administered by Poland.



**Daphne**, 1) (Gr. myth.) nymph transformed into a laurel as protection against Apollo's love. 2) (Bot.) Family of laurel-like shrubs, having tough, acrid bark. *D. mezereum*, paradise plant; purple flowers and red berries; formerly used medicinally. *D. laureola*, spurge laurel; smooth evergreen leaves, black berries poisonous to man but not to birds. *D. japonica*, cultivated variety, sweet-scented flowers.



**Daphnis**, (Gr. myth) Sicilian shepherd, said to have invented pastoral poetry.

**Da Ponte**, Lorenzo (1749-1838), It. writer; wrote libretto of Mozart's *Marriage of Figaro* and *Don Giovanni*.

**Dapple-grey**, colour of horse; grey variegated with darker spots.

**Dapsang**, mountain peak; see GODWIN-AUSTEN.

**D.A.R.**, abbr. Daughters of the American Revolution.

**Darbyites**: see PLYMOUTH BRETHREN.

**Dardanelles** (see map, BALKAN PENINSULA), the anc. *Hellespont*, strait betw. Aegean and Sea of Marmora; length 40 m.; width 1-4 m.; on N.W. is peninsula of *Gallipoli*; on S.E. Asia Minor, with site of Troy. Fortified 1460-1920. Treaty of 1841 closed D. to warships, unless with Turkey's consent. Since 1923 free in peace-time; open to neutrals in time of war. **D. expedition**, 1915-16, see WORLD WAR.

**Dardanus**, in Grk. legend, son of Zeus. After slaying his brother Iasius, he fled to Samothrace and thence to the Troad; married Batea, d. of Teucer, and fndd. royal house of Troy.

**Dar-es-Salaam**, cap. and port, Tanganyika Territory (former Ger. E. Africa), on the Indian Ocean; pop., 25,000; cable station; anus of Central Railway.

**Darfur**, prov. Anglo-Egyptian Sudan; fertile valleys; copper, iron; cap., *El-Fasher*.

**Daric**, gold coin of anc. Persia; said to have been first coined by Darius the Great.

**Darien**, E. part of Isthmus of Panama, on Gulf of D.; visited, 1513, by Vasco Núñez de Balboa. See also PATERSON, WM.

**Dar.ole moulds**, small cup-shaped moulds for puddings or cakes.

**Darius, I, the Great** (c. 548-485 B.C.), Kg. of Persia; invaded Greece 492 and 490, deftd. at Marathon, (q.v.) 490. **D. III**, Codomannus (d. 330 B.C.), Kg. of Persia, deftd. by Alexander the Great at Issus, 333, and at Arbela, 331.

**Darjiling, Darjeeling**, 1) dist., Bengal, Brit. India, betw. Nepal and Bhutan; area, 1,160 sq.m.; pop., 265,000. 2) Cap. of dist., in the foothills of the Himalayas, 7,200 ft. abv. sea-level; pop., 20,000; summer residence of the Governor of Bengal; tea-planting.

**Dark Ages**, term applied to early period of Mid. Ages (q.v.), usu. from death of Charlemagne (814) to end of Carolingian dynasty (c. 1000); used in contradistinction to periods of classical civilization preceding and following it.

**Dark and Bloody Ground**: see KENTUCKY.

**Darling, Chas. John D.**, 1st bn. (1840-), Brit. judge; barrister, 1874; Q.C., 1885; M.P. (Con.), 1888-97; *Meditations in the Tea Room; A Pensioner's Garden and Other Verses*, 1926. **Grace D.** (1815-42), Eng. heroine; rowed in life-boat to rescue of 9 persons from SS. "Forfarshire," wrecked on Farne Islands, 1838.

**Darling**, riv., Australia, trib. of the Murray, 1,150 m. long, partially navigable; rises in *Darling Downs*, part of Great Dividing Range. **Darling Range**, mtn. range in S. of W. Australia, parallel with coast.

**Darlington**, co. bor., Durham, Eng., manuf. woollens, carpets; iron foundries, rly. works; terminus Stockton and D. Rly. (1825); pop., 72,100.

**Darmstadt**, cap. of Hesse, Germany; pop., 90,300; castle; technical college; iron and chem. indus. Mentioned in 8th century.

**D. and National Bank**: see D.BANKS.

**Darnel**, (bot.) name given to var. species of grass but properly to *Lolium temulentum*, with a long awned glume; grain is poisonous. See also RYE GRASS.

**Darnley**, Henry Stuart, Lord (1545-67), 2nd husband of Mary Qn. of Scots; murdered by Bothwell (q.v.).

**Darter**, or **Snake-bird**, so-called from its long neck; allied to cormorants (q.v.) and similar in habit; several species, all tropical, fnd. in S. Amer., Africa, India, and Australia.

**Dartford**, urb. dist., Kent, on Riv. Darent, 3 m. from confluence with the

Thames, 17 m. E. of London; pop., 28,900; paper-mills, chemical works.

**Dartmoor**, high moorland plateau (1,400 ft.), Devon, Eng.; several hills or "tors" (*High Willhays*, 2,039 ft.; *Yes Tor*, 2,027 ft.); area, c. 200 sq.m.; centr. portion once *Forest of D.*; cattle, sheep, ponies, trout-fishing. Convict prison at *Princetown*.

**Dartmouth**, seapt., Dart estuary, S. Devon., Eng.; R.N. College; pop., 6,700.

**Darts**, game of skill, popular in working men's clubs, etc.; played with small pointed missiles thrown upon a vertical circular board from a distance of 9 ft. Dart-board is divided radially and concentrically, the segments and rings having different values; score always an odd number, e.g., 201.

**Darwen**, munic. bor., Lancsh., Eng.; cotton-mills; pop., 36,000.

**Darwin, Charles** (1809-82), Engl. naturalist and biologist; originator of theory of man's evolution (*q.v.*) by natural selection. *Origin of Species* (1859), *Descent of Man* (1871). **D., Erasmus**, (1731-1802), Eng. scient. and poet, grd.-father of Charles; poem: *Botanic Garden* (1792). **D., Sir Horace** (1851-1928), Brit. scientist and civil engineer; son of Charles Darwin.



Darwin

**Darwin**, cap. and port, Northern Territory, Australia, on Port Darwin; overland telegraph to Adelaide; terminus N.-S., Transcontinental Rly. (partly built); airpt. (flights to and from Europe); pop., 1,000.

**Dash-pot**, (mech.) cylinder with closely fitting piston, containing air or liquid (gen. oil), used to oppose the motion of heavy machine-parts, vehicles relative to their wheels, heavy electric switches, etc., and so render it more gentle.

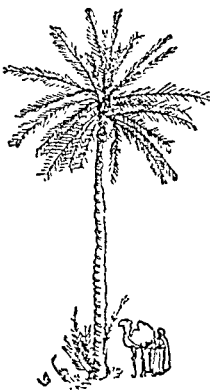
**Dasyure**, group of small, tree-climbing marsupials of Australia, wh. includes the Tasmanian Devil (*q.v.*).

**Date bill**, bill of exch., wh. matures according to date on wh. it is drawn, e.g., 3 months "after date."

**Date line:** *see* INTERNATIONAL DATE LINE.

**Date obolus Belisario** (Lat.), give a copper to Belisarius; phrase orig. from story that Belisarius (*q.v.*) in his old age was reduced to penury.

**Date palm**, *Phoenix dactylifera*, tall tree



Date Palm

indigenous to N. Africa and W. Asia; the oblong pulpy berry, containing a hard seed, is a valuable foodstuff; they are usually dried and pressed into cakes.

**Dathan:** *see* KORAH.

**Dative**, (gram.) in inflected languages, case used for indirect object of verb, e.g., He followed *him*.

**Datum line**, (tech.) base or fundamental line used for reference in drawings or calculations.

**Daubigny**, Charles (1817-78), Fr. landscape-painter and etcher; *Springtime*, 1857, in Louvre, Paris.

**Daudet, Alphonse** (1840-97), Fr. auth., *Tartarin de Tarascon*; *Lettres de mon Moulin*. His s. **Léon** (1867- ), Fr. Royalist politician and journalist.

**Daugavpils:** *see* DVINSK.

**Daughter of the Regiment** (*Figlia di Regimento*), opera by Donizetti (*q.v.*) (1840).

**Daumier**, Honoré (1808-79), Fr. painter and caricaturist; imprisoned for caricature of Kg. Louis-Philippe, 1832; contrib. to *Charivari*; paintings: *Good Samaritan*; *Christ Mocked*.

**Dauphin**, title of the lords of Dauphiné, 1140-1349, and of the Fr. heir apparent, 1349-1830.

**Dauphiné**, Fr. dist. (former prov.) betw. Rhône and Isère; mountainous (*Dauphiné Alps*); cap., *Grenoble*.

**Davenant**, Sir Wm. (1606-68), Eng. poet and dramatist; poet laureate, 1638; active supporter of royal cause; impris., 1642; escaped; fled to qn. in France; kntd. by Chas. I, 1643; captured, 1650; wrote *Gondibert*, etc.

**Davenport**, tn., Iowa, U.S.A., on Mississippi Riv.; pop., 60,750; R.C. and episc. bprics.; manuf.: agric. implements and cement; first bridge across Mississippi Riv. built here 1853.

**Daventry**, munic. bor., Northants, Eng.; wireless broadcasting station; pop., 3,600.

**David**, (O. T.), son of Jesse, psalmist to Saul; succeeded him as Kg. of Judah and Israel; reigned c. 1010-970 B.C. (I Sam., I Kings).

**David**, St. (d. c. 601), the patron saint of Wales; exterminated Pelagian heresy in Wales; fndd. many churches and monasteries; commem. March 1st.

**David, Gerard** (c.1460-1523), Netherlands painter. *Marriage of St. Catherine*, in Nat. Gallery, London. **D., Louis** (1748-1825), Verrocchio official artist during Fr. Rev., later court painter to Napoleon; *Rape of the Sabines*, 1799. **D., Pierre Jean** (1789-1856), Fr. sculptor; many busts and medallions of famous men and women in Musée David at Angers, France.

**Davidists**, (relig.) followers of David of



Dinant in 13th cent.; Christian *pantheists* (*q.v.*).

**Davidson, John** (1857-1909), Brit. poet, playwright, and novelist. **D., Randall Thos. D.**, 1st bn. (1848-1930), Brit. prelate; Dean of Windsor, 1883; Bp. of Rochester, 1891, and of Winchester, 1895; Abp. of Canterbury, 1903; cr. bn. on retirement, 1928.

**Davies, Sir Henry Walford** (1860- ), Eng. composer; organist of St. George's Chapel, Windsor, since 1927; cantata, *Everyman* (1904). **D., Wm. Hy.** (1871- ), Brit. poet and prose-writer; spent some years tramping through America; street-singer and pedlar in Eng.; *Autobiography of a Super-tramp*, 1908; *Collected Poems*, 1929.

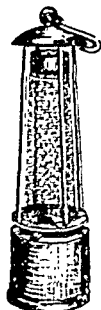
**Davis, John** (1550-1605), Eng. navigator; disc. **D. Strait**, betw. Greenland and Baffinland, 1585, Falkland Islands, 1592. **D., Jefferson D.** (1808-89), Amer. statesman; Southern leader in Civil War, 1861-64; pres. of Confederate States, 1862; wrote *Rise and Fall of the Confederate Government*, 1881.

**Davis Challenge Cup**, lawn tennis trophy given by the U.S.A. financier, Dwight Filley Davis, in 1900, for annual internat. competition.

**Davit**, (naut.) spar used as crane to hoist anchor to top of bow; also (*pl.*) arms projecting over ship's side with tackle to lower or raise boats.

**Davitt, Michael** (1846-1906), Irish politician; joined Fenians, 1865; sentenced, 1870, to 15 yrs.' penal servitude for arranging despatch of firearms to Ireland; released, 1877; joined Irish Republican Brotherhood; assisted Parnell to start Land League, 1879; re-arrested 1881, '83; opposed Parnell, 1890; assisted Wm. O'Brien to fnd. United Irish League, 1898; opposed Wyndham Land Purchase Act. Elected M.P., 1882 (while in prison) and sat from 1892 to 1899.

**Davos**, Alpine vall. in Swiss canton of Grisons; alt., 4,250 ft.; chief centre, **D. Platz**



Davy Lamp  
(Old Style)



Sir Humphry Davy



Davy Lamp  
(New Style)

(5,117 ft.); winter sports. Vill. of **Davos** (5,167 ft.), a health resort for tuberculous  
ts; pop., 10,450.

**Davout**, Louis Nicolas, P. of Eckmühl, Duke of Auerstädt (1770-1832); Fr. marshal in Napoleonic Wars, army comm. in Russia, 1812.

**Davy**, Sir Humphry (1778-1829), Eng. chem. and physicist; disc. alkali metals, electrolysis; inv. miner's safety lamp.

**Dawes**, Charles Gates (1865- ), Amer. statesm.; chmn. Committee of Experts of Allied Reparations Commission, 1923; Nobel Peace Prize, 1925. **D. Loan**: By the London Agreement (Aug., 1924), Ger. recd. a foreign loan of 800 million gold marks in order to stabilize her currency and provide for the first year's payment due under Dawes Plan. **Dawes Plan**: see REPARATIONS.



Dawes

**Dawkins**, Sir Wm. Boyd (1837-1929), Brit. archaeologist and geolog.; curator, Manchester museum, 1870-90; prof. of geol. and palaeontol., Owens Coll., Manchester, 1872; surveyed Eng. and Fr. coasts for Channel Tunnel Committee; *Cave-hunting*, 1874; *Early Man in Britain*, 1880; *Brit. Pleistocene Mammalia*, 1866-87.

**Dawlish**, seaside resort, S. Devon, 12 m. S. Exeter; pop. (urb. dist.), 4,700.

**Dawson**, Geoffrey (1874- ), Brit. journalist; ed. of *The Times*, 1912-19, and from 1923; assumed name of D., *vice* Robinson, by royal licence, 1917.

**Dawson of Penn**, Bertrand Edward Dawson, 1st bn., Brit. physician; physn. extraordinary to Edw. VII, 1907; physn. in ordinary to George V and to Pr. of Wales; *The Diagnosis and Operative Treatment of Diseases of the Stomach*, 1908.

**Dawson**, tn. in Canadian goldfields, at confluence Klondyke and Yukon rivs.; cap. prov. Yukon; pop., 975.

**Day**, period in wh. earth rotates once on its axis; calcul. by Heb. and Gr. from sunset to sunset; by astron. and seamen, noon to noon, and popularly from midnight to midnight. Cf. NIGHT. **Day's reckoning**, dist. covered by ship in 24 hours.

**Dayaks, Dyaks**, aborig. inhabts. of interior of Borneo, (1½ million); head-hunting (*q.v.*) practised usually as reprisals against enemies and in connec. with funeral ceremonies of chiefs.

**Day book**, (book-keeping) subsidiary book for daily record of mixed entries (*in-comings* and *out-goings*). Items later classified in other acct. books accdg. to accounting system.

**Daylight saving**, scheme for taking full advantage of hours of daylight in summer by advancing clock one hour. First advocated by Willet (*q.v.*) in 1907; adopted in Gt. Brit.

1916; in U.S.A. in 1918; also practised in Canada, France, Holland, Belgium, Spain, and Portugal. In Gt. Brit., period of D.S. (Summer Time) is from 2 A.M. on the day following the 3rd Sat. in April to 2 A.M. on the day following 1st Sat. in October.

**Days of grace**, period allowed for pymt. beyond specified date; acceptor of a bill of exch. is by Eng. law allowed 3 days of grace.

**Day-to-day loans**, day-to-day money, loans wh. London banks make to bill-brokers wh. can be called in at a moment's notice. In U. S. A. usu. known as *call money*.

**Dayton**, tn., Ohio, U.S.A., pop., 201,000; univ. (1850); manuf.: aeroplanes (began with Wright Bros.), cash registers, golf clubs, etc.; railway centre; serious floods in 1913; airport.

**Daytona Beach**, Florida, U. S. A.; pop., 16,600; winter resort; on beach is motor-racing course; scene of world records (Seagrave, and see CAMPBELL, SIR MALCOLM).

**Dayyan** (Hebr. Judge), judge of the Beth Din (q.v.).

**D.B.**, abbr. double breasted (of garments).

**"D." banks**, 4 great Ger. banks with initial "D.": 1) *Darmstadt and National B.* (Danatbank) (fndd. 1853), under govt. control, 1931; 2) *Deutsche B.* (fndd. 1870), amalgmt. (1929) with 3) *Disconto Gesellschaft* (fndd. 1851), the two combined (**D.-D.-B.**) now largest bking. concern in Ger.; 4) *Dresden. B.* (fndd. 1872), spec. ints. in S. Amer. and East.

**D.B.E.**, abbr. Dame, Order of Brit. Empire.

**D.C.**, abbr. 1) District of Columbia; 2) (mus.) *da capo* (q.v.).

**D.C.L.**, abbr. Doctor of Civil, or Canon, Law.

**D.C.L.I.**, abbr. Duke of Cornwall's Light Infantry.

**D.C.M.**, abbr. 1) Distinguished Conduct Medal; 2) District Court Martial.

**D.D.**, abbr. *Doctor Divinitatis* (Lat.), Doctor of Divinity.

**D.-D.-B.**: see "D." BANKS.

**D.D.D.**, abbr. 1) *dat, dicat, dedicat* (Lat.), he gives, devotes and dedicates; 2) *dono dedit dedicavit* (Lat.), he gave and consecrated as a gift.

**D.D.S.**, abbr. Doctor in Dental Surgery.

**Deacon**, (eccles.) orig. one of a special class of church workers appointed to minister to the poor; now (C. of E. and R.C.), one ordained to the order immediately inferior to that of priest; (Presbyt.) layman appointed to attend to secular affairs of the Church.

**Dead centre**, or **dead point**, 1) the position of a rotating shaft driven by an intermittent drive (e.g., from piston of engine, foot, etc.), in which drive is unable to cause rotation owing to its direction passing through axis of rotation of shaft; 2) conical centre of a

lathe betw. which the work is held. **D.-eye**, 1) (mech.) a) a hole in some substance, through which a moving piece passes; b) in bearings, such as have no lining. 2) (Naut.) Plain wooden blocks through which rigging-ropes are passed.

**D.-nettle**, (bot.) common white variety (*Lamium album*) of nettle; resembles stinging N.; other varieties are: **red d.-n.** (*L. purpureum*); **spotted d.-n.** (*L. maculatum*), white-spotted leaves, purple flowers; **henbit** (*L. amplexicaule*), red flowers; **yellow d.-n.** (*L. galicobdolon*), with yellow flowers.

**D. reckoning**, (naut.) position in longitude and latitude of ship at sea, estmd. at noon from calculations based on course and duration of run from previous noon; method employed only when observations with sextant are impossible.

**Deadly nightshade**, *Atropa belladonna*, plant found in deciduous woods; small berries like cherries; extremely poisonous; yields *atropine*, used medicinally. See HENBANE.

**Dead Sea**, salt lake, Palestine, without outlet; area, 355 sq.m.; 46 m. long; 1,292 ft.



Dead-nettle



Deadly Nightshade



Dead Sea

below sea-lvl. (lowest lake water-lvl. known); salt-content 25%; bitumen floats on surface; affluent Riv. Jordan.

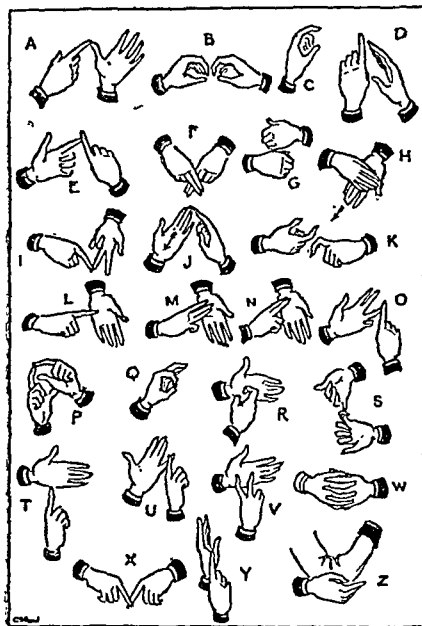
**Dead-weight**, actual weight of an object as opposed to a wt. calculated by cubic content.

**Deaf and dumb**, persons who, through congenital deafness, have failed to acquire faculty of speech by sound-imitation; may be taught to speak by imitating lip-movement, and so reach high degree of educn. and social usefulness (cf. KELLER, HELEN). In Eng., local authorities must provide special schools for deaf and dumb. **D.-and-d. alphabet**, system of manual signs for communicating with those so affected.

**Deafness**, impaired or absent hearing. May be congenital or due to disease of ear or brain. **Congenital d.** implies that child is a



deaf-mute and should be taught to read and to communicate with others by lip-reading or sign-language, etc.



Deaf-and-dumb Alphabet

**Deal**, munic. bor. and seaside resort, Kent, Eng., on Strait of Dover; pop., 13,700; R.M. depot; tn. adjoins Walmer; noted golf-links.

**Deal**, sawn timber; a plank of fir-wood c. 7 in. broad and 3 in. thick.

**Dean** (Lat. *decanus*), 1) president of the chapter (q.v.) of a cathedral or collegiate church; 2) fellow of university who supervises discipline of a partic. college; 3) in some universities, head of a faculty.

**Rural d.** (Ch. of Eng.), clergyman acting as bp.'s representative in a deanery or section of a diocese.

**D. of Sacred College**, the senior cardinal (q.v.) deacon.

**D. of Arches**, eccles. judge of Court of Arches, chief court of Abp. of Canterbury.

**D. of Peculiars**, one not subject to ordinary episcopal jurisdiction, e.g., D. of Westminster and Windsor.

**Dean, Forest of**, anc. royal forest, Glos., oak woods; coal fields; includes small tns. of Coleford and Cinderford.

**Death**, cessation of life, or state consequent thereupon. In Gt. Brit., notification

of d. and its cause must be made within 5 days to Registrar of D. **D.-rate**, proportion of deaths to population, in given area, over given period. **Crude d.-rate**, total number of deaths in a district in any year, multiplied by 1,000 and divided by total population. **Standardized d.-rate**, figures obtd. by reckoning what crude D.-R. would have been if pop. under considrt'n. had consisted of cert. fixed proportions of age and sex; in Eng. and Wales standard pop. is taken to be that recorded by Census of 1901. **D. duties**, taxes levied on property changing ownership on death of holder. In Gt. Brit. consist of 3 duties: 1) *Estate Duty* (q.v.), chargeable on total estate of deceased, irrespective of method of division; 2) *Legacy D.*, charged on interest derived from movable property; 3) *Succession D.*, charged on interest derived from immovable property. Death D. known in U.S.A. as *inheritance tax*. See TAXATION. **D.-watch**, a small beetle, the larvae of which are very destructive to house timbers and furniture; taps on the wood with its head to attract its mate.

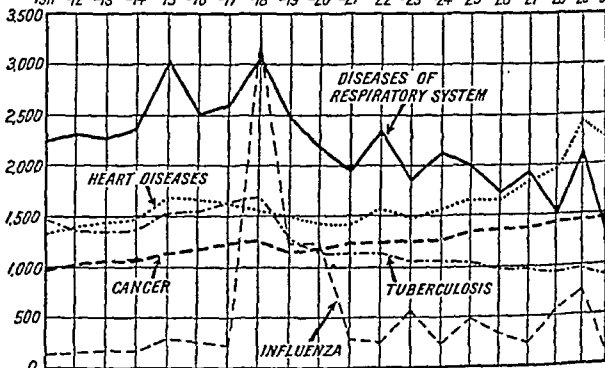


**Death's-head hawk-moth**, a large moth having on the back of the thorax markings resembling a skull or "death's head"; can emit a squeaking sound; larvae feed on potato plants.

**Débâcle** (Fr.), complete collapse.

**Debate**, (lit.) *estriif*, variety of early Fr. *chanson*, acclimatized in Eng. in 13th cent.

DEATH RATE (CRUDE ANNUAL DEATH RATES IN ENGLAND & WALES FROM CERTAIN CAUSES AT ALL AGES TO A MILLION LIVING)



Deaths from tuberculosis and diseases of resp. system considerably decreased since War; those from cancer and heart dis. steadily increased. When comparing general conditions of health, standardized death rate should be used, since, e.g., part of the increase of crude death rate of cancer during the last decade is due to greater proportion of people aged 40-60 yrs., at wh. age the risk of mortality from cancer is highest.

consisting of discussion in dialogue, e.g., *The Owl and the Nightingale*; *Body and Soul*, etc.; influenced drama considerably; e.g., *Harrowing of Hell* (an *estriif* between Christ and Satan).

**Debentures**, (Stk. Exch.) securities bear-

ing fixed int., gen. secured by mortgage; sim. to *bonds* in U.S. **Income d.** rank before share capital, but have no fixed rate of int. or charge on property.

**Deborah**, (O.T.) prophetess who, with Barak, freed Israel from Canaanite oppression; **Song of D.** celebrates this victory under Sisera (Judg. v.).

**Debrecen**, tn., Hungary; cap. co. of Hajdu; pop., 117,300; bpric. of Reformed Ch.; univ.; soap industry; cattle trade.

**Debs**, Eugene Victor (1855-1926), Amer. Socialist; organised Amer. Railway Union, 1893; candidate for U.S. Presidency, 1900, 1904, 1908, 1912, 1920; imprisoned under Espionage Act, 1918-21; pub. *Liberty*, 1895; *The Growth of Socialism*, 1910, etc.

**Debt of honour**, debt in wh. there is a moral but no legal obligation to pay.

**Debtor balance**, balance owed by a customer to a bank, etc.; ant.: *creditor balance*.

**Debussy**, Claude (1862-1918), Fr. composer; opera *Pelléas and Mélisande*; piano pieces: Bruyère's, *La Cathédrale engloutie*, represent new departure in technique of pianoforte music.

**Début**, 1st appearance in society; 1st public appearance on stage of actor or artiste.

**Débutant** (e) (Fr.), beginner; one who makes his or her début (q.v.); esp. a young girl on her first appearance at Court.

**Dec.**, abbr. 1) (mus.), *decrescendo* (q.v.); 2) December; 3) deceased.

**Deca-**, prefix meaning ten times, e.g., 1 decalitre = 10 litres.

**Decabrists, Decembrists**, revolutionaries who took part in Russ. conspiracy agst. the new Czar, Nicholas, in Dec., 1825.

**Decade**, 1) a period of ten years; 2) period of ten days which, in the Fr. Repub. Calendar, took the place of a week.

**Decadence**, decay; over-refinement; artistic tendency towards the end of 19th cent., exemplified in work of Verlaine, Beardsley, Wilde.

**Decalogue**, (O.T.) Ten Commandments (basis of Mosaic Law), graven on 2 tablets of stone and brought down to Israelites by Moses from Mt. Sinai (Exod. xx).

**Decameron**, 100 folk and other tales, retold in elaborate setting by Boccaccio (q.v.); written 1344-50; influenced Chaucer's *Canterbury Tales*.

**Décamps**, Alexandre Gabriel (1803-60), Fr. painter, noted for his colouring and light effects and preference for Oriental subjects.

**Decani**: see CHOIR.

**Decapoda**, order of Cephalopoda (q.v.) comprising cuttle-fishes and squids; distingd. by ten arm-like projections, studded with suckers, around mouth.

**Decastich**, poem or epigram of 10 lines.

**Decathlon**, athletic competition in wh. each competitor takes part in 10 events, e.g.,

100, 400, and 1,500 mtrs. runs, 110 mtrs. hurdles, high jump, long jump, pole-vault, weight-putting, and discus- and javelin-throwing; added to Olimp. Games, 1912.

**Decatur**, tn., Illinois, U.S.A.; pop., 57,500; univ. (1901); corn mills; iron and steel manuf.; coal mines. First home in Ill. of Abraham Lincoln.

**Deccan**, the triangular penins. of India S. of *Vindhya Mts.*; plateau bordered by E. and W. Ghats; name sometimes restricted to portion betw. rivs. Nerbada (N., flowing into Gulf of Cambay) and Kistna (S., flowing into Bay of Bengal).

**December** (Lat., *decem*: ten), 12th month, of 31 days; the 10th of the Roman Calendar.

**Decembrists**: see DECABRISTS.

**Decemvirate**, (Rom. hist.) committee of ten appointed to codify Rom. law, 451-449 B.C.; name also given to body of civil magistrates, instituted 292 B.C., and to the Curators of the Sibylline Books apptd. under the Licinian Laws, 366 B.C.

**Decentralization**, in pub. admin., opposite of centralization (q.v.) and, especially, mod. tendency to increase powers of local authorities.

**Deci-**, (metric system) a tenth of a unit of weight or measure, e.g., decigram =  $\frac{1}{10}$  gram.

**Decim.**, abbr. decimetre.

**Decimal fraction**, one whose denominator is a power of 10. See also FRACTION.

**D. system**, numerical s. based on the figure 10, used esp. in currencies, weights, and measures.

**Decimate**, to put to death by lot every 10th man; hence, to devastate.

**Decius Mus, Publius**, name of two Rom. heroes and consuls, father and son; the first deftd. the Samnites, 343, and devoted himself to death to save the Repub., 340; the second similarly sacrificed himself at the battle of Sentinum agst. the Samnites and Gauls, 295 B.C. **D., Gaius Messius Quintus**, Rom. emp. 201-51; persecd. Christians.

**Deck**, horizontal division of ship, of wood or steel plates; in large ships, carrying insulated cargoes, several decks are fitted and insulated with wood. **Orlop d.**, lower deck of ship of the line; that, in all vessels, on wh. the cables are stowed.

**Declaration of rights**, submitted by Parl. to William and Mary, and accepted by them on 13 Feb., 1689. Its provisions were that: 1) it sh. be illegal for the sovereign to suspend laws or to levy taxes without consent of Parl.; 2) all subjects sh. have a right to petition the king; 3) it was contrary to law to raise or keep a standing army during peace; 4) freq. Parliaments sh. be held, and freedom of speech allowed in debate; 5) the sovereign sh. marry a Protestant and take the oath agst. Transubstantiation.

**Declination**, (magnetism) angle betw. true and magnetic north; magnetic meridian coincided with true meridian in 1652, after wh. magnetic needle swung W. of true N., reaching maximum variation, 1815; now swinging back and will ultimately point to true N. and then increase angle in easterly direction. (Astron.) Angular distance from celestial Equator of a heavenly body as viewed from the earth.

**Decline and Fall of the Roman Empire**, The, history by Gibbon (*q.v.*), 1776-88; transl. into Fr., 1777-95; into Ger., 1779; into It., 1779-86.

**Decoction**, extract of a veg. drug made by boiling a herb with water.

**Décolleté** (Fr.), low neck-opening on a dress; low cut.

**Decomposition**, disintegration of chem. combinations. **Simple d.**, splitting up of complex molecule into simpler ones. **Double d.**, interaction of 2 compounds resulting in exchange of some constituents of each: *e.g.*, silver nitrate and sodium chloride form silver chloride and sodium nitrate.

**Décor**, (theatre) scenic setting and costume for a given play.

**Decortication**, process of stripping off bark, *e.g.*, from wood or stalks.

**Decoy**, means of enticing wild fowl into net or within range of gun, usu. tamed or artificial bird; also enclosure into wh. game is lured.

**Decrescendo**, (mus.) gradually softer, with diminishing volume of tone.

**Decretals**, compilation of papal decrees formerly forming part of the canon law (*q.v.*) of the R. C. Church. *The False Decretals*: spurious collection of documents purporting to be early papal edicts, made (ostensibly by "Isidorus Mercator") in 9th century. They include the forged *Donation of Constantine*, *i.e.*, the delegation of the rule of Rome and Italy to the Papacy by C. the Great on his withdrawal to Byzantium, 330.

**Dedeagatch**: see ALEXANDROUPOLIS.

**Dedekind, Fried.**, 16th-cent. Ger. writer; his chf. work *Erobianus*, a satire on the uncouth contemp. manners, was tr. into Eng., 1605, and imitated in Dekker's *Gull's Hornbook*, 1609.

**Dedication**, 1) state or act of being devoted to a sacred purpose, esp. of a church building; 2) inscription as at beginning of book, etc., to a partic. person.

**De docta ignorantia** (Lat., of learned ignorance), title of work by Nicholas of Cusa (*q.v.*), in which he maintains that man's chief wisdom consists in a realisation of his own ignorance.

**Deduction**, method of reasoning from a gen. truth to a partic. conclusion. Ant.: *induction*.

**Dee**, John (1527-1608), Eng. mathema-

tician and astrologer; lectured on Euclid in Paris, c. 1550; prosecuted on charge of magic, 1555; travelled in Europe, 1583-88, giving exhibitions of magic; apptd. warden of Manchester Coll., 1595; instructed Qn. Elizabeth in astrology.

**Dee**, 1) riv., N. Wales and Cheshire; source Lake Bala, Merionethsh.; flows past Chester into its estuary (dangerous tides) in Irish Sea; length, 70 m. 2) Riv., N.E. Scot., rises in Cairngorms, flows past Balmoral and Ballater into N. Sea at Aberdeen; length, 90 m.; salmon fishing.

**Deed**, (law) written and sealed contract delivered by one person bound thereby to the performance of some act to another, who benefits by said act. Signature and date not essential. **D.-poll**, D. by which one party is bound without corresponding obligation of the other. See *INDENTURE*. **Title-d.**, D. vesting ownership of land or real property in a person.

**Deemster**, an umpire or judge, esp. one of the two judges in the Isle of Man—one sitting in the N. and the other in the S.—who have summary jurisdiction in certain civil suits.

**Deer**, ruminating hoofed mammal belonging to family of *Cervidae*; in which most conspicuous feature is presence of antlers on head of male, in most species shed annually. *Red D.* indigenous to Brit., Eur., and W. Asia; *Moose* and *Wapiti* to N. Amer.; *Sambur* to India, Burma, China. *Reindeer* belong to N. Hemisphere in Old and New World. **D. forest**, tract of mountainous country, reserved for deer-stalking, the sport of tracking and shooting deer.



Deer

**Deerhound**, larger, heavier var. of greyhound (*q.v.*), with shaggy grey coat.

**De facto** (Lat.), actual, in fact, really. Cf. *DE JURE*.

**Default**, (law) failure to do what a person is reqd. to do or what under the circs. is reasonable. **Judgment by d.** is obtd. in absence of an appearance or answer by one party.

**Defeatist**, pessimist, one who expects defeat rather than victory.

**Defective children, education of**. Local educ. authorities in Gt. Brit. are responsible for providing special schools for mentally and physically defective children, unable to benefit by ordinary elementary education (Educ. Act, 1921).

**Defence**, answer to a statement of claim. **D. of the Realm Acts**, series of acts passed by Parl. of Gt. Brit. during World War (1914-18), popularly known collectively as "Dora"; their gen. effect was sim. to the institution of a state of martial law; certain sections,

re hours of shop opening, conditions of sale of intoxicants, etc., subsequently re-enacted as permanent legislation.

**Deferred payments:** *see* INSTALMENT BUSINESS. **D. bonds:** *see* BOND.

**Deffand, Marie de V.-C. du** (1697-1780), Fr. letter-writer, famous for her salons; corresp. with Horace Walpole, Voltaire, Montesquieu, etc.

**Deficit**, in a balance sheet, excess of liabilities over assets. **National D.**, excess of expenditure over revenue.

**Deflation**, reduction of means of payment in circulation, esp. currency and bank credit below econ. requirements, for normal conduct of business at the price levels obtaining. D. tends to cause a general fall in prices, other things being equal. Because of considerable confusion in general use of the term, a fall in prices (wh. may be due largely to other causes) is itself often referred to as deflation; *see* INFLATION; MONEY (QUANTITY THEORY OF).

**Defoe, Daniel** (1660-1731), Engl. auth. and politic. satirist; *Robinson Crusoe*, 1719; *Moll Flanders*; *Journal of the Plague Year*, 1722; *Shortest Way with the Dissenters*, 1702.

**Deft.**, abbr. defendant.

**Dégagé** (Fr.), easy in manner, etc.; unconstrained.

**Degas, Edgard** (1834-1917), Fr. impressionist painter: *Portraits of Criminals*; *Singers at Cafés-concerts*; *Ballet-girls*.

**Degeneration**, (biol.) unfavourable divergence from type in individuals or races.

**Degree**, 1) (acad.) one of three distinctions (*Bachelor, Master, Doctor*) conferred by Brit. univs. for proficiency in Arts, Medicine, Law, Science, etc. *Honorary d.* may be conferred on distinguished persons, *Honoris causa*. 2) (Math.) 360th part of circumf. of circle; 90th part of right angle; 1 degree (°) = 60 minutes ('), 1 minute = 60 seconds (").

**Degrees, songs of**, Psalms cxx-xxxiv; apparently so called because chanted by Jewish priests when ascending to the Inner Court; also known as *Songs of Ascents* (R.V.) and the *Gradual Psalms*.

**Degumming**, process in treatment of raw silk; removes sericin (silk glue) from raw silk threads.

**De gustibus non est disputandum** (Lat.), it is useless to argue on matters of taste; there's no accounting for tastes.

**De haut en bas** (Fr.), from high to low; disdainfully, haughtily.

**Delaneira**, (Gr. myth.) wife of Hercules.

**Dei gratia** (Lat.), by the grace of God.

**Deimos**, the outer of the 2 satellites of Mars (*q.v.*).

**De integro** (Lat.), anew, all over again.

**Deira**, anc. kgdm., N. England (cap., York), united in 7th cent., with Bernicia, to form Northumbria.

**Deism**, doctrine accepting God as ultimate source of all things, but denying that He has any present relations with man or universe. Locke, Shaftesbury, Toland, Voltaire, and others maintained princ. in late 17th and early 18th centuries.

**De jure** (Lat.), by legal right; *cf.* DE FACTO.

**Déjeuner** (Fr.), lunch; *petit-d.*, breakfast.

**Dekker, Thomas** (c. 1570-1641), Eng. dramatist; *Satiromastix*, an attack on Ben Jonson, 1602; *Westward Hol* with John Webster, 1605; *The Roaring Girl*, with Thomas Middleton, 1611; etc.

**Del.**, abbr., 1) *deleatur* (Lat.), delete;

2) *delincauit* (Lat.), drew; 3) Delaware.

**Delacroix, Eugène** (1798-1863), Fr. historical painter and illustrator, leader of romantic movement; *Entry of the Crusaders* (into Constantinople), in Louvre, Paris.

**Delagoa Bay**, inlet of Indian Ocean, Portug. E. Africa; port, Lourenço Marques.

**Delaine**, dress matl. made of mixture of wool and cotton.

**De la Mare, Walter**

John (1893- ), Brit. poet and novelist.

**De la Ramée, Marie Louise** (1839-1908), Brit. novelist (pseud. "Ouida"); *Under Two Flags* (1867), *Moths* (1880), etc.

**Delaroche, Paul** (1797-1856), Fr. classic-romantic painter; *The Princes in the Tower* (Louvre).

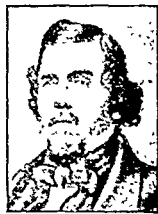
**Delatyn**, tn. in S. Poland, on Riv. Prut; mineral springs; pop., 49,000.

**De l'audace, encore de l'audace, toujours de l'audace** (Fr.: "boldness, more boldness, always boldness"), a phrase of Danton as keynote of republican French milit. policy.

**Delaware**, 1) State, U.S.A.; 2,370 sq.m.; pop., 238,000; on Atlantic coast, betw. Chesapeake Bay and mouth of D. Riv.; cattle, sheep; agric. and dairy products; iron, steel, machinery, and paper manuf.; meat-packing; lumber; oyster fisheries; Cap. *Dover*; largest tn., Wilmington. One of the 13 orig. states. 2) Riv. (350 m.), U.S.A.; enters Atlantic through D. Bay, joined by canal with Chesapeake Bay. **D., Lackawanna and Western Railroad**, U.S.A., operates in New Jersey, Pennsylvania, New York; 998 miles.



Defoe



Delacroix

**Delbrück, Berthold** (1842-1922), Ger. philologist; *Comparative Syntax of Indogermanic Language* (1893-1900). **D., Hans** (1848-1929), Ger. histor.; *History of Art of War*.

**Delcassé, Théophile** (1852-1924), Fr. statesman; several times For. Min.; concl. Anglo-French Agreement, 1904, beginning of Entente Cordiale; though in many respects a failure, he was one of the greatest Fr. For. Mins. of the 3rd Republic.

**Del credere**, security; guarantee on part of an agent for pymt. by customer for goods sold to him on credit. **D. c. commission**, fee pd. by princ. to agent for undertaking guarantee. **D. c. fund**, held by agent as reserves to meet losses wh. may result from outstanding claims.

**Deledda, Grazia** (1873- ), It. novelist; Nobel Prize (Lit.), 1926: *Elias Portolu*.

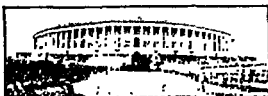
**Delegate, To**, to depute: 1) a polit. charge; 2) a polit. right from a higher to a lower authority.

**Delenda est Carthago** (Lat.), "Carthage must be destroyed"; words constantly reiterated by Cato the Censor in the Senate, 151 B.C.; often quoted to urge paramount importance of taking some prelim. step.

**Delft**, tn., S. Holland; pop., 50,000; famous in 17th-18th cents. for faience (*Delft* earthenware, with white glaze and blue painting).

**Delhi**, 1) smallest prov., India; 593 sq.m.; pop., 636,200. 2) Cap. of Brit. India since 1912, on Riv.

Jumna; pop., 447,400. Anc. cap. of Mogul Empire. City walls and gates,



Delhi, Parliament Building

Imperial Palace (once containing famous peacock throne); great Mosque; tomb of Humayun; Kutb Minar (tower 240 ft. high); Iron Pillar (24 ft.). The Ridge was Brit. base during siege of D. in 1857.

**New Delhi**, built 1912-1932; Govt. House (res. of viceroy), govt. buildings, palaces of Ind. princes. **Sieges of Delhi**: 1) in second Mahratta War, 1804, small Brit. garrison resisted attacks of 20,000 Mahrattas; 2) in Ind. Mutiny, 1857, D. seized by c. 30,000 mutineers, and relieved by small Brit. force under Sir Harry Barnard.

**Delian problem**, math. problem: given a certain cube, to construct another of twice its cubic content. So called because of warning of Delian oracle to Athenians to double Apollo's altar (which was a cube) in order to check a plague. **D. league**: see DELOS.

**Delibes, Léo** (1836-91), Fr. composer; ballet *Coppelia*, 1870; comic opera, *Lakmé*, 1880.

**Delilah**, (O.T.) woman of the Philistines,

to the lords of whom she betrayed her lover, Samson; (Judges xvi); name used as typical of a temptress.

**Deliquescence** (chem.): see SALTS.

**Delirium**, raving, extreme mental agitation, occurs in meningitis, typhoid fever, and in certain cases of poisoning. **D. tremens**, agitation and tremor, with visual hallucinations, accompanied by feeling of terror; due to alcoholic excess.

**Delius, Frederick** (1863- ), Eng. composer; operas incl. *A Village Romeo and Juliet*; orchest. works: *Appalachia*, *Paris*, *Brigg Fair*, etc.

**Delivery**, (commer.) handing over of goods or documents to recipient. **D. period**, period within wh. goods have to be delivered after completion of purchase; in shipments, period within wh. transport will be effected; see FORWARD BUSINESS.



Delius

**Della Robbia**, name of Florentine family of artists, incldg.: **Andrea** (1435-1525), esp. renowned for plaques of enamelled and glazed terra-cotta in relief and **Bambini**; his uncle, **Luca** (c. 1399-1482), sculptor in marble and bronze; perfecter of process of enamelling terra-cotta.

**Della Scala**, name of It. princely fam. of Verona; sculptured tombs of the family (14th cent.) at Verona.

**Delos, Mikra Dili**, small Gr. isl., Cyclades, Aegean Sea; ruins of Temple of Apollo; scene of Ionic festival in antiquity. **Delian League**, confederacy of Gr. states under Athens (478-404 B.C.); **Second Delian League**, 387-338 B.C.

**Delphi**, tn. in anc. Greece, in Phocis, at the foot of *Mt. Parnassus*, famous for precinct of Pythian Apollo (Delphic Oracle; "Centre of the World"; most important in Greece) and for Pythian Games. Site of D. (mod. village Castri) bought by Fr. Govt.; excavations since 1892.

**Delphinium**, genus of flowering plants of family *Ranunculaceae*, wh. includes the larkspur (*g.v.*).

**Delphinus**, the *Dolphin*, constell. of rhombic shape; see PL. ASTRONOMY, N.C.H., G.

**Delta** (from Gr. letter Δ), triangular tract of alluvial ground at mouth of a river that enters sea by two or more branches; esp. the D. of the Nile. **D. metal**, alloy consisting of 60% copper, 38% zinc, 2% iron; golden colour; can be forged and cast, is almost incorrodible and of great value in engineering.

**Deluge**, (O.T.) flood wh. swept away all life except Noah, his family, and beasts and birds sheltered in Ark (Gen. vi).

**Delusion**, false belief based on erroneous reasoning; may arise out of ignorance; if due

to mental disease, D. freqtly. takes the form of *monomania*, e.g., persecution mania.

**Delville Wood**, wood, dépt. Somme, France, 7 m. E. of Albert, taken 15 July, 1916 (first battle of the Somme), by S. African brigade; finally recaptured by British, 27 Aug., 1918. S. African War Memorial.

**Demagogue**, leader of people who seeks to influence them by playg. on their passions and prejudices; mob leader.

**Demand and supply**, for goods and services; interdependent factors in the determination of prices.

**Démarche** (Fr.), a new departure in diplomacy; fresh line or change of action or policy.

**Demavend**, extinct volcano, Elburz range, Persia; alt. 18,603 ft.; hot springs.

**Dementi** (Fr.), official contradiction of a rumour or statement.

**Déméntia**, mental incapacity, occurs in insanity. **D. paralytica**, gen. paralysis of insane. **D. praecox**, adolescent insanity, appears at age of puberty; child may have been quite normal previously; proceeds spasmodically or continuously; ends in characteristic condition (complete change of personality, lack of emotional feeling, withdrawal from outside world); freq. traceable to heredity. **D. senilis**, senile decay.

**Demerara**, 1) riv. (200 m.), Brit. Guiana, flowing into N. Atlantic. 2) Co. of Brit. Guiana; cap., *Georgetown*, for wh. it is an alternative name.

**Demeter**, Gr. name of goddess Ceres (q.v.).

**Demetrius, Poliorcetes**, (337-283 B.C.), Kg. of Macedonia. See also DEMETRY.

**Demi-monde** (Fr.), "half-world," orig., the fringes of society, the world of the declassed; women of easy virtue.

**De minimis non curat lex** (Lat.), the law takes no heed of trifles.

**Demiurge**, the Divine architect, the Creator (Plato). In *Neo-platonist* philos. D. was chief of lowest order of spirits, who evolved the visible world from chaos and was responsible for entry of evil into the world.

**Democracy**, form of govt. in wh. polit. power is diffused among those recog. as having civic rights (but may, nevertheless, exclude women or subject populations). See IMMEDIATE D.; REPRESENTATIVE DEMOCRACY.

**Democratic party**, in U.S.A., party-formed orig. to favour decentralization as agst. centraln. of Federal Govt.; assoc. with lowering of tariffs. Derives strength largely from Southern States but also from Tammany Hall (q.v.).

**Democritus** (c. 460-360 B.C.), Gr. philos., known as "The Laughing Philosopher"; developed atomistic theory of Leucippus (fl. 500 B.C.).

**Demography**, branch of statistics dealing with life-conditions of peoples (births, marriages, mortality, etc.).

**Demonology**, science or study connected with nature and operations of superhuman beings below rank of gods, e.g., good or evil spirits or witches. See SABBATH; VAMPIRE; WITCHES.

**Demonstration**, 1) visible presentation, esp. of scientific experiments. 2) Public mass expression of an opinion.

**Demonstrator**, (universities, etc.) assistant to professor of science, responsible for practical work with students.

**Demoralisation**, loosening of moral fibre, loss of moral standards or principles.

**De Morgan**, Wm. Frend (1839-1917), Brit. artist and novelist; fndd. firm for manuf. of tiles and pottery; publ. *Joseph Vance*, 1906; *Alice-for-Short*, 1907; etc.

**De mortuis nil nisi bonum** (Lat.), say nothing but good about the dead.

**Demosthenes** (383-322 B.C.), Gr. orator; defended Athenian independence against Philip of Macedon (q.v.) in 3 Philippics; cf. AESCHINES.

**Demotic**, popular, belonging to the people; spec., of the popular form of writing in anc. Egy. as distinct from hieratic.

**Dempsy, Jack** (1895- ), Amer. pugilist; World Hvy.-wt. Champ., 1919 (deftd. Jesse Willard); 1921 (deftd. Geo. Carpentier); deft. by Gene Tunney, 1926 and 1927.

**Demurrage**, (com.) compensation to be pd. by the merchant to the ship-owner if stipulated time for loading or unloading is exceeded.

**Denarius**, silver coin of anc. Rome, first struck 269 B.C.; origin of Eng. symbol "d." for a penny.

**Denature**, in ref. to alcohol; to add such substances as will make it undrinkable, but not interfere with its use as fuel or solvent; substances used are wood naphtha, pyridine, quassia, etc. See METHYLATED SPIRITS.

**Denbighshire**, marit. co., N. Wales; area, 668 sq.m.; pop., 157,700; surface mainly hilly moorland (*Moel Sych*, 2,713 ft.); rivs.: Dee, Conway; agric. in vales of Clwyd and Llangollen; coal, lead, slate; woollens.

**Denbigh**, co. tn.; pop., 7,200; castle.

**Dendrite**, mineral with markings resembling trees or plants.

**Dendrology**, science of trees and shrubs.

**Deneb** (Ar., *The Tail*), name of several stars, referring to their situation in their respective constellations. **Denebola** (*Tail of Lion*), 2nd magn. star,  $\delta$  in Leo (q.v.).

**Dene-hole**, prehist. excavation in chalk, comprising a shaft, 50-60 ft. deep, leading to an underground domed chamber; possibly



Demosthenes

used for storing corn. Found in Kent and Essex.

**Dengue**, infectious trop. and sub-trop. fever characterized by pains in joints and skin eruption.

**Denikin**, Anton Ivanovich (1872- ), Russ. gen.; com. VIII Army Corps, 1914-17; ch. of staff, 1917; com. White Armies (counter-revol.), 1918; destd. by Budenny, 1919-20.

**Denis**, St. (3rd cent.), patron saint of France; 1st Bp. of Paris; commem. Oct. 9th; rep. in art carrying head in hands.

**Denizen**, dweller; in Grt. Brit., alien enjoying privileges of a Brit. subject by virtue of letters patent.

**Denmark** (see map, SCANDINAVIA), constitutional kgdm., N. Europe, betw. North and Baltic seas; separated from Norway by Skagerrak, and from Sweden by Kattegat and the Sound; area, 16,579 sq.m.; includes N. Slesvig, Jutland, isls. of Fünen, Möen, Bornholm, Falster, Langeland, Laaland, Zealand, and the Faeroes (*q.v.*), also colony of Greenland;



pop., 3,542,000 (214 to sq.m.), mostly Protestant. Isls. flat and fertile; Jutland largely moorland. Pasture, agricul., cattle-breeding, dairy-farming, fisheries; few industries. Rlys. 3,286 m. (many train-ferries); mercantile marine 1,809 vessels of 1,096,144 tons. Foreign trade (1932): imports, £62,800,000; exports, £59,570,000. Cap., *Copenhagen*. HISTORY: Viking raids on S. England and Normandy in 10th cent.; Canute the Great (d. 1035) conquered S. England and Norway; conquest of E. and S. coasts of Baltic in 12th cent., lost in 13th cent. By Union of Kalmar (*q.v.*) Denmark, Norway, and Sweden one kgdm., 1397; under Christian II (1513-23) Sweden seceded; Reformation, 1536; Northern War (D., Poland, Saxony, Russia, and Hanover against Sweden), 1700-21. Peasants emancipated under Christian VII. Bombardment of Copenhagen by Brit. fleet, 1807. Heligoland ceded to Eng. and Norway to Sweden, 1814. D. receiving Lauenburg. Schleswig-Holstein Wars (*q.v.*), 1848-50 and 1864, as a result of which D. lost Schleswig-Holstein and Lauenburg. Neutral during World War; acquired N. Slesvig (Schleswig), 1920. *Dan. W. Indian Isls.* sold to U.S.A., 1917. Iceland indept. State, under Kg. of Denmark, 1918. **D. Strait**, betw. E. Greenland and Iceland.

**Dennewitz**, vill., nr. Potsdam; victory of Prussians under Bülow over the French, 6 Sept., 1813.

**Denominator**, the figures of a fraction, below the line, by which the numerator (*q.v.*) is divided.

**De novo** (Lat.), anew, afresh.

• see SPECIFIC GRAVITY.

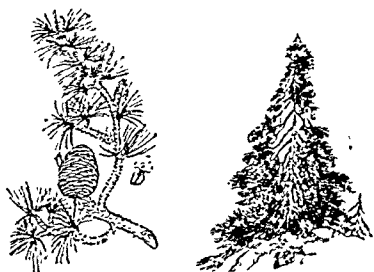
(phon.) sound pronounced chiefly

... e.g., *d*, *t*, *th*. **D. hygiene**, prac-

tice of keeping teeth clean and free from particles of food; regular brushing will do all that is req., action of dentifrices being merely to polish surface of teeth and leave "clean" taste in mouth. So-called antiseptic dentifrices usu. have little germicidal power; they should not be abrasive. Reg. visits to a dentist are advisable, so that unnoticed defects may be discovered and appropriate treatment given.

**Denver**, cap. Colorado, U.S.A.; pop., 288,000; univ. (1864); state Capitol; museum; mint; iron and cotton indust.; meat-packing; gold- and silver-mining district. **D. and Rio Grande Western Railroad**, U.S.A., operates in Colorado, Utah, and New Mexico; 2,549 m.

**Deodar**, species of cedar tree, native to Himalayas but readily cultivated in Europe.



Deodar. A) Seed

Reddish timber is used in cabinet-making and takes a high polish.

**Deo gratias** (Lat.), thanks be to God. **Deo juvante**, God helping. **Deo volente** (D.V.), God willing.

**Deoxidation**, removal of oxygen from any substance, e.g., mineral metallic oxides, leaving metal.

**Department**, 1) sphere of work, esp. in ministries; 2) Fr. administrative district.

**D. stores**, retail businesses on a large scale, selling a variety of goods; 1st D.S. establ. middle of 19th cent. in France (Bon Marché), then in U.S.A. and Eng.; in Ger. abt. 1880.

**Depew**, Chauncey Mitchell (1834-1928), Amer. lawyer and politician; general counsel for entire Vanderbilt rly. system, 1875; chairman, 1898; Sec. of State of New York, 1864-66; joined Republican party, 1872; U.S. Senator for N.Y. State, 1899; re-elected, 1904-11. *My Memories of Eighty Years*, 1922.

**Depilatory**, prep. for destroying or removing hair.

**Deportation**, (leg.) transportation (*q.v.*); term usu. limited to expulsion of aliens after recommendation to that effect by court which has convicted them of certain offences.

**Deposit**, (geol.) solid matter, sand, clay, etc., held in solution in water and left behind as a coating or stratum when the water subsides or dries up. (Banking) Sum placed

with bank by customer wh. may be withdrawn by cheque or otherwise. See CURRENT, DEPOSIT, and SAVINGS ACCOUNTS. **D. accounts** (banking), D. kept on acct. with a bank by an individ. or firm, etc.; D. not immed. withdrawable (period of notice to be given usu. fixed). Banks pay int. on such accts. in Eng., usu. 1% less than bank rate (q.v.); banks in U.S.A. must hold 3% cash agst. time deposits.

**Depression**, 1) (meteor.) lowering of at-

portant silk and cotton industry; L.M.S. locomotive and rly. carriage works; Rolls-Royce motor-car works; "Crown Derby" china. **Derbyshire**, inland co., centr. Eng.; area, 1,002 sq.m.; pop., 757,300; contains famous *Peak District* N. and N.W.; flat or undulating in S. and E. (important coal mines).

**Derby, The**, (horse-racing) race for 3-year-old colts (1½ m.); chf. event of the Eng. flat-racing season, fndd. by 12th E. of Derby,



The Derby

mospheric pressure, indicated by fall in barometer. 2) (Astron.) Angular distance of a heavenly body below horizon.

**De profundis** (Lat.), out of the depths; 1) Penitential Psalm (130). 2) Book by O. Wilde (q.v.).

**Deptford**, met. bor., S.E. London, Eng., on S. bank Riv. Thames; pop., 106,900; R.N. victualling yard.

**De Quincey**, Thomas (1785-1859), Eng. auth. and literary critic: *Confessions of an English Opium Eater*, 1821.

**Derating**, term used in Eng. for relief from rates (q.v.) of cert. properties. Began in 1896 with reduction to half of rates on agric. land. Much extended by Local Govt. Act, 1929.

**Derbent**, port, Dagestan, on Caspian Sea; pop., 23,100; known in antiquity as the "Iron Gate," through which Asiatics passed into Europe.

**Derby, Edward Geoffrey Stanley**, 14th E. of (1790-1869), Brit. statesm.; Pr. Min., 1852, 1858, 1866; supporter of abolition of slavery and Reform Bill. **D., Edward Stanley**, 17th E. of (1865- ), Sec. of State for War, 1916-18, and 1922-24; dir. of recruiting, 1915, launching *Derby Scheme*, a final attempt to secure adequate voluntary enlistment; Brit. Ambass. in Paris, 1918, noted racehorse owner and sportsman; won the Derby 1924 and 1933.

**Derby**, co. bor. and cap. of Derbysh., on navigable riv. Derwent; pop., 142,400; im-

portant silk and cotton industry; L.M.S. locomotive and rly. carriage works; Rolls-Royce motor-car works; "Crown Derby" china. **Derbyshire**, inland co., centr. Eng.; area, 1,002 sq.m.; pop., 757,300; contains famous *Peak District* N. and N.W.; flat or undulating in S. and E. (important coal mines).

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**Derg, Lough**, 1) lake, I.F.S., cos. Galway, Clare, and Tipperary; 24 m. by 2; an expansion of Riv. Shannon. 2) Lake, Co. Donegal, I.F.S.; 24 sq.m.; on Station Isl. is cave of St. Patrick's Purgatory.

**De rigueur** (Fr.), indispensable in accordance with strict rules of etiquette.

**Derivative**, (chem.) compound produced from another, by substitution of one atom or group for another.

**Dermatology**, (med.) science of diseases of skin.

**Dernburg**, Bernhard (1865- ), Ger. politic. and banker; Col. Sec., 1906; Min. of Fin., 1919.

**Dernier cri** (Fr.), last cry; the very latest, applied esp. to fashions.

**Déroulède**, Paul (1846-1914), Fr. poet and politician; organized "League of Patriots," 1882; tried to arouse anti-German feeling; banished for conspiracy agst. the Republic, 1900; returned to Fr., 1905. Patriotic hymn, *Vive la France*, 1878, set to music by Gounod (q.v.).

**Derrick**, crane for hoisting material, gen. loading and unloading ship, consisting of a *jib*, a spar fixed at one end to foot of mast, and sloping away upwards; held by rope passing over top of mast; carries a pulley at free end, over which a rope passes to windlass (q.v.).

**Derry**, alternat. name of tn. of London-derry (q.v.).



**Derryveagh Mountains**, range, Co. Donegal, I.F.S.; *Errigol*, 2,466 ft.

**Dervish**, 1) mendicant Mohammedan monk. 2) Fanatical follower of the Sudanese Mahdi (*q.v.*).

**Derwent**, 1) riv., Yorks., Eng.; trib. Riv. Ouse, length 60 m.; 2) riv., N. Derbysh., Eng.; flows past Matlock and Derby into Riv. Trent; length, 60 m.; 3) riv., W. Cumb., Eng.; flows from Derwentwater into Solway Firth at Workington; length, 33 m.; 4) riv., Northumb. and Durham, Eng.; trib. Riv. Tyne; length, 30. miles.

**Derwentwater**, lake, S.W. Cumb. Lake Dist., Eng.; 3 m. by 1; several small islands; outlet Riv. Derwent.

**Desbordes-Valmore**, Marcelline (1786-1859), Fr. poetess and opera-singer.

**Descant**, (mus.) oldest form of counterpoint; part for high women's or boys' voices, now called *soprano*. **D. clef** on 1st line of stave (now rarely used).

**Descartes**, René (1596-1659), Fr. philos. and mathemat.; the "father of mod. philosophy"; *The Principles of Philosophy* (1644); see COGITO ERGO SUM. Originator analytic geometry. See also PHILOSOPHY, HISTORY OF.

**Deschanel**, Paul Eugène Louis (1856-1922), Fr. statesman; deputy for Eure-et-Loire, 1885; Pres. of the Chamber, 1898, 1901; Pres. of Commission on Foreign and Colonial Affairs, 1905-09; Pres. of Republic, 1920, but forced, through ill-health, to resign the same year.

**Desert**, part of earth's surface with poor or no vegetation, comprising *sandy*, *rocky*, *salt*, and *ice deserts*, and est. at 18,400,000 sq.m. (nearly one-third of total land area). Sit. chiefly under N. and S. tropics; salt deserts in centr. N. Amer., round the Caspian and Dead Seas, etc.; ice deserts in Greenland, Antarctic, etc.

**Desertas**: see MADEIRA.

**Desertion**, continual absence of a married person from cohabitation without reasonable cause, agst. the will of the other spouse.

**Desiccation**, drying up of fish, meat, grains, malt, fruit, etc., in mod. heat, for preservation.

**Desiccator**, (chem.) a dryer, usually a glass jar, contg. at bottom calcium chloride or sulphuric acid.

**Desiderius**, last Kg. of Lombards, 756-74; deftd. by Charlemagne, who annexed Lombard Kgd., 774.

**Designs, Registration of**: see PATENTS, SIGNS, and TRADE-MARKS.

**Desman**, (zool.) aquatic mammal of order Insectivora, intermediate betw. shrewmouse and mole; webbed feet, long snout; inhab. Pyrenees and S.E. Russia.

**Des Moines**, -cap., Iowa, U.S.A.; pop., 142,000, on **D. M. Riv.** (450 m.), rt. trib. of the Mississippi; univ. (1881); indust.: iron and coal; agric. centre.

**Desmoulins**, Camille (1760-94), Fr. revolutionary and politic. pamphleteer; incited mob to storm Bastille, 1789.

**Dessau**, cap. of Anhalt, Germany; on Riv. Mulde, near confluence with Riv. Elbe; pop., 78,500; beer, soap,

aeroplanes. Victory of Wallenstein over Mansfield, 1626, at the *Bridge of Dessau*.

**Dessert-spoonful**: see DRAM 2).

**Destiny, Stone of, Lia Fail**, coronation stone of anc. Kgs. of Ire. at Tara (*q.v.*); said to have been removed, first to Dunstaffnage Castle, Argyllsh., Scot., thence to Scone Palace, Perthsh., and finally to England (by Edward I, in 1297); now part of Coronation Chair at Westminster Abbey.

**Destructor**: see REFUSE.

**Detaille**, Jean Baptiste Édouard (1848-1912), Fr. painter, pupil of Meissonier; mainly military subjects; *Le Rêve* (Luxembourg).

**Determinism**, doctrine wh. denies free will and maintains that the relation betw. motive and action is the same as that betw. cause and effect.

**Detinue**, in Eng. law, right of action agst. one who, having goods or chattels delvrd. to him, refuses to give them up.

**Detonation**, sudden chem. disintegration accomp'd. by loud report; explosion, *e.g.*, of bombs.

**Detonator**, container filled with fulminate of mercury alone or mixed with potassium chlorate to discharge explosives; lead azide also is used; fired by fuse or electricity.

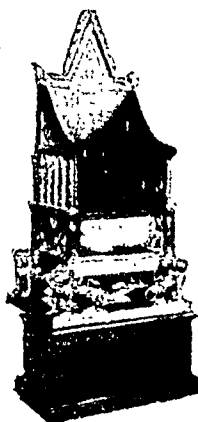
**Detroit**, tn., Michigan, U.S.A., port on D. Riv. (28 m.), connecting lakes Huron and Erie; pop., 1,570,000; Inst. of Arts; engineering and motorcar factories (Ford); ship-building.

**De trop** (Fr.), in excess of what is required; said of an unwanted intruder.

**Dettingen**, vill., Bavaria, on the Main, 16 m. E.S.E. Frankfurt. **Battle of D.**, 1743, victory of British and Hanoverians over French. Last battle in which an Eng. Kg. (Geo. II) appeared in the field.



Descartes



Coronation Chair

**Deucalion**, (Gr. myth.) son of Prometheus; saved from flood caused by Zeus.

**Deuseddit**, St., Pope (615-18), tradit. 1st pope to use leaden seals for pontifical documents.

**Deus ex machina** (Lat.), a god from the machine, applied to a sudden intervention to solve a difficulty; orig. from a stage device of the Gr. drama, in which a god descended from above to straighten out a tangled situation.

**Deussen**, Paul (1845-1919), Ger. philos.; transl. Indian *Veda* and *Upanishads* (1883, 1897).

**Deus vult** (Lat.), God wills it; battle-cry of 1st Crusade.

**Deuteronomy**, (O.T.) 5th bk. of Pentateuch; story of Israel's wanderings and of law given to people by Moses; prob. 7th cent. B.C.

**Deutsche Bank**: see D.-BANKS.

**Deutzia**, (bot.) genus ornamental saxifragaceous shrub; native to Asia and Centr. Amer.; flowering with white racemes; certain varieties cultivated.

**Deux-Sèvres**, dépt. W. France; area, 2,337 sq.m.; pop., 309,850; agric., cattle-breeding; iron mines; weaving; cap., Niort.

**De Valera**, Eamon (1882-), Ir. statesman; led Ir. Rebellion, 1916; sented. to death but sentence commuted to penal servitude; released in gen. amnesty, 1917; Sinn Féin leader, 1917-26; Pres. Exec. Council, Ir. Free State, 1932; repudiated oath of alleg. to the Brit. Crown, 1933.



De Valera

**Devaluation**, lowering in gold value of a nominal currency unit.

**Devata**, or *devas*, beneficent nature gods of Hindu mythology.

**Development 1)** (photog.) is the making visible of the invisible or "latent" image impressed by light upon the photographic plate or film, coated with silver bromide emulsion, when in the camera. The developer reduces the minute grains of silver bromide to metallic silver, which is thrown down as black grains only where light has previously acted. Ferrous oxalate, hydroquinone, pyrogallol, and many other substances are used as developers. **Tank** or **Thermo D**. consists in D. without inspection during the process; it is necessary to measure time and temperature accurately. 2) (Mus.) Section of a movement in which the themes are variously worked out. **D. Commission**, appointed, 1909, to promote econ. development of U.K.; advances made for development of agriculture and rural industries, land reclamation and drainage, fisheries, and improvement of harbours.

**Deventer**, inland tn., Overijssel, Holland,

on Riv. Yssel; pop., 36,200; Groote Kerk (13th cent.); Athenaeum (high school; fndd. 1630); manuf. carpets, gingerbread.

**Deviation**, error in indic. of a compass on acc. of magnetic effect of iron contd. in a ship.

**Device**, motto or emblem; borne in Mid. Ages on shields and banners and probably origin of heraldry (*q.v.*).

**Devil**, (tech.) name for a large number of machines in various trades; in textile trade machine for tearing up rags. **D.-fish**, popular name applied to the octopus (*q.v.*) and the angler-fish (*Lophius piscatorius*), which has the head and fore-part of the body greatly enlarged, and the first three dorsal spines modified into curious tentacles, the first bearing a filamentous appendage, which seems to serve as a lure to bring prey within reach of the capacious jaws, as the fish rests half-buried in the sand on the floor of the sea.



Devil-mask from the Tirol

**D.-masks**, grotesque or terrifying disguises used by many primitive peoples in relig. ceremonies (dances, etc.) to inspire fear, avert evil (*sympathetic magic*), etc.; traces of this paganism still found among peasantry of centr. Europe (e.g., *Perchtenspiel* in Salzburg).

**D. upon Two Sticks**, comedy, by Foote (produced 1768), adapted from Le Sage's *Le Diable Boiteux*; see ASMODEUS.

**Devil's coach-horse**, (entom.) one of the largest of the rove beetles (*q.v.*); long-bodied insect found under stones in gardens; when its course is arrested with a stick or finger it assumes a threatening attitude with up-raised jaws and tail. **D.'s**



**Dyke**, hollow on S. Downs, Devil's Coach-horse Sussex, 5½ m. N.W. Brighton, below a hill (697 ft.); name also given to similar features elsewhere. **D.'s Island**, *Île du Diable*, one of group of Îles du Salut, off Fr. Guiana; penal settlement; Dreyfus imprisoned, 1894-99. **D.'s Punchbowl**, depression on Hindhead Common, Surrey, 2 m. N. Haslemere. **D.'s Tower**, Wyoming, U.S.A.; natural rock tower; 1,200 feet.

**Devise**, term used for bequest (*q.v.*) of immovable property.

**Devitrification**, conversion in igneous rocks from glassy to crystalline, opaque texture.

**Devon**, Earls of, title in peerage of England: **Reinaud de Courtenay**, a favourite of Henry II, was granted lands at Sutton Courtenay, Berks., 1161; his g.s. **Robert** (d. 1242) m. Mary, dau. of William de Vernon, Earl of Devon; his g.s. **Hugh** (1275-1340) was created earl, 1335; his s.

**Hugh**, 2nd E., m. Eleanor, dau. of Humphrey de Bohun, E. of Hereford; his s., **Sir Hugh**, fought at Crécy (1346) and was a knight founder of the Order of the Garter, but died before his father; **Edward**, 3rd E. (d. 1419), marshal of Eng., 1385; **Hugh**, 4th E., m. sister of Talbot, E. of Shrewsbury; his s. **Thomas**, 5th E. (1432-62), supp. of Henry VI, was beheaded after Towton; titles and estates forfeited; restored to **Edward** (d. 1509); his s. **William** (d. 1511) m. Catherine, dau. of Edward IV; sent to Tower by Henry VII; estates forfeited; **Henry** (1498-1538) restored to earldom, 1517; beheaded in Tower; his s. **Edward** (1526-56) succ. in 1553; exiled in 1555, and d. at Padua, earldom dormant; after being held by Lord Mountjoy, 1603, and Sir William Cavenish, 1618, regranted to collateral branch of Courtenay family, 1831; **Charles Pepys** (1870-1927) was succ. by his bro. **Henry Hugh**, 15th E. (1872- ).

**Devon**, or **Devonshire**, S.W. Eng., third largest co. in Eng.; area, 2,605 sq.m.; pop., 458,664; fine coast scenery (many harbours); hilly and picturesque interior: Exmoor (partly in Somerset) in N., Dartmoor in S. Mild climate, rich vegetation in S. Devon, characteristic red soil. Cattle and sheep-breeding; Exmoor ponies; cider and clotted cream; pilchard fishing; considerable mineral wealth. Co. tn., *Exeter*; largest tn., *Plymouth*; principal health-resorts, *Torquay*, *Ilfracombe*.

**Devonian**, (geol.) system of rock formation betw. the Silurian and Carboniferous; includes Old Red Sandstone (*q.v.*). See GEOLOGICAL FORMATIONS.

**Devonport**, westernmost of "Three Towns" (Plymouth, Stonehouse, Devonport) forming Plymouth; famous dockyard.

**Devonshire**, Earls and Dukes of, titles in peerage of England—**Earls**: **William Cavenish** (d. 1626), s. of Sir William C., cr. 1st E., 1618; his g.s. **William**, 3rd E. (1617-84), prom. Royalist; orig. member of earlist Roy. Soc., 1645. **Dukes**: **William** (1640-1707), s. of 3rd E.; witness for Lord William Russell, 1683 (see RYE HOUSE PLOT); supptd. William of Orange (Wm. III of Eng., 1689-1702), cr. Marq. of Hartington and Duke of D., 1694; built Chatsworth House, Derbysh.; his g.s., **William**, 4th D. (1720-64), Prime Min., 1756-57; his s. **William**, 5th D. (1748-1811), m. 1) Georgiana Spencer, and 2) Elizabeth Foster, both subjects of famous paintings by Gainsborough; his s. **William**, 6th D. (1790-1858), d. unmarried; succ. by cousin, **William**, 2nd E. of Burlington, and 7th D. (1808-91); his s. **Spencer Compton**, 8th D. (1833-1908), with short breaks M.P. (as Marq. of Hartington), 1857 to succession to dukedom, 1891; moved vote on address which overthrew Derby govt., 1859; War Sec., 1866; P.M.G., 1869; Chf. Sec. for Ire-

land, 1870-74; Sec. for India, 1880-82; War Sec., 1882-85; joined lib.-unionists, 1885; Lord Pres. of Council in Unionist govt., 1895-1903; opposition to Tariff Reform led to resignation; succ. by his nephew, **Victor Christian**, 9th D. (1868- ), Civ. Lord of Adm., 1915-16; Gov.-Gen. of Canada, 1916-21; Lord-Lieut. of Derbyshire; High Steward of Camb. Univ. since 1923.

**Devonshire**, Eng. co., see DEVON.

**Dew**, condensation in drops of water of moisture in the air upon objects cooled below the dew-point (*q.v.*). Greatest on cloudless nights, when heat is radiated away from earth into space. **D.-point**, temp. at wh. moisture cntd. in atmos. is precipitated in form of dew. **D.-pond**, artificial pool of water found on high ground S. Eng. (esp. on Sussex downs), said to be fed by dew deposits; some dew-ponds date back to Neolithic Age.

**Dewar**, James (1842-1923), Eng. chem. **D. flask** has double walls of silvered glass, with high vacuum betw. them, thus preventing loss or gain of heat by convection or radiation: orig. form of thermos flask.

**De Wet**, Christian (1854-1922), Boer gen. in 2nd Boer War and in Boer rebellion, 1914.

**Dewey**, George (1837-1917), U.S. adm.; deft. Sp. fleet in Manila Bay, 1898.

**De Wint**, Peter (1784-1849), Eng. landscape painter; partic. noted for his water-colours: *Knaresborough Castle*; *Collages and Harvesters*; *View on the Thames*, etc.

**Dewsbury**, 'co. bor., W. Riding, Yorks; manuf. heavy woollens, shoddy; pop., 54,300.

**Dextrin**, British gum prepd. from starch by hydrolysis, used in sizing of cotton goods and as adhesive; also as a food.

**Dextrorotatory**, (chem.) quality attributed to substances, wh. cause the plane of a polarized ray of light to rotate from left to right. Ant.: *Laevorotatory*.

**Dextrose**, sugar manuf. from starch; given as a food and to prevent acidity. See GLUCOSE.

**D.F.**, abbr. *defensor fidei* (Lat.), Defender of the Faith.

**D.F.C.**, abbr. Distinguished Flying Cross.

**D.G.**, abbr., 1) *Dei gratia* (Lat.), by the grace of God; 2) *Deo gratias* (Lat.), thanks be to God. **dg.**, abbr. decigramme.

**Dhaulagiri**, peak of the Himalayas, in Nepal, height 26,826 feet.

**Dhow**, Arab. coasting vessel with single mast and large lateen sail.

**Di-**, Gr. prefix; two-, double-, little used in forming Eng. words (see **BI-**, from which it is sometimes differentiated, as in *digamy*, second legal marriage, and *bigamy*).



Dhow

**Di**, (chem.) symbol of didymium. **D.I.**, abbr. District or Deputy Inspector.

**Dia-**, Gr. prefix; through, or by means of.

**Diabase**, crystalline granular rock; greenstone, whinstone, or trap; some varieties used for road-making.

**Diabetes**, term usually applied to *D. mellitus*, a disease in wh. the pancreas is inefficient, resulting in excretion of sugar (glucose) in urine. Until recently *D.* was usually fatal, now treatment with *insulin* (*q.v.*) controls it. *D. insipidus* is a rare affection, characterized by passage of large amount of urine; due to lesion of posterior lobe of pituitary gland.

**Diabolo**, game in wh. a kind of top is thrown up from a string between 2 sticks.

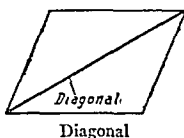
**Diadochi**, **Diadochoi** ("successors"), genrls. of Alexander the Great who divided his empire (323-281 B.C.): Ptolemy (Egy.), Seleucus (Asia), Antigonus (Greece and Macedon.).

**Diaeresis**, 2 points (") over 1 of 2 vowels indicating sep. pronun., e.g., naïve.

**Diaghilev**, Sergei Pavlovich (1872-1929), Russ. ballet-producer: *Carnaval*; *Scheherazade*; *Petrushka*; *The Three-cornered Hat*.

**Diagnosis**, (med.) identification of a disease. **Diagnostics**, substances used for this purpose.

**Diagonal** (Gr.), (geom.) line connecting two opposite angles of a plane or solid polygon.



**Dialect** (Gr.), speech peculiar to district, class, or person; a subord. variety of a lang. with distinct vocabulary, idiom, or pronunciation. oft. differ. widely from current

**Dialectics**, (lit.) the art of conversation; a method of reasoning based on a series of propounded questions and their logical answers.

**Diallage**, (mineral) dark-green, laminated form of pyroxene, with irregular planes of fracture.

**Dialogue**, (Gr.) conversatn. betw. two or more people.

**Dial-sight**, instrument for pointing ordnance, now telescopic.

**Dialysis**: see DIFFUSION.

**Diamagnetism**: see MAGNETISM.

**Diamantina**, riv., Australia, flowing from Queensland hills (part *Great Dividing Range*) into L. Eyre; intermittent; last part of course known as Warburton River.

**Diameter** (Gr.), line through centre of a figure or body, from one side to the other, e.g., *D.* of circle. **Diametrical**, pertaining to the ends of a diameter; directly opposed; as far removed as possible.

**Diamond**, 1) hardest substance known and most valuable of precious stones; pure crystallized carbon, usually colourless and

of great brilliance; found chiefly in S. and S.W. Africa. 2) A tool with a small *D.* fixed at the end, used for cutting glass. 3) Plane figure of 4 nearly equal sides, with 2 obtuse and 2 acute angles. 4) Playing card marked with red figures of a *D.* 5) (Typog.) one of the smallest sizes of type. See TYPE.

Diamond

**D. jubilee**, **d. wedding**, 60th anniversary of (e.g.) a sovereign's accession, or a wedding.

**Diamond sculls**, race over the Henley course (1 m. 550 yds.) for amateur single scullers, instituted 1844 and competed for annually at Henley regatta. Fastest recorded time, 8 m. 10 s., by F. S. Kelly (Leander), 1905.

**Diamond Harbour**, seapt., on the Hugli (Hooghly), 41 m. below Calcutta.

**Diana** (Gr. Artemis), goddess of the chase, of chastity, and of the moon; sister of Apollo.

**Diane de Poitiers** (1499-1566), mistress of Henry II of France.

**Diapason normal**: see PITCH.

**Diaper**, 1) linen material woven with diamond pattern. 2) Napkin made of 1). 3) (Archit.) Ornamental design consisting of a series of square or diamond-shaped figures, formed by either stones or bricks of different colours or by carving on surface; highly developed in Moorish architecture. 4) In illuminated MSS., chequered ornamentation of backgrounds of miniatures or of initial letters. 5) In heraldry, ornamentation of a plain surface as distinguished from a charge.

**Diaphragm**, 1) dividing membrane. 2) (Med.) Muscular partition betw. chest and abdomen; most important muscle used in breathing. 3) (Photog.) A partition, also called a stop, placed in the lens to vary the aperture (*q.v.*) and thus permit a greater or less amount of light to pass through the lens. Stops are metal plates, with different-sized holes, now superseded by the iris *D.*, wh. opens and closes like the iris of the eye.

**Diarbekr**, cap., Turk. vilayet of *D.*, Kurdistan (pop., 194,300), on Riv. Tigris; pop., 31,500 (Armenians, Turks, Kurds).

**Diarrhoea**, frequent evacuation of watery faeces; may be due to constipation, nervousness, food-poisoning, dysentery, cancer, or colitis (*q.v.*).

**Diaspota** (Gr.), *dispersion* of members of one religion among people of another faith; esp. that of the Jews after the Captivity.

**Diastrase**, enzyme (*q.v.*) contained in extract of malt, converts starch into soluble substances wh. may be fermented.

**Diatessaron**, "harmony of the Gospels"; arrangement in one contin. narrative of the 4 Gospels. First made by Tatian in 2nd cent.

**Diathermy**: see HIGH FREQUENCY.

**Diathesis**, (med.) tendency to a disease; e.g., **furuncular d.**, tendency to eruptions of the skin.

**Diatom**, microscopic marine or freshwater alga (*q.v.*). **Diatomaceous earth** (*Kieselguhr*), fine white siliceous powder containing fossilized remains of diatoms; used for polishing and as an absorbent in various manufactures.

**Diatonic**, (mus.) chord, interval, or melody, restricted to notes within a given key or tonality.

**Diaz**, **Bartholomeu** (c. 1450-1500), Port. navigator; disc. Cape of Good Hope, 1486. **D., Porfirio** (1830-1915), Mex. gen.; led forces agst. Emp. Maximilian; Pres. of Republic, 1877-80, 1884-1911. **D., Armando Vittorio** (1861-1928), It. gen.; succ. Cadorna as Ch. of Gen. Staff, 1917.

**Diazo substances**, organic chem. combinations, with Diazo grp. (2 atoms of nitrogen,  $-N_2-$ ). Together with the Amines they form Azo dyes (*q.v.*).

**Dibbling seeder**, agric. implement for planting seeds.

**Dibdin**, Charles (1745-1814), Eng. writer and composer; numerous pop. songs, many of them nautical: *The Jolly Young Waterman*; *Tom Bowling*; *The Lass That Loves a Sailor*.

**Dice**, cubes with sides numbered 1-6, used for gambling and games of chance. *Poker D.* are marked with court cards and 9 and 10.

**Dichtung und Wahrheit** (Ger.), *Poetry and Truth*, title of Goethe's Auto-biography (pts. i-iii, 1811-14; pt. iv, 1833).

**Dickens**, Charles (1812-70), Eng. novelist (pseudon. Boz): *Pickwick Papers*, 1836-7; *David Copperfield*, 1849-50; *Bleak House*, 1852-53; did much to call attention to various social evils and to lead to their reform.

**Dicker**, group of ten; used esp. of hides.

**Dicksee**, Sir Francis Bernard (1853-1928), Eng. painter; R.A., 1891; pres. of Royal Academy, 1924. *Harmony*; *The Two Crowns*.

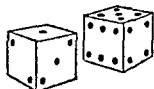
**Dicotyledons**, (bot.) flowering plants having 2 or more seed lobes, or embryo leaves.

**Dictaphone**, machine whereby dictated words are recorded on a phonographic cylinder for reproduction.

**Dictator**, ruler invested with unlimited power. **D.-ship**, extraordinary admin. of govt. without parl. control; laws replaced by ordinances. **D.-ship of the proletariat**: see COMMUNISM.



Gen. Armando Diaz



Dice



Dickens

**Didache**, or *Teaching of the (twelve) Apostles*, one of the earliest documents of the Christian Ch., prob. written in Syria (c. 120); known only by allusion and quotation until 1883, when discovered at Constantinople in an 11th-cent. version.

**Didactics**, science of teaching.

**Diderot**, Denis (1713-84), Fr. writer and philos.; projected and edited *l'Encyclopédie* (*q.v.*).

**Dido**, legendary fndr. of Carthage; committed suicide when Aeneas left her. **D. and Aeneas**, opera by H. Purcell (*q.v.*) (betw. 1688-90).

**Didot**, **François** (1689-1757), Fr. printer and bkseller; fndd. publishg. house, 1713; his s., **François** (1730-1804), designed new types.

**Didymium**, (chem.) name given to mixture of praseodymium and neodymium, metals of rare earths (*q.v.*), before they were separated.

**Die-casting**, method of casting more easily fusible metals and alloys, gen. light alloys of aluminium. Fluid metal forced under great pressure into steel moulds. Accuracy,  $1/1000$  in.; castings require no machining.

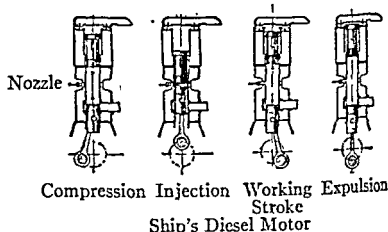
**Diedenhofen**: see THIONVILLE.

**Diehards**, "the unyielding"; 1) name given by polit. opponents to rt. wing of Eng. Conservatives, Imperialists; chief organ, *Morning Post*. 2) Nickname of the Middx. Regt., earned at the batt. of Albuera.

**Dieppe**, Fr. seapt. tn. and bathing resort, on Eng. Channel, dépt. Seine-Inférieure; pop., 25,000; oyster fisheries; across Channel service to Newhaven, England.

**Diervilla**, **Weigela**, shrubs of China and N. Amer. belonging to honeysuckle family. White or pink flowers.

**Diesel**, Rudolf, Ger. engin. (1858-1913), constructed the **D. engine**, an intern. combust. eng. in wh. the liquid fuel (gen. heavy oil) is not gasified but injected into the cyl-



inder as a spray, and ignites spontaneously owing to high temp. prod. by high compress. of air in cylinder; acts by 2- or 4-stroke cycle method. Advantages of D.E.: high degree of efficiency (abt. 35%), fuel cheap and non-explosive; always ready for use; used for power stations, ships, motorcars, railways, airships, and aeroplanes.

**Die-sinking**, process of cutting steel dies for impressing coins, medals, seals, etc. See MINT; COINAGE.

**Dies irae** (Lat.), day of wrath, the Judgment Day. **Dies non**, a day on which judicial business is not transacted.

**Die-stock**, tool for cutting screw threads in metal; holds interchangeable dies.

**Diet**, assembly of the Estates of the Holy Roman Empire (*q.v.*) (electoral princes, spiritual and secular princes, imperial counts, free cities), orig. summoned as req.; after 1663 in permanent session at Ratisbon. Dissolved, 1803.

**Dietetics**, science of rational feeding in health and sickness to secure such balance of foodstuffs as will repair waste and provide material to produce muscular and nervous energy; art of framing dietaries to suit special cases. Special diets are indicated in certain diseases, *e.g.*, diabetes (limitation of starch and sugar); nephritis (limitation of proteins, such as meat); calculus (omission of fruits containing oxalates), etc.; in acute disease with fever, a liquid diet, often milk only, is advisable. Rickets is due to lack of vitamin D, and cod-liver oil or a trustworthy substitute should be given. Scurvy occurs when vitamin C is deficient; the remedy consists in giving plenty of fruit, such as oranges and lemons. Beri-beri is the result of a deficiency of vitamin B; treatment consists in giving extract of yeast or rice polishings. *Sippy's diet* for gastric ulcer is a regulated diet of milk, egg, bread-and-milk, oatmeal, or rice, together with an alkaline powder of sodium bicarbonate and calcium carbonate or magnesia. *Banting's* treatment for obesity consists of carefully balanced meals in which proteins predominate.

**Dieu et mon droit** (Fr.: "God and my right"), motto of kgs. of Gt. Britain; ascribed to Richard I; first assumed as motto by Henry VI.

**Diez**, Friedrich Christian (1794-1876), Ger. philologist; founder of the study of Romance philology.

**Differential calculus**, (math.) in higher maths., calculation with infinitesimal differences; invented by Leibnitz (1684) and Newton (1666-1687). Differentiation of  $y$  with respect to  $x$  (written  $\frac{dy}{dx}$ ) shows the rate

at wh.  $y$  increases or decreases as the magnitude  $x$  increases. Used esp. for determining maximum or minimum value a quantity ( $y$ ) can have.

**Differential gear**, 1) apparatus by which D. motion is produced, *i.e.*, movement where velocity of one part equals diff. betw. velocities of two other parts of apparatus; see PLANETARY GEAR. 2) In a motorcar, the **axle-d.**, or mechanism wh. allows one driving wheel to overrun the other when taking curves.

**Diffraction**, (phys.) bending of waves (of water, sound, light, or electricity) around an obstacle. Result is that no perfectly sharp shadow is formed; larger the obstacle or hole, as compared with wave length, sharper the shadow.

**Diffusion**, (chem.) causes gases, liquids miscible with one another, and solutions to mix spontaneously when placed in contact, or when separated by porous partition or membrane, owing to rapid heat motion of particles; heavier substance may diffuse upwards into lighter. Colloids (*q.v.*) diffuse with extreme slowness, hence can be separated in solutions from *crystalloids* or truly dissolved substances by D.; mixture is placed in parchment vessel surrounded by pure water or other liquid; this is called *Dialysis*. **D. pump** (Gaede), used to create a high vacuum (*q.v.*).

**Digambaras**: see JAINISM.

**Digamma** ( $\varphi$ ), anc. Gr. letter = w.

**Digest**, scientific statement of the law; applied to Rom. or Eng. law.

**Digestion**, chem. change of food into simpler and easily assimilated substances by means of gastric and intestinal juices, and elimination of non-assimilable portion.

**Digger** or **Burrowing wasp**, solitary wasp which digs a vertical burrow in the soil and stocks it with insects and spiders as food for the larvae.

**Digit**, finger-breadth; anc. Heb. linear meas.;  $\frac{3}{4}$  in. ( $\frac{1}{4}$  palm).

**Digitalis**, poisonous medicinal drug. obtd. from leaves of foxglove (*q.v.*); used to increase blood-pressure in cases of heart-disease.

**Digne**, cap. dépt. Basses-Alpes, France; pop., 6,740; cathed.; mediaeval walls.

**Digression**, (astron.) distance in angular degrees of Mercury or Venus from the sun.

**Dijon**, fortified cap. of Fr. dépt., Côte d'Or, on Burgundy Canal; pop., 83,800; cathed.; univ.; wine trade; tobacco. Residence of dukes of Burgundy in 11th cent.; French, 1477.

**Dikē**, (Gr. myth.) one of the Horae (*q.v.*); goddess of justice.

**Dike**: see DYKE.

**Dilemma**, condition in wh. choice lies betw. two equally unpleasant things, or (in logic) betw. two equally unacceptable arguments.

**Dilettante**, amateur lover of the arts; now used in derogatory sense, but the **Dilettanti Soc.** founded in London c. 1732, gave serious and practical encouragement to art and archaeology.

**Diligence** (Fr.), stagecoach; term orig. used ironically with reference to its habitual slowness.

**Dill**, (bot.) *Anethum gracile*, umbelliferous plant cultivated in Eng. and Ger.

for its seeds, from wh. a well-known children's carminative mixture is made.

**Dillon**, John (1857-1927), Irish politician; became nationalist M.P. for Tipperary, 1880; arrested under Coercion Act, 1881; prominent in agrarian movement; sentenced to 6 months' imprisonmt., June, 1888, but released in Sept.; chairmn. Irish National Federation, 1896; gave full supp. to govt. on outbreak of World War.

**Diltthey**, Wilhelm (1833-1911), Ger. philos.; positive idealist, with empirical tendencies. See IDEALISM; EMPIRICISM.

**Diluvium**, (geol.) solid accumulation of débris, a deposit due to powerful action of water; also synonym for post-Tertiary period. See GEOLOGICAL FORMATIONS.

**Dim.**, (mus.) abbr., *diminuendo* (q.v.).

**Dime**, 1) tenth part or tithe (q.v.); 2) silver coin of U.S.A., one-tenth of dollar.

**Dimension**, (Lat.) measurement, extension; in math., a line has one D. (length), plane two Ds. (length and breadth), enclosed space 3 Ds. (length, breadth, height).

**Dimeter**, verse of 2 "metres" (q.v.).

**Diminishing returns**, law of, econ. law fndd. on experience. Orig. applied only to agric., but later extended to all factors of production. If increasing amt. of one factor of produc. (e.g., labour) be applied to a constant quantity of other factors (e.g., land and capital), the returns per unit of varying factor increase, reach a maximum, and then decr. *Varying* returns is a more approp. name, but *diminishing* is traditional term and implies that in final state increasing returns are unlikely.

**Diminuendo**, (mus.) gradually softer; decreasing in tone.

**Dimitry, Dmitry**, Russ. form of Demetrius: **D. Donskoi** (1350-89), Grand-Duke; fndd. united Russia by victories over Tatars, 1378 and 1380; blt. Kremlin (q.v.). **D.** (1583-91), s. of Tsar Ivan the Terrible; after his murder three *Pseudo-Ds.* claimed to be he, and were themselves murdered, 1606, 1610, and 1612.

**Dimity**, strong cotton fabric, usu. of satin or twill weave countered, changed, and reversed, in broad stripes; used for curtains, etc.

**Dimorphism**, property of assuming two forms: 1) (Biol.) In plants or animals, **sexual d.**, having two different forms of one sex, 2 different kinds of offspring, stamens of different length; also **seasonal d.**, different colouring, etc., at different seasons. 2) (Cryst.) Power possessed by certain substances of crystallising into two distinct forms. **Dimorphous**, capable of crystallising in 2 distinct forms.

**Dinan**, tn., N.W. France, dépt. Côtes-du-Nord, on Riv. Rance, 15 m. S. of St. Malo; pop., 8,600; mediaeval ramparts; 14th-cent. castle; tourist resort.

**Dinant**, tn., Namur, Belgium, on Riv. Meuse; pop., 7,600; anc. citadel; pointed Gothic church; tourist resort. Sacked by Charles the Bold, 1466; captured by the French, 1675; Belgian since 1830; devastated by Germans, Aug., 1914, in World War.

**Dinar**, 1) anc. Byzantine gold coin; 2) Persian coin of small value; 3) unit of currency in Yugoslavia (1.761 cents, U.S.A.), 25.22½ D. = £1 at par.

**Dinard**, seaside resort, N.W. France, dépt. Ille-et-Vilaine, at mouth Riv. Rance, opp. St. Malo; pop., 6,550.

**Dinaric Alps**, mtn. range in S. Yugoslavia; barren limestone; *Prokletije*, 10,172 ft. **D. race**, variant of Alpine race; S.E. Europe; dark-haired, dark colouring, high head, flat occiput.

**Ding an sich** (Ger., thing in itself), the inapprehensible true being behind the world of appearance (Kant).

**Dinghy**, small boat carried on a ship; small pleasure-boat, with one or two pairs of sculls.

**Dingo**, Australian native dog of doubtful origin; tawny-coloured, smooth-coated, with bluntly pointed muzzle and clean-cut limbs; great pest to sheep farmers.



Dingo

**Dingwall**, co. tn. and royal burgh, Ross and Cromarty, or Cromarty Firth, 11 m. N.W. Inverness; pop. 2,600; 5 m. W. lies *Strathpeffer Spa*.

**Dinosaur**, genus of land reptiles which flourished in Jurassic and Cretaceous periods include Iguanodon, Diplodocus, Brontosaurus, etc.

**Diocese** (Gr.), dist. under jurisdiction of a bishop.

**Diocia**, (bot.) class of plants having stamens on one plant and pistils on another; cf. MONOECIA.

**Diocletian** (245-313), Rom. emp.; re-organized empire; persecuted Christians, 303.

**Diodorus Siculus** (1st cent. B.C.),

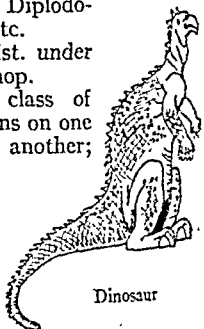
Gr. historian: *Historical Library* in 40 books. **Diogenes** (412-323 B.C.), Gr. cynic (q.v.) philos.; said to have lived in a tub.

**Diomedes**, Gr. hero of siege of Troy.

**Dione**, one of the satellites of Saturn.

**Dionysius**, Pope (259-68), re-organized Church after persecution of Valerian.

**Dionysius the Elder** (c. 431-367 B.C.) his s., **D. the Younger** (c. 395-343 B.C.) tyrants of Syracuse. **D. of Halicarnassus** (c. 66 B.C.-c. A.D. 10), critic and historian: *Archaeologia*, hist. of Rome up to 264 B.C.



Dinosaur

**D. the Great** (c. 200-264), St., Bp. of Alexandria; fragments of his writings remain.

**Dionysus**, Gr. god of wine (also called *Bacchus*), of fertility, and of the theatre; son of Zeus and Semele.

**Diophantus** (c. A.D. 250), Gr. mathematician; author of first bk. of algebra: *Arithmetica*; *Diophantine Equations*, indeterminate equations requiring rational solution, gave rise to analytic theory of numbers.

**Diopside**, (mineral) variety of augite, of greenish tint, found in Germany, Chile, and Siberia.

**Dioptr**, sighting device; theodolite of Hipparchus; index arm of graduated circle; instrument for measuring projections of skull; also, a dioptric.

**Dioptric**, (phys.) measure of the power of a lens; defined as reciprocal of focal length in metres (positive sign for converging lenses, negative for diverging). **Dioptrics**, term formerly used for sc. of refraction of light.

**Diorama**, exhibition consisting of paintings in wh., by means of transparencies, lighting, and colour effect, etc., changes are produced in view of the spectator. Inv. by Daguerre.

**Diorite**, group of granite, igneous rocks, composed of felspar (q.v.) and hornblende (q.v.).

**Dioscuri**, (Gr. myth.) *Castor and Pollux* (q.v.), inseparable twin sons of Leda; the constellation called *Gemini*, the Twins (q.v.).



Dioscuri

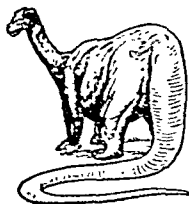
**Diphenylamine**,  $C_6H_5 \cdot NH \cdot C_6H_5$  raw matl. for many dyes; from aniline; very sensitive reagent for nitric acid.

**Diphtheria**, infectious, notifiable disease caused by the *Klebs-Loeffler* bacillus; a false membrane is formed on mucous membrane, most commonly of pharynx; membrane may be found on larynx, causing difficulty in breathing, and it may be necessary to perform operation of tracheotomy (q.v.). Diagnosis by bacteriological exam. of swab (q.v.) from throat; treatment by injection of diphtheria antitoxin, rest, etc.

**Diphthong**, combinatn. of two distinct vowel-sounds, uttered in rapid succession, one being more strongly stressed than the other so that they form but one syllable; e.g., *ai* (maize), *ei* (heir), *ou* (mouth).

**Diplococci**: see COCCI.

**Diplodocus**, extinct dinosaur found in Wyoming and Colorado,



Diplodocus

c. 80 ft. in length and 16 ft. high; short body and head; long tail, weak teeth; vegetarian; prob. aquatic.

**Diplomacy**, forms of offic. intercourse prevailing betw. States in accordance with internat. law. **Diplomats**: representatives of sovereign States having right of extritoriality (q.v.); see AMBASSADORS. **Diplomatic privilege**, ambassadors, their staff and household, are immune from process of the courts and from taxation in the country in wh. they are serving. **Diplomatics**, science of deciphering mediaeval documents.

**Dipper**, 1) (astron.) see URSA MAJOR. 2) (Ornith.) Water-ouzel, bird freqtg. rocky streams of temperate regions; *Amer. D. ind.* in Rocky Mountains.

**Dipping-acid**, mixture of acids, used to remove oxide and dirt from brass and copper objects, by dipping them in it. Usually nitric acid; abt. 1:4 or 1:6 of water is used; removed by sawdust and washing with whitening and water.

**Diptera**, order of two-winged insects, including the true flies; over 40,000 species; their metamorphosis is complete; their habits very varied; predatory, parasitic, herbivorous, and carrion-feeding forms; many destructive to crops, etc.

**Dipteros**, anc. Gr. temple surrounded by a double row of columns.

**Diptych**, 1) anc. writing-tablet folding in the middle (usu. of wax-coated wood); also a painting or carving on two tablets of equal size connected by hinges. 2) (Archit.) Inscription-tablet of 2 leaves, affixed to walls, usu. in churches, bearing a register (as of bps.); see TRIPTYCH.

**Dirac**, Paul A. M. (1902- ), Brit. mathematician and physicist; supplied mathematical data required for splitting of atom, 1931.

**Direct action**, (indus.) use of strike as weapon to secure polit. ends; declared illegal in Gt. Brit. by *Trade Disputes and T. U. Act*, 1927. **D. current**, elec. curr. flowing in one direc. only, generated by dynamo or battery, or prod. by rectifying alternating C. (q.v.). Used for elec. lighting (less and less), electrolysis (indispensable), charging accumulators, and for elec. trains and trams (more freq. than A.C.). Can be stored in accumulators (q.v.); can only be transformed to a diff. voltage by the use of moving machinery; hence is not used for high-tension long-distance transmission.

**Directoire**, style of dress affected at period of the Directory (q.v.), classic in tendency; also style in architecture, decoration, furniture, etc., of same period.

**Director of public prosecutions**, legal officer charged, under attorney-gen., with



conduct of prosecutions in Eng. on behalf of the State.

**Directors**, 1) (milit.) *see* STAFF. 2) (Finan.) Persons chosen by shareholders of a co. from among their numbers to direct the business of the co.; may number from 2 to a dozen or more and form *Board of D.* They again may appt. *Managing D.*, who will actually conduct the business, reporting periodically to Board of D., who make the final decisions on important points. Responsibilities of D. are defined by Companies Acts.

**Directory**, (hist.) highest executive authority (consisting of 5 members) during Fr. Rev. (1795-99); suppressed by Napoleon, 18th Brumaire (10 Nov.), 1799.

**Dire Dawa**, second most important tn., Abyssinia; on rly. from Addis Ababa to Djibuti; pop., 30,000.

**Dirge** (Lat., *dirige*, 1st word of antiphon in Office for the Dead), lament sung in memory of, or at burial of, the dead.

**Dirk**, kind of dagger; short sword worn by midshipmen.

**Dirt-track racing**, racing betw. motorcyclists on a dirt or cinder track, with sharp turns, introd. into Eng. (1928) from Australia; teams of 6 riders, organised in leagues, compete for national championship.

**Dis**, a Rom. name for Hades (*q.v.*).

**Dis aliter visum** (Lat.), the gods have judged otherwise.

**Disarmament**, systematic reduction of military and naval armaments by internat. agreement; proposals included in Treaty of Versailles, 1919, and in covenant of League of Nations; some progress in naval disarm. at Washington, 1921; further conferences at Washington, 1927; London, 1930, and Geneva, Feb. 1932—*See* WASHINGTON AGREEMENT and LEAGUE OF NATIONS.

**Discaled friars**: *see* OBSERVANTINES.

**Discharge, electric**, passage of electric betw. conductors at diff. potential separated by insulators (air or other gas, oil, solid); takes place as luminous spark (lightning), brush, corona; due to ionisation (*q.v.*) of molecules of insulator. **D. tubes**, glass tubes filled with rarefied gases or air, in wh. elec. of high voltage prod. a glowing light. The "noble" gases, neon, krypton, xenon, etc., prod. the brilliant colours used for advertising signs.

**Discipline**, systematic training, development of faculties; subjection to rule; punisht. by way of correctn. and training; in R.C.Ch. self-inflicted penitential punishment; hence, a scourge. **Disciplinary power**, right to enforce their rulings pertaining to partic. bodies, *e.g.*: armed forces of the Crown, school and college authorities, clubs, etc.

**Discobolos** (*the Discus-thrower*), bronze

statue by Gr. metal-worker, Myron (c. 425 B.C.), known from two anc. marble copies, one found (1791) at Hadrian's Villa, Tivoli, and now in the Vatican, the other found (1781) in the Esquiline, now in the Lancelotti Palace, Rome.

**Disco-medusan**, a type of jelly-fish having a flat "umbrella" with eight divisions.

**Disconto-gesellschaft**:

*See* D.-BANKS.

**Discord**, (mus.) dissonance, a chord requiring resolution.

**Discordance**, (geol.) divergence from the parallel of contiguous strata of soil; *e.g.*, when upper (younger) stratum is horizontal, and lower folded; *see* FOLD.

**Discount**, per cent. deduction from value, price or intrst. Ds. on retail prices are usu. allowed to dealers, wholesalers, etc. **D. for cash**, allowance for immed. pymt. when price is quoted for crdt. within specified period, usu. 3, 6, or 9 mths. **D. business** (*discounting*) consists in banks and D. houses buying claims, esp. bills bef. they are due, and deducting D., equiv. to advancing loan to amt. of bill and charging-intrst. to day of maturity; *see* BILL BROKERS. London has most important D. market in the world; funds used in this mkt. are loaned by banks; when funds are scarce, mkt. borrows from Bk. of Eng. and is then said to be *in the Bank*; rate at wh. Bk. of Eng. will re-discount bills, known as *bank rate*, fixing of wh. depends on Bk. of Eng.'s D. policy, an important factor in money and D. mths. **At a d.**, (*Stk. Exch.*) diff. betw. *lower* and *nominal* value of securities quoted; ant.: *at a premium*.

**Discus**, flat circular implement of hard wood. **D.-throwing**, Gr. sport revived at 1st mod. Olym. Games, 1896. Recd. throw of 169 ft. 8 in. by P. Jessup (Pittsburgh) in 1930.

**Disestablishment**, removal of institution from privileged position, especially a ch. Thus Ch. of Eng. disestablished in Wales by Welsh Church Act, 1914.

**Diseur, -euse** (Fr.), sayer; one who de-claims or recites to music.

**Dishonoured bills**, (finan.) term applied to bills of exch. acceptance or payment of wh. has been refused.

**Disinfection**, process of freeing any article or substance from communicable disease germs. In case of a room, all apertures should be sealed, and poisonous gas, such as formaldehyde or sulphur dioxide, liberated; clothes, etc., may be soaked in some germicide or subj. to effects of high-pressure steam in a closed chamber; seeds tainted with fungus may be disinfected by copper sulphate (blue vitriol).



Discobolos

**Disintegration**, (geol.) breaking-up of rock by mechanical (frost, heat, wind, etc.) or chemical (water, carbonic acid, etc.) agents; *mechanical D.* strongest in Polar regions, deserts, and highlands; *chemical D.* in Tropics. See also RADIO ACTIVITY. **Disintegrator**, (tech.) gen. term for machine which breaks up materials by impact, as opposed to grinding or crushing.

**Disjecta membra** (Lat.), scattered members or parts; orig. applied by Horace to isolated quotations from great poets.

**Disjunctive judgment**, logical determination by selection of one of two or more alternatives wh. are exhaustive of all possibilities.

**Disko**, isl., W. coast Greenland; whaling centre; area, 3,200 sq.m.

**Dislocation**, (med.) displacement from its natural posn. of one or more bones of a joint.

**Dispensary**, 1) Place where medicines and med. advice are given free, or at small charge, to the poor. 2) That part of a pharmacy or hospital where medicines are compounded.

**Dispensation**, act or result of dispensing or distributing; decree of Providence or Fate; set of ordinances promulgated under divine authority (Mosaic, Christian D.); suspension of a law in favour of partic. person(s), esp. (R.C.Ch.) relaxation of eccles. law in a partic. instance granted by competent authority, e.g., D. from fasting.

**Dispersion**, 1) (statistical) spread of values of variable quantity possessed by items in a frequency distribution (q.r.). 2) (Optics) Separation of light of diff. colours by prism or grating. Chem.; see COLLOID.

**Displacement**, (naut.) tonnage term indicating amt. of water displaced by ship in any given condition.

**Disqualify**, (sport) to pronounce a competitor ineligible for a competition, usu. through some breach of the rules.

**Disraeli**, Benjamin: see BEACONSFIELD, BENJAMIN DISRAELI, 1ST EARL OF.

**Dissenters**, those who disagree; esp. those who reject the doctrines and discipline of the C. of E.; Nonconformists.

**Dissertation** (acad.): see THESIS.

**Dissociation**, (chem.) spontaneous breaking up of chem. compounds into constituent parts or elements: e.g., amm. chloride vapours into hydrochloric acid and ammonia gases. *Electrolytic D.*, that of salts in solution into charged ions (q.r.).

**Dissonance**, (mus.) opposite of consonance (q.r.), indicating chords or intervals which leave the ear unsatisfied without a "resolution."

**Distaff**, staff on spinning wheel round wh. flax is wound.



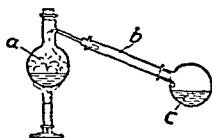
Distaff

**Dist. att.**, abbr. District Attorney (U.S.A.).

**Distemper**, infectious disease of young dogs, characterized by rise of temperature, loss of appetite, and watery discharge from eyes and nose. Broncho-pneumonia, convulsions, and paralysis may occur as complications; d. may be fatal.

**Distich**, epigram or poem of 2 lines only.

**Distillation**, (phys.) process of heating a mixture of substances, so that the more volatile subst. (a in fig.) passes off as vapour before the rest; it is cooled in a condenser (b) and caught in the receiver (c).



Distillation

Used for obtn. alcohol. **Dry d.** is used in manuf. of illumin. gas from coal, wh. is heated in an airtight retort. **Fractional d.** occurs when a mixture of volatile subs. having diff. boiling points is separ. by D.; used in prep. petrol, paraffin oil, etc., from crude min. oil. **Distiller's wash**, residue in manuf. of alcohol (potato wash); valuable cattle fodder; ashes yield *crude potash*.

**Distinguished Conduct Medal**, medal award to N.C.O.'s and men of the Brit. Army for distingd. conduct in the field. Establd. 1854, in place of Medal for Meritorious Service, insttd. 1845. Ribbon: red, blue, red. **D. Flying Cross**, decoration (insttd. 1918) awarded to officers and warrant officers for acts of gallantry in the air agst. the enemy. Ribbon: violet and white (diagonal stripes). **D. Service Cross**, Brit. decoration awarded for distinguished service before the enemy, to naval and marine officers below rank of lieut.-commander. Fndd. 1901, as *Conspicuous Service Cross*; present title adopted, 1914. Ribbon: blue, white, blue. **D. Service Medal**, medal awarded to petty officers and men of British Navy, and N.C.O.'s and men of marines, for bravery in action. Estab. 1914. Ribbon: blue with two broad white stripes in centre. **D. Service Order**, Brit. Order fndd. 1886 as a recogn. of disting. service performed by naval and milit. officers. Ribbon: red edged blue.

**Distress**, (law) act of distraining or seizing goods in satisfaction of a debt; right of a landlord to distrain on tenant's goods for unpaid rent.

**Distribution**, (econ.) transference of commodities from person to person or place to place, or, esp., division of products of industry betw. members or classes of community. A fundamental problem of polit. economy.

**District auditor**, officer of nat. govt., app. in Eng. and Wales to audit accounts of local authorities and, esp., prevent illegal payments.

**Dithyramb**, inspired poetic outpouring; orig. Gr. hymn in praise of Dionysus (q.r.).

**Diu**, Portug. possession, India, isl. and tn., S. coast, Kathiawar penins.; pop., 14,615; chf. tn. and port, *Diu* (pop., 10,000).

**Diuresis**, excessive excretion of urine.

**Diuretic**, drug which increases flow of urine.

**Diurnal arc**, arc described by a heavenly body from its rising to its setting.

**Diva**, celebrated singer (*prima donna*).

**Divalent** (chem.): see VALENCY.

**Divan**, (Pers.) Moslem council of State; couch; collection of poems.

**Dive**, (aeronaut.) **nose-dive**, steep descent with nose of the aircraft pointing downwards. **Spinning D.**, descent combined with continued rotation about centre of gravity of aeroplane. For **D.** in aquatics see DIVING.

**Diver**, family (*Colymbidae*) of aquatic birds of order *Pygopodes*; frequent coasts of cooler regions of N. Hemisphere; also known as *loon*.

**Divergent lens, concave lens**, gives upright, reduced, virtual images (*q.v.*); used as eye-piece in Galilean telescope and in spectacles for the short-sighted.

**Divertimento**, light mus. composition intended for entertainment.

**Divertissement**, (mus.) sequence of dances as distinct from a formal ballet.

**Divide et impera** (Lat.), divide and govern, *i.e.*, safeguard your own despotism by setting your rivals at loggerheads with one another; motto of Louis XI of France.

**Dividend**, (Stk. Exch.) shareholder's share in profits, fixed in percentages of share capital by annual gen. meeting in accordance with proposal of the management; usu. paid out semi-annually.

**Dividers**, form of compass (*q.v.*), with two like arms hinged together at one end and carrying sharp points. Used for transferring distances from measuring scale to paper or work.

**Dividing engine**, (phys.) device for exactly dividing scales of distance, angle, etc., on instruments. Depends for accuracy upon extremely perfect screw.

**Dividing Range, Great**, mountain system E. Australia; see AUSTRALIA.

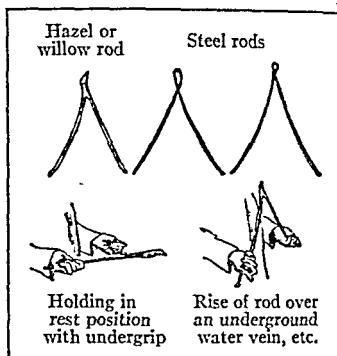
**Divi-divi**, native name for pods of the shrub *Caesalpinia coriaria* found in marshlands of W. Indies and S. America; seeds are used in tanning.

**Divina commedia**, epic poem by Dante (*q.v.*), in 3 parts, *Inferno*, *Purgatorio*, *Paradiso*, written 1300-18; Eng. trans. by Cary, Longfellow, etc.

act or art of foretelling future; augury. See also DIVINING.

**Diving**, sport or art of plunging into water from a height, either head or feet first. See HEADER; PLUNGE. **D. bell**, airtight vessel, open at bottom, for working under water; operated by compressed air, wh. prevents entry of water. **D. suit**, equipment for working under water; rubber suit, lead-soled heels, metal helmet with glass windows; air supplied thr. pipe extending to surface or by oxygen apparatus.

**Divining rod**, forked branch of pliant



Divining Rod

wood or metal used by water-finders, or "dowsers" to discover hidden water, coal, and ore deposits.

**Division**, 1) (math.) fourth rule of arithmetic; process of finding how often a number (*divisor*) is contained in another (*dividend*); result: *quotient*. 2) (Milit.) 3 or 4 brigades commanded by a maj.-gen., forming a complete formation with cavalry and artillery, etc., 3 or 4 of wh. form an army corps. 3) (Naval) Group of 4 war-vessels as unit of squadron or fleet.

**Divorce**, legal dissolution of marriage.

**Divot**, (golf) piece of turf removed by the club in playing the ball.

**Divvers**, colloquial name for exam. in Holy Scripture at Oxford Univ., formerly part of 2nd public exam.; now abolished.

**Dixie Highway**, extends from lakes Michigan and Huron to Florida, U.S.A.; 3,989 miles (incl. branches). **D. Overland Highway**, from Savannah, Georgia, to San Diego, San Francisco, U.S.A., 2,660 miles.

**Dixmude**, Belg. tn. on Yser Canal; scene of fierce fighting in World War.

**Dizain**, in Fr. prosody, poem in 10 stanzas.

**Djambi, Jambi**, residency, Sumatra, Dut. E. Indies; 17,180 sq.m.; pop., 245,350 (379 Europeans); cap., *Djambi* (pop., 16,000); rich oil finds.

**Djibuti, Djibouti**, cap. and port of Fr. colony of Somali Coast (Fr. Somaliland); pop., 11,370 (630 Eur.); terminus of rly. to Addis Ababa; cable and wireless stations.

**D.L.**, abbr. deputy-lieutenant. **dl.**, abbr. decilitre. **D.L.I.**, abbr. Durham Light

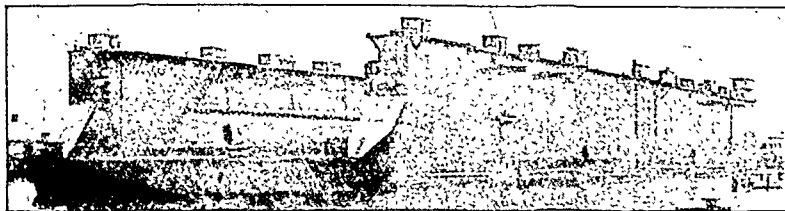
Infantry. **D. Litt.**, abbr. *doctor litterarum* (Lat.), Doctor of Letters. **D.L.S.**, abbr. Doctor of Literary Science (U.S.A.).

**D.M.**, abbr., 1) Doctor of Medicine (Oxford). 2) Doctor of Music. 3) *Diis manibus (sacrum)* (Lat.), dedicated to the souls of the departed.

**D.N.B.**, abbr. Dictionary of National Biography.

**Dnepropetrovsk Ekaterinoslav**, Ukrainian tn. on r. bank of Riv. Dnieper; pop., 234,000; centre of S. Russian metal indus.; responsible for third of total Russ. productn. of rolled iron, cast iron, and steel. Near by

(river) where ships are loaded, repaired, often with gates thr. wh. water can be let in or out. **Dry-d.**, **graving-d.**, one with water excluded; **floating d.**, floating enclosure with walls and contrivances for pumping; **wet-d.**, one containing water about level with high tide. 2) (Bot.) Name given to varieties of *Rumex*. Common broad-leaved D. is *R. obtusifolius*. The **great water-d.**, *R. hydrolapathum*, grows to height of 4 ft. **Common sorrel**, eaten raw as salad and boiled as a vegetable, and, in folk medicine, to make a cooling drink in fevers, is *R. acetosa*. **D. brief**, acceded on request of accused in



Floating Dock

are *Dnieper Rapids*, 40 m. long, where world's largest hydraulic power station is being constructed.

**Dnieper**, second longest riv. (1,410 m.) in Russia, rises in Valdai Hills, flows past Kiev, Dnepropetrovsk, and Kherson into a bay of the Black Sea, 100 m. E. of Odessa. Chf. tribs.: Berezina, Pripet, Desna. Connected by canals or rivs. with Dvina, Niemen, Vistula, and Baltic Sea.

**Dnieprostroi**, hydro-electric plant at Kichkas (*q.v.*). Cf. FIVE YEAR PLAN.

**Dniester**, navigable riv. (865 m.) in S.E. Europe, rises in Carpathian Mtns., S. Poland, and falls into Black Sea; forms frontier betw. Rumania and Russia.

**D.N.P.P.**, abbr. *Dominus Noster Papa Pontifex* (Lat.), Our Lord the Pope.

**Do.**, abbr. ditto, the same.

**Dobbs Ferry**, vill., New York State, U.S.A.; pop., 5,750; meeting place of Washington, Governor Clinton, and Gen. Sir G. Carleton, 1783.

**Dobell**, Sydney Thompson (1824-74), Eng. critic and poet: *The Roman*, 1850; *Balder*, 1854; *England in Time of War*, 1855.

**Döblin**, Alfred (1878- ), Ger. physician and writer; novel: *Alexanderplatz*.

**Dobrudja, Dobrogea**, district, S.E. Rumania, betw. lower Danube and Black Sea; 8,975 sq.m.; pop., 722,600; wooded mtn. region; agric., cattle-breeding; cap., *Constanza*. Turkish till 1878; then Rumanian; occupied by Bulgarians and Germans, 1916; Rumanian, 1920.

**Dobson**, Austin (1840-1921), Eng. poet and writer.

**Dock**, 1) (archit.) enclosure (in sea or

criminal proceedings; accused may select any barrister present in court, who, if accused has no means, receives a fee from public funds. **D. warrant**, receipt given by owners of a D. warehouse for goods entrusted to their care; used to obtn. credits and for transfer of property.

**Docta ignorantia** (Lat.), learned ignorance, as Nicolas of Cusa called the knowledge of the incomprehensibility of God.

**Doctor**, 1) (acad.); see DEGREE; 2) (printing) device for scraping away superfluous ink, used in rotary engraving (Schaber method).

**Dr. Jekyll and Mr. Hyde, The Strange Case of**, tale by Stevenson (*q.v.*), 1886; story of a dual personality.

**Doctors' Commons**, college for Doctors of Civil Law in City of London, demolished, 1867. Contained 5 courts of justice, incl. Consistory Ct., Ct. of Arches, High Ct. of Admiralty.

**Doctrine**, act of teaching; standpoint; instruction; body of principles in any branch of knowledge. **Doctrinaire**, pers. obsessed by theory, without regard to reality and pract. results.

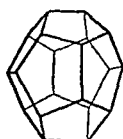
**Documentary bill**, (finan.) bill of exch. accomp'd. by such documents as bill of lading (*q.v.*), dock warrant, insur. policy, invoice, etc. Ant.: *clean bill* (*q.v.*). **D. credit**, (finan.) agreemt. made by bank to negotiate bills drawn on an importer by an exporter up to a specified amt., importer agreeing to accept and pay bills if drawn in acc. with terms of the credit; bills are accomp'd. by shipping docs. etc., hypothecated to bank agst. pymt. of bills, and surrendered to importer on ac-

ceptance; D.C. does not relieve exporter from liabilities of drawer of bill of exch. Ant.: *clean credit*.

**Dodder**, *Cuscuta*, parasitic plants; **Lesser d.**, *C. epilimum*, grows on heath, thyme, furze, and other small plants; pink, waxy flowers; herb used in folk med. as liver stimulant; other varieties: **Greater d.**, *C. europaea*, yellowish, grows on nettles, etc.; **Flax d.**, *C. epilinum*, white flowers; **Clover d.**, *C. trifolii*, white flowers, reddish stems.

**Dodecahedron** (Gr.), twelve-planed body; regular D. is body bounded by 12 equal regular pentagons.

**Dodecanese** ("Twelve Islands"), group 13 (*sic*) isls., belonging to Italy, S.E. Aegean (Rhodes, Cos, Patmos, Leros, etc.); 976 sq.m.; pop., 118,100 (mainly Greeks); cap., Rhodes. Turkish until 1912; Italian since; claimed by Greece.



Dodecahedron

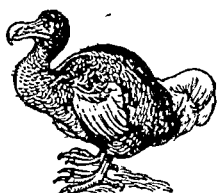
**Dodgson**, Rev. Charles Lutwidge (1832-98), Eng. mathematic. and auth.; pseud. **Lewis Carroll**: *Alice in Wonderland*, 1865; *Through the Looking Glass*, 1871; *The Hunting of the Snark*, 1876.

**Dodman, The**, headland (380 ft.), south coast of Cornwall, 10 m. S. of St. Austell; Nat. Trust property.

**Dodo**, giant flightless pigeon, size of a turkey-hen; formerly found on Mauritius; extinct since 17th century.

**Dodona**, anc. sanctuary, Epirus, Greece; oracle of Zeus.

**Dog**, 1) (zool.) member of dog tribe (*Canidae*), which includes wolves, jackals, and wild dogs; *domestic Ds.*



Dodo

probably descended from wolf and jackal families; many different species: St. Bernard (*q.v.*), bulldog (*q.v.*), terrier (*q.v.*), etc. 2) (Engin.) *a*) Large pawl; see RATCHET WHEEL; *b*) piece attached to work being turned in lathe, by which it is carried round; *c*) in mining and well-boring, grab irons used for hoisting tackle. **D.-cart**, open, high, two-wheeled conveyance. **D.-days**, hottest time of year in Europe, abt. July 24th-Aug. 24th; abt. time of year when Sirius, the dog-star, rises and sets with the sun. **D.-fish**, family of fishes of shark type, small-toothed, found on Brit. coasts; **spiny d.-f.**, 3 to 4 ft. long, slate-blue above, yellowish-white beneath; skin of **spotted d.-f.** furnishes shagreen for wood-polishing. **D.-star**: see SIRIUS. **D.-tooth**, (archit.) form of carved ornament in a series of pointed teeth, used in Early English (15th-cent.) architecture. **D.-watch**: see WATCH.

, title of the chf. magistrate of

Repubs. of Genoa and Venice; the latter was ruled by doges (122 in all) from 697 to 1797, and the former—intermittently—from 1339 to 1797.

**Dogger Bank**, extensive sandbank in N. Sea, c. 100 m. E. of N. Eng.; c. 170 m. long by 60 broad; average depth, 6-16 fathoms; important fisheries (cod). **D. B. Incident** in 1904, mistaken attack of Russian fleet on Hull fishing boats; naval battle of D. B. on 24 Jan., 1915, in World War; Ger. battle-cruiser, *Blücher*, sunk, *Derfflinger* and *Seydlitz* badly damaged.

**Doggerel**, irregular measure in burlesque poetry (*cf.* German *Knüttelverse*, metrical line of 4 accented syllables with indefinite numb. of unaccented syllables, rhymes being either in couplets or intermittent, rhythm usually ascending); worthless verse.

**Doggett**, Thos. (d. 1721), Eng. actor; created part of Ben in Congreve's *Love for Love*; managed Haymarket and Drury Lane theatres; fndd. (1715) prize of **D.'s Coat and Badge**, a red coat with silver badge on arm bearing Hanoverian white horse, for race to be rowed annually on Aug. 1st on Riv. Thames, by watermen of not more than 12 months' apprenticeship; winners' names are recorded since 1791.

**Dogma** (Gr. opinion), doctrine of faith laid down by authority of the Ch. as true and necessary to be believed; essentials of doctrine; any opinion or opinions strongly held and insisted upon by those who believe them. **Dogmatic Theology**, Science of Christian dogma; chf. *dogmatic theologians*: Origen, St. Augustine, St. John Damascene, St. Thomas Aquinas, Bonaventure, Duns Scotus.

**Dogs, Isle of**, penins. S.E. London, bor. of Poplar, in loop of N. bank of Thames, opp. Greenwich; turned into isl. by canal, now part of W. India Docks.

**Dog's mercury**, *Mercurialis perennis*, herbaceous woodland plant, 9 in. high; roughish leaves, small green flowers.

**Dogwood**, properly *Cornus sanguinea*, wild cornel; shrub with creamy white flowers, small red berries; name also given to other shrubs, e.g., *Euonymus europæus* and *Rhamnus frangula*.

**Dol.**, (mus.) abbr., **Dolce** (It.), softly.

**Dolce far niente** (It.), sweet idleness.

**Dolci**, Carlo (1616-86), Florentine painter; *St. Andrew Praying before Crucifixion*, 1646.

**Dolcis.**, (mus.) abbr., *dolcissimo* (It.), very softly.

**Dolcoath Copper Mine**, at Camborne, Cornwall, 3,000 ft. deep; worked since 1800.

**Doldrums**, region of ocean, normally without wind, lying on each side of Equator and betw. the Trade Winds (*q.v.*).

**Dole**: see UNEMPLOYMENT INSURANCE.

**Dolgelley, Dolgelly**, co. tn., Merionethsh.,

N. Wales; pop., 2,300; manuf. woollens; tourist resort.

**Dolgoruki**, Russ. princely family; **Vassili Lukich**, Ct. D. (1672-1739), Russ. diplomat and minister; charged with forging will of Peter II, and beheaded.

**Dolichocephalic**, term. applied to long-headed races; opp. to Brachycephalic (*q.v.*).  
**Dolina**, funnel-shaped depression worn through limestone stratum by water as it drains through.

**Doll**, child's toy in shape of human being; one of the earliest forms of playthings. Small figures of clay, wood, bone, etc., have been found in anc. Egypt., Rom., and Grk. tombs of children, and among the aborigines of America, Australia, and Asia different forms of such images exist, some having sacred or magical significance. Modern manuf. of dolls an important industry; Nuremberg and Tyrol were centres of trade, but in recent years industry has increased in Gt. Britain.

**Dollar**, name of a coin, orig. corruption of *Thaler* and applied to *Joachimsthaler*, silver piece first struck in Bohemia (1518). **Silver d.** became unit of currency in U.S.A. in 1787; representd. by symbol \$; 4.8665 dollars = £1 at par. **Gold d.**, repestg. \$5, \$10, \$20, no longer issued. D. is also monetary unit of Canada, Newfoundland, Brit. Guiana, Brit. Honduras, and Straits Settlements. **The Almighty Dollar**, humorous typification of the power of wealth, esp. in the U.S.A.

**Dollart**, bay of the N. Sea at mouth Riv. Ems, betw. N. Holland and Prussia; formed in 13th cent.; av. depth 42 feet.

**Döllinger**, Ignaz v. (1799-1890), Ger. theolog. and church historian; took leading part in formation of Old Catholics (*q.v.*).

**Doll's House**, A, *Et Dukkehjem*, play by H. Ibsen, orig. produced at Oslo, c. 1879; in London, 1889.

**Dolly**, (text.) revolving tub for scouring light fabrics; instrument for agitating textiles during scouring.

**Dolman**, hussar's jacket, worn with the right arm free.

**Dolmen**, (archaeol.) prehist. megalithic stone chamber, referred to Neolithic Period (*q.v.*), formed by a large stone placed on three or more upright stones. Served as tomb-stone; see CROMLECH.

**Dolomite**, magnesian limestone rock, consisting of carbonates of calcium and magnesium in varying proportions. Used to make refractory bricks for construction of kilns and furnaces; also in basic Bessemer process of converting iron into steel, for lining converter.

**Dolomites**, mtn. group, S. Tyrol, N.E. Italy, formed of dolomite (*q.v.*); *Marmolata*, 10,972 ft. *Dolomite Pass*, from Predazzo to Cortina, 88 m. long.

**Doloroso**, (mus.) sadly, sorrowfully.

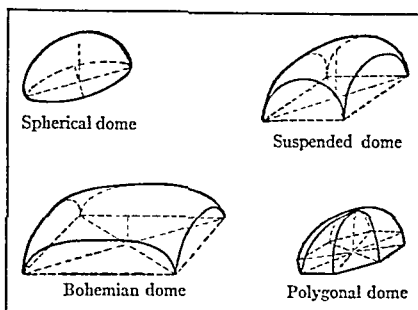
**Dolphin**, toothed cetacean in which the snout is more or less elongated and pointed; teeth very numerous, peg-shaped, sharp. Occurs in all seas, feeding principally on fish; rarely exceeds 10 ft. in length; single crescentic blow-hole (nostril) on top of head. In same family are Narwhal, Beluga, Porpoise, Grampus.



Dolphin

**D.O.M.**, abbr. *Deo optimo maximo* (Lat.), to God the best and greatest. **Dom.**, abbr. *Dominus* (Lat.), Lord or Master; used as a title.

**Dome**, (archit.) isolated and regular vault above a space; round, square, or regularly



Forms of Dome

polygonal; may have a semicirc. or other continuously curved section.

**Domenichino**, Zampieri (1581-1641), It. painter: *Martyrdom of St. Agnes*, in Bologna.

**Domesday Book**, compiled 1085-86, contains an account of the divisions of Eng., the size of each estate, and how divided into arable, pasture, and woodland, the numbers of stock and the name of its owner. Forests, churches, mills, and salt-works also are included.

**Domestic economy**: see HOUSEHOLD.

**Domicile**, place where a person has his permanent home. **D. of origin** depends on d. of parents; **D. of choice** obtd. when person chooses another place as his permanent home. **Domiciliary visit**, visit by the officers of govt. for the purpose of searching a house.

**Dominant**, (mus.) 5th note (fifth) of a scale. **D. chord**, esp. *triad*, on this note.

**Domine**, *dirige nos* (Lat.), O Lord, guide us. Motto of the city of London.

**Dominic**, de Guzman, St. (1170-1221), Sp. theologian; fndd. Dominican Order (*q.v.*), 1216.

**Dominica**, largest of Brit. Leeward Isls., 305 sq.m.; pop., 42,300; surface mountainous (5,300 ft.) and wooded; Boiling Lake in S.; limes, oranges, coffee, rubber; cap. *Rosau* (pop., 7,000).

**Dominical letter** or **Sunday letter**, device for finding relation between days of week and days of month in any given year; one of the first 7 letters of the alphabet in order is assigned to each day, Jan. 1 being A; and the D.L. for any year is the letter attached to the day on which its first Sunday, and consequently all other Sundays, falls: e.g. in 1933, Jan. 1 being Sunday, the Sunday letter is A; in 1934, when Jan. 1 is Monday, the Sunday letter is G. In Leap Years, since no letter is assigned to the intercalary day, the Sunday letter changes after Feb. 29th.

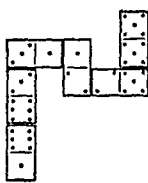
**Dominicans**, relig. order fndd. by St. Dominic, 1215; known as *Preaching Friars*, or *Black Friars*.

**Dominican Republic** (*Santo Domingo*), larger, eastern part of isl. of Haiti; 18,750 sq. m.; pop., 1,200,000; surface mountainous; soil very fertile. Exports: sugar, cocoa, coffee. Cap. and port *Santo Domingo* on S. coast; pop., 32,000; fndd. 1496; Span. until 1697, when ceded to France; independent (with Haiti), 1804; independent repub., 1843; under protection of U.S.A. since 1907; occupied by Amer. marines, 1916-24.

**Dominion**, (territ.) lands under the "dominion," or supreme authority, of a king; hence, a gen. title for the self-governing lands and peoples of the Brit. Emp., viz., Canada, Newfoundland, Australia, New Zealand, Union of S. Africa, and Irish Free State, with India so regarded for many purposes. **D. office**, dept. of Brit. Govt. charged with relat. betw. govt. in Gt. Brit. and govt. of Dominions (*q.v.*). These relat. formerly in charge of Colonial Office (*q.v.*); personnel of offices is still partly in common, but sep. Sec. of State now appointed.

**Domino**, cloak with mask worn at masquerades, etc.

**Dominos**, game played with set of 28 pieces ("bones"), bisected into rectangles, each of wh. bears 1-6 pips or is blank.



Dominoes

**Dominus** (Lat.), lord. **Dominus illuminatio mea** (Lat.), "The Lord is my enlightening"; motto of Oxford University.

**D. vobiscum**, The Lord be with you!

**Domitian**, Titus Flavius (51-96), Rom. emp.; notorious for cruelties in later years; assassinated.

**Domo d'Ossola**, frontier tn., dept. Novara, Italy, at S. end of Simplon Pass and of Simplon Railway Tunnel; population, 7,000.

**Domrémy-la-Pucelle**, Fr. vill. on Riv. Meuse, near Lorraine frontier; birthplace of Joan of Arc.

**Don**, Kaye (1894- ), Brit. racing motorist; establd. world's motor-boat speed record on Loch Lomond, 18 July, 1932

(119.75 miles per hr.), subseq. surpassed by Gar Wood, 20 Sept., 1932.

**Don**, 1) riv., Yorks., Eng.; rises in Pannines, flows past Sheffield and Doncaster; joins Riv. Ouse at Goole; length, 70 m. 2) Riv., Aberdeensh., Scot., rises on Banfish border, flows into N. Sea at Old Aberdeen; salmon- and trout-fishing; length, 80 m. 3) Navig. riv., 1,325 m., rises in centr. Russia, falls into Sea of Azov.

**Donatello** (1386-1466), Florentine sculptor; *Gattamelata* (Padua), *David*, *Judith* (Florence).

**Donation**, free transfer of property to another. **D. of Constantine**, document attrib. to Constantine the Great, granting Rome and its annexed territory to the Pope; exposed as pre-8th-cent. forgery by Laurentius Valla, 1439.

**Donatists**, Christian schismatics in Africa, 4th-7th cents.; named after Bp. Donatus of Carthage.

**Donatus**, Aelius (fl. 4th cent. A.D.), Rom. grammarian; *Ars Grammatica*.

**Doncaster**, co. bor. and mkt. tn., W. Riding, Yorks., on Riv. Don; pop., 63,308; L.N.E.R. locomotive and rly. carriage works; important agric. centre; horse-racing (the St. Leger, dating from 1778).

**Donegal** (Ir., *Tírconail*), 1) marit. co., Ulster, I.F.S.; area, 1,865 sq. m.; pop., 152,500; coast deeply indented (Loughs Foyle, Swilly, Donegal Bay); surface barren and mountainous; Derryveagh Mtns., *Erris* (2,466 ft.); many lakes; linen, woollens (Donegal tweeds), muslin, fisheries, marble and granite quarries. 2) Cap. co. Donegal, at mouth Riv. Eask, on Donegal Bay; pop., 1,300.

**Donetz Basin**, important indust. area, Ukraine S.S.R.; rich coal, iron, and manganese deposits; foundries. Fourteen towns being built at cost of 634 million roubles; first, Gorlowka, begun in 1930.

**Don Giovanni**, opera by Mozart (*q.v.*) (1787).

**Dongola**, 1) prov., Anglo-Egyptn. Sudan, in the Nile vall.; cattle-breeding; wheat; cap. *Merowe*. 2) Or **New D.**, tn. in prov., on left bank Riv. Nile, above third cataract, 75 m. below Old Dongola (ruined city); pop., 15,000.

**Donizetti**, Gaetano (1797-1848), It. composer; operas: *La Favorita*, *The Daughter of the Regiment*, *Don Pasquale*.

**Don Juan**, partly legendary character of Span. orig.; typical sceptical libertine and seducer; hero of dramas by Tirso de Molina, Molière, of opera by Mozart, of poem by Byron; and present in G. B. Shaw's *Man and Superman*.

**Donkey pump**, (mech.) steam-driven water pump used for feeding steam boilers; steam and water pistons directly coupled.

**Donne, John** (1573-1631), Eng. poet and divine. Dn. of St. Paul's and auth. of mystical and devotional poems, sermons, etc.

**Donnybrook**, S.E. suburb, Dublin, I.F.S.; notorious fair, estab. 1204; abolished, 1855.

**Don Quixote**, "Knight of the Woeful Countenance," hero of eponymous satirical romance by Cervantes (*q.v.*); type of impractical idealist, "tilts against windmills."

**Doom**, riv. (27 m.), Ayrsh., Scotland, flowing N. from Kirkcudbrightsh. border, through **Loch D.** (5 m. long) into Firth of Clyde; Burns associations.

**Doom-palm**, *Hyphane thebaica*, African palm with ramified trunk and edible fruit, said to resemble gingerbread in taste.

**Doone**, the lawless Exmoor fam. living 17th cent. immortalized by Blackmore in *Lorna Doone*, 1860. **D. Valley**, a branch of Bagworthy Valley, their trad. home, differs in many features from the author's description.

**Doorn**, vill., Holland; pop., 3,200; since May, 1920, residence of former Ger. Emp.

**Doppelzentner**, Ger. wt., 100 kg. (1.968 cwt.).

**Doppler principle**, (phys.) law governing apparent frequency of waves origntd. by light or sound. **D. effect** is observable in the changes of pitch in the note of a rapidly receding locomotive whistle and in the lines of the spectra of celestial bodies, these being apparently shifted towards the blue or the red end by the approach or recession of the body.

**D.O.R.A.**, abbr. Defence of the Realm Act.

**Dor-beetle**, a large, blue-black beetle of family *Scarabacidae*; female collects pasture dung, wh. it makes into balls and buries as food.

**Dorcas**, (N.T.) woman disciple whom Peter raised from the dead; made garments for poor; hence **D. Society**, meeting of charitable ladies for making clothes for poor.

**Dorchester**, 1) co. tn., Dorset, Eng.; pop., 10,000; centre Thomas Hardy's *Wessex*; home of Wm. Barnes, the Dorsetshire poet. 2) Village (Saxon city), Oxon., Eng.; abbey church.

**Dordogne**, 1) dépt. W. France, 3,560 sq.m.; pop., 383,720; truffles, agric., sheep; iron, cobalt, nickel; foundries, woollens; cap., *Périgueux*. 2) Riv., France, rt. trib., Riv. Garonne, in dépt. Dordogne; 305 miles.

**Dordrecht**, **Dort**, tn., S. Holland, in the Rhine delta; pop., 57,000; iron works, ship-building.



Donne

**Doré**, Gustave (1832-83), Fr. artist, illustrator of Dante's *Inferno*, *Don Quixote*, *Paradise Lost*, La Fontaine's *Fables*, etc.

**Doria**, Andrea (1468-1560), Genoese adm. and "Liberator of Genoa"; took Tunis, 1535.

**Dorians**, one of the main divns. of the Gr. peoples. Conquered Peloponnesus and drove out Achaeans (*Dorien invasion*); trad. date 1104 B.C. Destroyed Mycenaean civilization.

**Doric order** (archit.): see COLUMN.

**Dorking**, urb. dist. and mkt. tn., Surrey, 25 m. S. of London; pop., 10,200; gives name to breed of five-toed fowl.

**Dormer**, (bldg.) window jutting out of sloping roof.

**Dormouse**, small rodent of arboreal habit and mouse-like form; c. 3 ins. long, in

addition to thick, hairy tail which is almost as long as body; coat, beautiful tawny yellow; feeds on nuts, seeds, berries, etc.; grows very fat in autumn, when it makes



Dormouse

round grassy nest in thicket or hedge, in which it sleeps intermittently throughout winter. **Garden d.**, smaller, more active species found in Centr. and W. Europe, where sometimes causes considerable damage to fruit.

**Dormy** (golf). State of one's score when one is as many holes up as there are holes left to play.

**Dörnberg**, Wilhelm Kaspar Ferdinand, Bn. v. (1768-1850), Westphalian patriot; rebelled agst. rule of Jérôme Bonaparte (*q.v.*), 1809.

**Dornier**, Claude (1884- ), Ger. engineer; collab. with Ct. Zeppelin; blt. first Dornier seaplane, 1922; Do-X, 1929.

**Dornoch**, co. tn. and royal burgh, Sutherland, Scot.; pop., 700; 13th-cent. cathedral.

**Dorpat**: see TARTU.

**Dörpfeld**, Wilhelm (1853- ), Ger. archaeologist, noted for researches into ancient topography of Athens, Ithaca, and Troy.

**Dorsetshire**, **Dorset**, marit. co., S.W. Eng.; area, 988 sq.m.; pop., 732,900; chalk downs (sheep-grazing); agric. in Vale of Blackmore. Contains Isl. of Portland (with Chesil Beach), Poole Harbour; stone quarries in Portland and Purbeck. Co. tn., *Dorchester*; seaside resorts: Weymouth (port), Lyme Regis, Swanage. Forms chf. part of "Hardy" country, "Wessex."

**Dort**: see DORDRECHT.

**Dortmund**, indus. tn., Westphalia, Prussia, on *Dortmund-Ems Canal*; pop., 535,170 (1931); oldest Germ. town-hall; iron, coal, steel. Hanseatic town, 1220-1803; Prussian,



Dor-beetle



1815; occupied by French, 1923-24. **D.-Ems Canal**, longest inland artif. waterway in Germany (174 m.); connects Rhenish-Westphalian indus. area with N. Sea; exports of Ruhr coal, and imports of iron ore.

**Dory**: see JOHN DORY.

**Dossal**, (eccles.) cloth hung behind altar, varying in colour according to church season.

**Dossier** (Fr.), collection of documents relating to a specific case, individual, etc.

**Dostoevski**, Fyodor Mikhailovich (1821-81), Russ. novelist; *Crime and Punishment*, 1866; *The Idiot*, 1868-69; *The Brothers Karamazov*, 1880.

**Dot** (Fr.), dowry, marriage portion of a wife.

**Dotterel**, migrant bird, sim. to plover, but with breeding-plumage distinct from winter-p.; named from ease with wh. it may be approached.

**Douai**, formerly **Douay**, Fr. tn. dépt. Nord, on Riv. Scarpe; arsenal; lace-works; coal mines. See *Douay Bible*. **D. School**, Woolhampton, nr. Reading; Eng. sch. for R.C. boys; former sch. revived, 1818, by Eng. Benedictine Congregation at Douai, France; transferred to Woolhampton on expulsion of monks from France in 1903.

**Douane** (Fr.), custom-house.

**Douay Bible**, officially recognized R.C. translation of the Bible into English; first appeared at Douai and Rheims, 1582-1610. Var. versions made from time to time, esp. by Bp. Challoner in 1750.

**Douaumont**, Fr. fortress, N.E. of Verdun, scene of many costly assaults by Germans in World War.

**Double bass**, **contra-bass**, the lowest pitched and the largest of the string instruments.

**Double entente** (Fr.), double meaning, intentional ambiguity; often incorrectly written *double entendre*.

**Double salt**, e.g., alum, formed of 1 acid and 2 diff. metals. **D. refraction**, (phys.) occurs in some crystals, e.g., calcspar; ray of light is divided so that objects are seen double when viewed thr. such crystals. **D. star**, 2 stars very near to and moving round each other; only distinguishable from one another with a telescope.

**Doublet**, tight-fitting, short, man's jacket, worn from 15th-17th centuries.

**Doubloon**, obsolete Span. gold coin, worth c. 1 guinea.

**Doubs**, 1) dépt. E. France, on Swiss frontier; 2,032 sq.m.; pop., 305,500; wooded hills, pastures; cheese, watches, machinery, canneries; cap., *Besançon*. 2) Lt. tributary R. Saône, rises Swiss Jura Mtns., feeds

Rhine-Rhône Canal, flows past *Besançon*; length, 267 miles.

**Doughty**, Charles Montagu (1843-1926), Eng. traveller (*Travels in Arabia Deserta*, 1888) and poet (*Dawn in Britain*, 1906, etc.).

**Douglas**, noble Scot. family: **Archibald**, 5th E. of Angus, surnamed "Bell the Cat" (d. 1514); took part in conspiracy agst. James III. Two branches of the family were known respectively as the *Black* and the *Red Douglasses*. **James**, 2nd E. of D. (d. 1388), hero of ballad *Cherry Chase* (q.v.).

**Douglas**, **Gavin** see BROWN, George Douglas. **D., George**, (c. 1474-1522), Scot. poet; transl. Virgil's *Aeneid* into Scot. verse.

**Douglas**, cap. and principal port on E. coast of Isle of Man; pop., 21,110; legislative bldgs. (House of Keys, etc.); very popular seaside resort.

**Douglas fir**, Oregon pine, large North American conifer, valuable source of hard timber.

**Doukhobors** (Russ., spirit wrestlers), Russ. relig. sect having much in common with the Quakers (q.v.); persecuted in Russia, migrated to Canada in 1898, where some have adopted a nudist cult.

**Doulton**, Sir Hy. (1820-97), Eng. inventor and pottery manuf.; started with manuf. of drain-pipes at Lambeth and turned to art-pottery, 1870; chevalier of Legion of Honour, 1878; awarded Albert medal by Society of Arts, 1885.

**Doumer**, Paul (1857-1932), Fr. statesman; Gov.-Gen., Indo-China, 1897; Pres., 1931. Assassinated 1932.

**Doumergue**, Gaston (1863- ), Fr. statesman; Pres., 1924-31.

**Douro**, riv., Spain and Portug.; rises N. Spain; flows generally W.; forms part of Span.-Portug. frontier; drains into Atlantic at Oporto; length 485 miles.

**Douw**, Gerard (1613-75), Dut. painter; pupil of Rembrandt (q.v.): *Woman Sick of the Dropsy*, at Louvre, Paris.

**Dove**: see PIGEON.

**Dovedale**, narrow upper vall. of Riv. Dove, Derbysh. and Staffs, England.

**Dover**, 1) One of Cinque Ports, seaside resort and port in S.E. Kent, on Strait of

Dover; pop., 41,095; historic castle; mil. depot; cable station; important harbour (1909); chief port for cross-Channel steamers to Continent (Calais, Ostend, etc.). 2) Cap. Delaware, U.S.A.; fndd. 1717; pop., 4,800.



Dostoevski



By courtesy of the Town Clerk  
Dover Castle

**D., Strait of**, narrowest and shallowest (c. 12 fathoms) part of Eng. Channel; 18 m. across from Dover to Cap Gris-Nez.

**Dove-tail**, (tech.) projection with divergent sides from a piece of material (wood, metal) fitting into a socket with convergent sides in a 2nd piece of material, thus holding 2 pieces together. Used for fastening parts of woodwork (furniture, etc.) together.

**Dowden**, Edw. (1843-1913), Irish critic and poet; prof. of Eng. Literature, Trinity Coll., Dublin, 1867; 1st Taylorian lecturer, Oxford, 1889; *Shakespeare, His Mind and Art*, 1875; *Life of Shelley*, 1886; *New Studies in Literature*, 1895; etc.

**Dowel**, (bldg.) peg or key, closely fitting a recess made to rec. it; used in jointing timber and masonry to secure parts in position.

**Dowland**, John (1563-1626), Eng. lutanist and song-composer of internat. fame; publ. *Songs and Ayres*, 1597-1612.

**Dowlas**, kind of coarse calico; used for aprons, linings, overalls, and finer qualities for workmen's shirts.

**Down**, marit. co. Ulster, N. Irel.; area, 951 sq. m.; pop., 209,200; surface hilly (*Mourne Mtns.* in S.; *Slicke Donard* 2,796 ft.); agric. in Lagan Vall.; dairy farming, stock raising, fisheries, brewing, linen; co. tn., *Downpatrick*.

**Downing College**, Cambridge; fndd. 1800 under will of Sir George Downing (d. 1749).

**Downing Street**, Whitehall, London; named after Sir Geo. Downing (d. 1684), Sec. to the Treasury and the second graduate at Harvard. No. 10 has been offl. residence of First Ld. of the Treas. since 1731, when George II, at suggestn. of Sir Robt. Walpole, to whom he had offered it, attached it to that office. No. 11 is the offl. residence of the Chanc. of Exchequer.

**Downpatrick**, co. tn. Co. Down, N. Irel., on Riv. Quoile; ancient mkt. tn.; burial-place St. Patrick; pop., 3,100.

**Downs**, 1) roadstead betw. E. Coast, Kent, Eng., and Goodwin Sands. 2) Two parallel ranges chalk hills, S.E. Eng., extending from Hants through Surrey to Kent and Sussex; N. Downs end at Dover, S. Downs at Beachy Head; enclose the Weald (q.v.); noted for Southdown sheep.

**Downside School**, school fndd. for Eng. R.C. boys at Douai, France, attached to Eng. Benedictine Community of St. Gregory; transferred during Fr. Revolution to Acton Burnell, nr. Shrewsbury; removed to Downside, nr. Bath, 1814.

**Dowry**, dower, money or estate given to woman or her husband on occas. of their marriage; portion of man's real estate wh. his widow enjoys during her life, or to wh. woman is entitled after husband's death.

**Dowser**: see DIVINING-ROD.

**Dowson gas**, mixed water and producer

gas (q.v.), produced by action of steam and air upon bed of glowing coke.

**Doxology**, a hymn of praise; *Gloria in excelsis*, greater D., sung at Mass; *Gloria Patri*, lesser D. recited after each psalm; applied also to last sentence of Lord's Prayer ("For Thine is the Kingdom," etc.).

**Doyen** (Fr., dean), senior member of any body; spokesman of the diplomatic corps, esp. the papal nuncio.

**Doyle**, 1) **Sir Arthur Conan** (1859-1930), Brit. author: *Adventures of Sherlock Holmes*. Later, a prominent figure in spiritualism (q.v.). 2) **D., Richd.**

(1824-83), Eng. artist; on staff of *Punch*, 1843-50, and designed cover; illustrated 3 of Dickens' *Christmas Books* and Thackeray's *The New-comers*; *Comic Histories*, publ. posthumously.



Conan Doyle

**D'Oyly-Carte**, Richard (1844-1901), Eng. theat. manager; prod. series of Savoy operas by Gilbert and Sullivan.

**D/P**. Documents against payment: see DOCUMENTARY CREDIT.

**D.P.A.S.**, abbr. Discharged Prisoners' Aid Society.

**D.P.G.M.**, abbr. Deputy Provincial Grand Master (Freemasonry).

**D.P.H.**, abbr. Department of, or Diploma in, Public Health.

**Dr.**, abbr. Doctor; debtor; drachm; dram.

**Dr. H. C.** (*honoris causa*), honorary degree of doctor.

**D.R.**, abbr., 1) District Registry; 2) dead reckoning.

**Drachenfels**, volcanic peak, Siebengebirge Range, on right bank Riv. Rhine (mountain railway); alt., 1,056 ft.

**Drachm**: see DRAM.

**Drachma**, 1) unit of weight in anc. Greece, c. 2 dwt. 7 grms. troy. 2) Anc. Gr. silver coin of small value. 3) Monetary unit of mod. Gr. (1.2977 cents, U.S.A.); par. val., 375 D. = £1.

**Draco** (c. 520 B.C.), Gr. statesm.; codified Athenian (**Draconian**) laws, of exceptional severity; (astron.) constell., the Dragon; see PL. ASTRONOMY, N.C.H., E-F.

**Draff**, residue in manuf. of cider, wine, or beer; D. of beer and cider valuable cattle-fodder.

**Draft**, (finan.) written order for pymt. of a sum of money to a specified person; bills of exch. and cheques are drafts, but term is usu. used for orders by banks drawn on other bankers or on its branches.

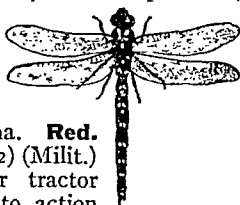
**Dragée** (Fr.), sugar-coated pill or sweetmeat.

**Drag-net**, used in trawling (q.v.) to catch bottom-feeding fish, shaped like a bag, and kept open by beam across head. **D.-hunt**,

sport in wh. no animal is chased, but hounds follow artif. scent.

**Dragoman** (Arab.), an interpreter in the Levant and the East; official attached to Turkish embassies.

**Dragon**, 1) (myth.) legendary winged monster, usu. a serpent, of evil reputation; symbolical in Hebr. and Christian lit. of sin, death, and hell. D.-ensign common to many nations; national symbol of China. **Red. D.**, badge of Wales. 2) (Milit.) Armoured caterpillar tractor for bringing guns into action under fire. First used 1917.



Dragon-fly

*See also* TANK. 3) (Astron.) *See* DRACO: D.'s HEAD, TAIL, *below*. **D.-fly**, insect of order *Odonata*; characterized by its large eyes, slender body, narrow, transparent wings, and varied and beautiful colouring; metamorphosis incomplete, there being no distinct pupal stage; larvae are aquatic and predatory. Widely distribtd. throughout the world. **D. lizard**: *see* MONITOR. **D. tree**, *see* DRAGON'S BLOOD.

**Dragonet**, (ichthyol.) small, bright coloured fish allied to goby (*q.v.*) with large, spined fins.

**Dragonnades**, operations of mounted troops engaged in enforcing Louis XIV's decrees agst. Protestants after revocation of Edict of Nantes, 1685.

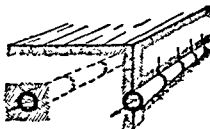
**Dragon's blood**, resinous extract of certain tropical trees, esp. of the **D. tree** of the Canary Isls.; red in colour; formerly used as astringent; now mainly for colouring varnishes. **D.'s Head**, **-Tail**, (astron.) ascending or descending *node* (*q.v.*) of the moon or a planet, indicated by symbols  $\Omega$  and  $\vartheta$ . **D.'s teeth**, seeds of discord; from Gr. legend of Cadmus (*q.v.*) in wh. men grew from dragon's teeth sown by C. and immed. began to kill each other.



Dragon Tree

**Dragon**, (milit.) mounted infantryman (now cavalry) formerly armed with a "dragon" (carbine). In Brit. Army, five regts. of **D. Guards**: 1st King's D.G., The Queen's Bays (2nd D.G.), 3rd Carabiniers (Prince of Wales's D.G.), 4th/7th D.G., 5th Inniskilling D.G.; and two regts. of *Dragoons*: 1st The Royal Dragoons, and 2nd Dragoons, the Royal Scots Greys.

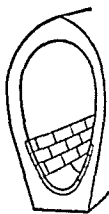
**Draguignan**, cap. dépt. Var, France; pop., 9,440; olive-growing; silkworms.



Soil-Drainage

**Drainage**, removal of superfluous water from land in order to

make possible cultivation of grain and other useful plants, wh. cannot flourish in waterlogged soil. Underground earthenware pipes are used to carry off water; if there is no river available for it to run into windmills and steam pumping-stations may be used to remove it. For drainage in towns: *see* SEWAGE DISPOSAL.



Drain

**Drake**, Sir Francis (c. 1540-96), Eng. adm.; 1st Eng. circumnavigator of globe, 1577-80; raided Span. fleet in Cadiz harbour, 1587; leader in deft. of Span. Armada, 1588.

**Drake**, male duck (*q.v.*).

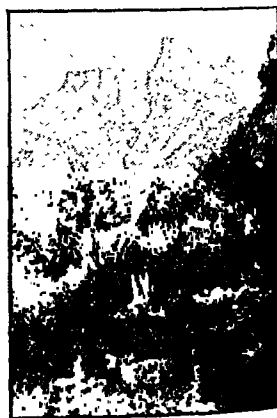
**Drakensberg** (or **Kwathlamba**) **Mountains**, range S.E. Africa, Transvaal, Orange Free State, and Natal, 500 m. long; *Mont aux Sources*, 11,150 ft.

**Drakoules**, Platon Soterios (1838- ), Gr. sociologist and writer; transl. Emerson, G. B. Shaw, Ruskin, etc.



Sir Francis Drake

**Drama**, originally representation of sacred hist. as part of Gr. ritual; the *actor* devlpd. from *reciter*, who addressed *chorus*; grad. further actors added, chorus limited, and subjects extended to include legends of heroes. Eng., Fr., Ger., Span. drama also of relig. orig., e.g., mediaev. *mystery* plays (*q.v.*). D. is logical development of events from character of actors in conversation (dialogue) or soliloquy (monologue): 3 classes, *tragedy*, *comedy*, *tragic-comedy*.



By courtesy of the High Commissioner for South Africa

The Drakensberg

**Dram** or **Drachm** 1) Brit. wt. a)  $\frac{1}{8}$  oz. (avoirdupois); b)  $\frac{1}{8}$  oz. (apothecaries' wt.). 2) Liquid meas.,  $\frac{1}{8}$  oz., 1 teaspoonful (60 minims or drops); 2 drams = 1 dessert-spoonful; 4 drams = 1 table-spoonful.

**Dramatis personae** (Lat.), characters in a play or story.

**Dramaturgy**, art of play-production.

**Drambui**, Scot. liqueur having Scot. whisky basis.

**Dram. pers.**, abbr. DRAMATIS PERSONAE.

**Draught**, (naut.) distance betw. bottom of ship's keel and water-line in any given condition of load.

**Draughts**, game for 2, played on chess-board (see CHESS), with 12 pieces a side (white and black); object being to capture all opponent's pieces (by "jumping"), or confine them so that none can be played.

**Drava**, 1) or **Drave**; r. trib. of Danube; rises Upper Pusterthal (S. Tirol); flows through Carinthia; forms frontier betw. Hungary and Yugoslavia; length 465 m., mostly navigable. 2) Or **Dravska Banovina**, Yugoslav prov., Slovenia; 6,151 sq.m.; pop., 1,037,850 (mainly Slovenes); cap., Ljubljana (*Laibach*).

**Dravidian**, race, remains of dark aborig. inhab. of India, found mingled w. other races in S. India and N. Ceylon; plateau in Decan. D. lang., see LANGUAGE SURVEY (spoken in S. India and N. Ceylon).

**Dravska Banovina**: see DRAVA.

**Drawback**, (finan.) refund of customs duties on re-exportation of goods; payable in U.K. on certain imports after undergoing manuf. there; e.g., artific. silk, sugar, tobacco, etc.; see IN BOND.

**Draw-bench**, machine for making wire, tubes, etc., by *drawing* (i.e., by reducing diameter) of mat. thr. *draw plates* with corresp. profile diameter. **D.-knife**, wood-working tool; long, flat blade with handle at each end set at right angles to it. Used for rough shaping of wood, and esp. for making poles and spars. **D.-loom**, old pattern of loom in wh. cords are attached to each warp end so that they can be grouped to form pattern. **D.-press**, machine for shaping metals and other ductile (drawable) materials by forcing metal, usu. in sheet form at first, into reqd. shape by pressure betw. a punch and a matrix into wh. it enters. Shape is given by a graduated series of operations, metal being softened after each by heating and quenching; used in manuf. of cooking utensils, etc.

**Drawbridge**, bridge that can be raised, by hand or by machinery; used over moats of mediaeval strongholds as defensive measure; now, bridge across river or canal, raised to permit tall-masted ships to pass. See BRIDGE.

**Drawee**, (finan.) party to whom bill of exch. is addressed and by whom bill is payable. **Drawer**, person who addresses B. of exch. and to whom pymt. is due.

**Drawings**, (Stk. Exch.) in govt. loans repayable in instalments on specified dates, a certain no. of outstanding stocks are *drawn* by lot for redemption on each of apptd. days.

**Drawn thread work**, embroidery in wh. a no. of threads are drawn from the fabric and the remainder caught up into a pattern.

**Drayton**, Michael (1563-1631), Eng. poet, buried in Westminster Abbey; *Poly-Olbion* (18 bks.), *Nymphidia*, *Batt. of Agincourt*, etc.

**Dreadnought**, type of battleship of high speed, wide radius of action, and specially armoured, first designed for Brit. Navy, 1905; later copied in other navies.

**Dreams**, illusions, hallucinations occurring during sleep; caused by dissociation of consciousness due to transference of the higher nerve centres from normal to subnormal activity. D. are gen. held to be based on actual experience. **Interpretation of d.**, 1) among semi-civilized peoples and in days of anc. Gr. and Rome, attempts made to explain Ds. either philosophically or by assigning to them prophetic significance. Superstitious belief in D. still lingers. 2) In psycho-analysis (*q.v.*), Ds. form basis of scientific investigation in morbid mental conditions. **Daydream**, a vivid mental picture, formed while awake, of the realisation of some personal desire; frequently occurring at the age of puberty or in neurotic subjects.

**Dredger**, machine for removing mud, sand, etc., from under water; for deepening rivers and harbours and winning valuable sand (gold, tin). **Ladder d.**, buckets on endless chain; **hydraulic** or **suction d.** sucks mud and water from bottom thr. flexible pipe; **dipper d.**, like shovel excavator (*q.v.*), mounted on float; **grab d.**, **clamshell d.**, self-closing bucket lowered into mud and hauled up again.

**Dreiser**, Theodore (1871- ), Amer. author: *An American Tragedy* (1925).

**Drente**, prov. N.E. Holland; 1,030 sq.m.; pop., 222,500; cap., *Assen*.

**Dresden**, cap. of Saxony, divided by Riv. Elbe into Old and New Towns (five bridges); pop., 632,700; ex-royal palace; Theodore Dreiser Zwinger (museum; picture gallery), Jap. palace; tech. coll.; china; engineering, automobile and chem. works; rly. junct. Orig. Slav (*Dresdzany*); Ger. from 1206; resid. of House of Wettin, 1485-1918. **Battle of D.**, 27 Aug., 1813 (last great victory of Napoleon). **D. bank**: see D.-BANKS. **D. china**, made at Meissen, near Dresden, noted for delicate figurines of shepherdesses, etc., in 18th-cent. style. Lacework made by dipping fabric in slip (*q.v.*) and firing.

**Dressing**, (tech.) term in many trades, meaning getting ready, e.g., textiles for the market, by loading them with D. and ironing; metallic ores for smelting, by removing gangue or waste; earth with manure, insecticide, etc. **D.-station**, (milit.) advanced medical post betw. regt. aid posts and



casualty clearing stations in war. Urgent operations performed.

**Dreyfus**, Alfred (1859- ), Fr. soldier; capt. on H.Q. staff; twice convicted on one false charge of treason, 1894 and '99; championed by Zola (*q.v.*); rehabilitated, 1906.

**D.R.G.M.**, abbr. *Deutsches Reichs-Gebrauchs-Muster* (Ger.), Ger. patent.

**Driesch**, Hans (1867- ), Ger. philos. and psychologist; *History and Theory of Vitalism*, 1914; *The Crisis in Psychology* (Princeton Lectures, 1925).

**Drift**, slow current in sea caused by wind; amt. of deviation in ship's course caused by currents; snow, leaves, etc., piled up by wind, sea, etc.; trend of thought, meaning; (geol.) deposit of sand, gravel, shells, etc. transported by moving water, ice, etc.; (min.) horizontal boring. **D. ice**, ice-floes of polar origin drifting twds. Equator as far as c. Lat. 40°.

**Drill**, 1) (tech.) implement for making holes in solid bodies. Two main kinds:

**Rotating d.**, operates by cutting, twist for metal, augers for wood, tubular for soft substances; **Jumper d.**, operates by pulverising; usu. triangular section, operated by hammer blows (hand, compressed air) used for brittle substances, rocks (in mining) and drilling marble, brick, building stone. 2) (Textile) Coarsely woven twilled matl. of linen or cotton used for ticking and mattresses; finer qualities for clothing and household linen. 3) (Zool.) Variety of baboon similar to, but without distinctive colouring of, mandrill (*q.v.*).

**Drilling machines**, appar. in wh. D. is held in a *chuck*, and rotated rapidly by hand or power. Power-driven machines have various types of feed for advancing D. as it does its work. **Rock-d. m.**, operates not by cutting but by pulverising the rock by means of very rapid blows; usu. compressed-air-driven.

**Drin**, riv., Albania, formed by union of *White Drin* (from Yugoslavia) and *Black Drin* (from L. Ochrida, S. Albania); flows into Adriatic.

**Drina**, 1) rt. trib. of Riv. Save; rises Montenegrin mtns., flows through Bosnia, Yugoslavia; length 165 m. 2) Or **Drinska Banovina**, prov. Bosnia; 11,400 sq.m.; pop., 1,354,200 (Serbs); cap., *Sarajevo*.

**Drinkwater**, John (1882- ), Brit. poet, dramatist, and critic; plays, *Abraham*, 1918; *Mary Stuart*, 1922.

(archit.) term used in Gothic or a moulding above doorways or

windows, both inside and outside a building. **Driver**, Saml. Rolles (1846-1914), Eng. divine; succ. Pusey as Regius prof. of Hebrew, Oxford; member of O.T. revision committee, 1876-84.

**Drogheda**, seapt. and mkt. tn., Co. Louth, I.F.S., on Riv. Boyne, 4 m. from its mouth; pop., 12,800. **D.**, *Statute of*: see POYNING'S LAW.

**Droit** (Fr.), right, law; **d. des gens**, international law. **D. du seigneur**, term for a custom in mediaeval Europe, whereby an over-lord exercised an alleged right to the virginity of his vassals' daughters on the first night after their marriage. Also called *jus primae noctis*.

**Droitwich**, munic. bor. and spa, Wores, Eng.; pop., 4,550; brine baths.

**Drôme**, dépt. S.E. France; 2,532 sq.m.; pop., 267,080; mtns. and forests; fruit, honey, silkworms; cap., *Valence*.

**Dromedary**, the one-humped camel (*q.v.*).

**Drone**, 1) any monotonous humming noise. 2) (Mus.) In bagpipe and sim. instruments, pipe producing sustained bass notes. 3) Male bee, esp. hive bee. **D.-fly**, a large fly, resembling a bee; larvae known as "rat-tailed maggots"; breed in foul water.

**Drop**, 1) (phys.) form assumed by a liquid under surface tension (*q.v.*). 2) (Meas.) See MINIM. **D.-scene**, (theatre) large sheet of canvas, painted to represent sky, landscape, etc., suspended from flies (*q.v.*). **D.-curtain**, curtain similarly suspended between stage and audience. **D.-hammer**, machine for *drop-forging*; a heavy hammer of suitable shape falls on a heated piece of metal of correct size and presses it into a die.

**Dropsy**, abnormal accumulation of fluid in and under the skin, and in cavities of chest and abdomen, due to insufficient excretion of water by the kidneys, generally in consequence of heart or kidney disease. See also OEDEMA.

**Dross**, 1) waste matter; 2) scum on surface of molten metals, mainly oxide and other impurities.

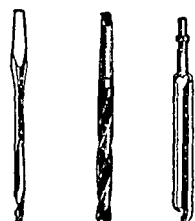
**Drowning**, process of suffocating in water; partially drowned persons may be revived by artificial respiration (*q.v.*).

**D.R.P.**, abbr. *Deutsches Reichs-Patent* (Ger.), Ger. patent.

**Drug**, any subs. used as ingredient in med. or in the prep. of a med. Official list of drugs and med. preps. is known as *Pharmacopoeia*. Pop. term "drug" is understood to mean a powerful or dangerous subs. and in more limited sense is applied to those substances wh. have stupefying and habit-forming properties.

**Drugget**, coarse woollen matl. felted and raised on one side; used chfly. for floor-coverings.

**Drugs of addiction**, narcotics wh. cause



Auger      Twist-drill      Rock-drill  
Drills

state of intoxic. and lead to devel. of drug habit if used freq. or indiscriminately, e.g., alcohol, morphine, cocaine.

**Druids**, 1) anc. Celtic priesthood, including prophets, priests, poets, judges, magicians. 2) Officials of the mod. Welsh Eisteddfod. 3) Members of a mutual benefit society fndd. in 18th century. **D.'s foot**, pentagram (q.v.), used in the Mid. Ages as protective sign agst. evil spirits.

**Drum**, percussive instr., flat wooden cylinder with hides stretched on it, above and below; see KETTLE DRUM. **D.-horse**, horse trained to carry the drummer and **side-drums** of the band of a cavalry regiment.

**Drumclog**, moorland par., Lanarksh., Scot., 14½ m. E. Kilmarnock; here Claverhouse was routed by Covenanters in 1679.

**Drumlins**, moraine (q.v.) hills of elliptic shape, formed under ice during Ice Age.

**Drummond**, 1) **Sir James Eric** (1876- ), Brit. diplomat.; 1st Sec.-Gen. League of Nations, 1919-33. 2) **D., Wm.**, "of Hawthornden" (1585-1649), Scottish poet.

**Drury Lane**, old London street, from Aldwych to Broad St., Bloomsbury; formerly Via de Aldwych, leading from Dan. settlement to St. Giles. Aristoc. quarter in 17th cent.; notable residents, Oliver Cromwell, Nell Gwynne, etc. **D. L. Theatre**, 1st built 1663, pres. structure 1812.

**Druse**, (geol.) cavity or chink in rock, studded with small crystals.

**Druses**, warlike Syrian tribe, pop. c. 92,000; mixed race; lang. Arabian, own relig. (mixture of Christian, Jewish, Mohammedan teaching); since 1922 indep. State under Fr. mandate in Syria.

**Drusus, Marcus Livius** (?-91 B.C.), Rom. tribune of the plebs.; his murder caused social war, 90 B.C. **D., Nero Claudius** (38-9 B.C.), Rom. gen.; extended Empire to Elbe.

**Dryads**, (Gr. myth.) Hamadryads, tree nymphs.

**Dryburgh Abbey**, ruined abbey, Berwicksh., Scotland, on Riv. Tweed, 4½ m. S.E. Melrose; built 1150, destroyed 1544; tomb of Sir Walter Scott.

**Dry cell**, (elec.) galvanic cell, in wh. electrolyte is absorbed in solid matter (e.g., sawdust) thus rendering cell portable. Used for pocket lamps, etc. **D.-point**: see ETCHING. **D.-rot**, decay of wood, due to a fungus which attacks seasoned timber exposed to damp, and ultimately destroys it. See WOOD, PRESERVATION OF. **D.-steam**, steam at a temperature exceeding that at

which it condenses to water at its existing pressure.

**Dryden**, John (1631-1700), Eng. dramatist, poet, and satirist. Poems: *Absalom and Achitophel*, 1681; *The Hind and the Panther*, 1687; Plays: *All for Love*, *The Spanish Friar*. Also wrote much literary criticism.

**Drygalski**, Erich von (1865- ), Ger. geographer; led S. Polar expd., 1901-03, in the ship "Gauss."

**Drying oils**, oils which become solid and hard by oxidation in air, e.g., linseed, almond, poppy, hemp, colza. Process hastened by mineral substances, such as litharge, manganese dioxide, and also by light.

**D.S.C.**, abbr. Distinguished Service Cross.

**D.Sc.**, abbr. Doctor of Science.

**D.S.M.**, abbr. Distinguished Service Medal.

**D.S.O.**, abbr. Distinguished Service Order.

**Dsongars**: see DZUNGARIA.

**D. Ter.**, abbr. Dakota Territory.

**D. Th.**, abbr. Doctor of Theology.

**Duala**, 1) chf. port, Fr. Cameroons, W. Africa, on estuary Cameroon Riv.; pop., 20,000; 2) Bantu tribe of the Cameroons; see LANGUAGE SURVEY, *Bantu*.

**Dual alliance**, 1) betw. Austria and Ger., 1879; 2) betw. Fr. and Russ., 1892. **D. control**, (educ.) system of educ. in Gt. Brit. whereby elementary and secondary schools, aided but not provided by the State, are managed jointly by local educ. authorities and voluntary boards of governors.

**Dualism**, theory that entire universe is founded upon an eternal conflict betw. two opposing principles of good and evil, spiritual and material.

**Dualia**: see DUALA.

**Du Barry**, Marie Jeanne, Comtesse



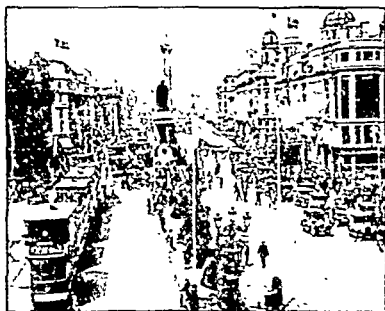
Dryden



Drum-Horse:  
Royal Horse  
Guards



Druse



By courtesy of the Irish Tourist Association  
O'Connell Street, Dublin

(1746-93), mistress of Louis XV; guillotined for conspiracy agst. the Republic.

**Dubl.**, abbr. Dublin.

**Dublin**, 1) co. of Leinster, I.F.S.; area, 355 sq.m.; pop., 505,654; mountainous in S., watered by Riv. Liffey; agric. 2) Officially *Baila Atha Cliath*, cap. of I.F.S., on Riv. Liffey; pop., 419,900 (incl. suburbs); castle, Univ. of Dublin (and Trinity College), univ. college (part of Nat. Univ. of Irel.), R. Cath. and Angl. catheds.; busy trade; clearings from port in 1929: 5,740 ships of 2-3 million tons register; extensive docks; shipbldg., mech. engineer; exports of dairy-produce, whisky. Port, *Kingstown* (Dun Laoghaire). Orig. Celtic, then stronghold of Danes until battle of Clontarf (1014), settled by Henry II in 1172.

**Du Bois-Reymond**, Emil (1818-96), Ger. physiologist. *Researches in Animal Electricity* (2 vols., 1848-84).

**Dubonnet**, Fr. appetizer, foundation of wh. is strong wine mixed with herbs.

**Dubrovnik**, *Ragusa*, seapt. tn. on Dalmatian coast, Yugoslavia; pop., 13,340; R.C. bpric.; 14th-cent. buildings; manuf.: liqueurs, silks.

**Du Cange**, Charles du Fresne, Sieur (1610-88), Fr. histor., antiquary and lexicographer; publ. *Glossaries* to the writers of mediaev. and low Latin and Greek.

**Ducat**, coin of gold or silver, formerly issued in several countries of Eur.; first struck in duchy of Apulia (1140).

**Duccio di Buoninsegna** (c. 1250-1329), It. pntr. of Siene School: *Majestas*, at Siena.

**Duce** (It., from Lat. *dux* = leader), title given to Mussolini (q.v.).

**Duchess**: see DUKE.

**Duck**, 1) (zool.) aquatic bird of the subfamily *Anatinae* which embraces some 19 genera, incldg. tree-D., shel-D., widgeon, wild D. or mallard, teal, pintail, shoveller, scoter, pochard, etc. (qq.v.). **Domestic d.**, believed to be descended from mallard. Bred chfly. for the table, also for its eggs. Main varieties: *Aylesbury*, white, heavy bird, favourite Eng. breed. *Rouen*, most closely resembling mallard; male has brilliant plumage. *Peking*, orig. imptd. from China; white and yellow; good egg-layer. *Indian runner*, introduced from India mid. 19th cent., small bird; prolific egg-layer. Other varieties: *Cayuga*; *Huttegern*; *Blue Swedish*; *Muscovy*. 2) (Text.) Coarse linen or cotton cloth of canvas type, used for clothing by sailors, etc., in tropics.

**Duckbill**, **Duck-mole** (*Ornithorhynchus*), one of the *Monotremes* or egg-laying mammals, native of Australia, where it lives in galleries excavated in river-banks; feeds on aquatic insects and fresh-water crustacea, and mollusca; muzzle is expanded to form broad duck-like beak; feet are large, with toes



Duckbill

stout and broad, about 18 ins. long. The white eggs-laid in breeding chamber, and hatching, the naked, helpless young are suckled by the female.

**Duckweed**, (bot.) gen. name for *Lemna*, but usually *L. minor*, minute but abundant pond plant, eaten by ducks.

**Ductility**, (phys.) capacity of bodies for having their shape changed by tension (e.g. drawn into fine wire) without heating or cracking; often improved in metals by alloying and annealing.

**Ductless glands**: see ENDOCRINE GLANDS.

**Duddon**, riv., Cumberland and Lancs, Eng.; **D. Valley** described in Wordsworth's series of sonnets.

**Dudley**, Robt.: see LEICESTER, EARL OF.

**Dudley**, co. bor., Worcs, Eng.; ironworks; pop., 59,600.

**Duel**, fight between 2 pers. with swords, pistols, etc., in the presence of seconds (q.v.), to settle a quarrel; any kind of 2-sided contest.

**Duenna** (Span.), chaperon, female escort to a lady.

**Duet**, **duo**, song for two voices; instrumental piece for two players.

**Dufferin and Ava**, Fredk. Temple Hamilton-Temple Blackwood, 1st marq. of (1826-1902), Brit. diplomatist; Gov.-Gen. Canada, 1872-78; Ambass. to Russ., 1879-81, and to Turkey, 1881-84; Viceroy of India, 1884-88; cr. Marq., 1888, and apptd. Ambass. at Rome; Ambass. at Paris, 1892-96.

**Dugdale**, Sir Wm. (1605-86), Eng. herald and antiquary; *Rouge Croix*, 1639, Norway, 1660, Garter Kg.-at-Arms, 1677; publ. *Monasticon Anglicanum*, 1655, 1664, and 1673; *Baronage of England*, 1675-76; etc.

**Dugong**, marine mammal, 5 to 9 ft. long, bluish-grey, found in Indian Ocean.

**Dug-out**, 1) primitive boat made of hollowed-out tree-trunk. 2) (Mil.) Cellar-like excavation for accom. of troops, munitions, or stores, in or near front line, ideal being proof agnst. shell-fire or weather.

**Duhamel**, Georges (1884- ), Fr. auth.; war book, *Civilisation*, 1917.

**Dühring**, Eugen (1833-1901), Ger. philos. and pol. econ.; *Philosophy of Reality* (1895), *Capital and Work*.

**Duiker**, very small and graceful African antelope, characterised by having a tuft of long hairs betw. the short simple horns, which are placed far back on forehead.

**Duisburg-Hamborn**, indus. tn., Prussia, at confluence of Ruhr and Rhine; pop. 441,160; river port, with large traffic in coal, coke, and iron goods.

**Dukas**, Paul (1865- ), Fr. composer; symphon. poem, *L'Apprenti Sorcier*, 1897; "poème dansé," *The Peri*, 1912.

**Duke** (fem., **Duchess**), highest order of Brit. peerage, taking precedence next below royal princes and abps. First conferred in

1337. The Duke of Norfolk is the premier duke.

**Duke of Cornwall's Light Infantry**, Brit. infantry regt.; union (1702) of old 32nd and 46th Foot; depot, Bodmin; record office, Exeter; 15 battalions in World War.

**Duke of Wellington's Regiment** (West Riding), Brit. infantry regt.; union of old 33rd and 76th Foot; depot, Halifax; record office, York; 21 battalions in World War.

**Dukeries**, woodland dist., Notts, Eng. (part of Sherwood Forest), so called from number of dukes formerly resident therein (at Welbeck, Clumber, Thoresby, Worksop).

**Dulce est desipere in loco** (Lat.), it is pleasant to unbend on occasion.

**Dulcinea**, innamorata of Don Quixote (q.v.).

**Dull-emitter**, tungsten filament, coated with thorinated tungsten; emits electrons at lower temperature than pure tungsten; used as filament of wireless valves (q.v.).

**Dulong**, Pierre Louis, Fr. chem. (1785-1838), discv'd., with Alexis Petit (1791-1820), **D. and Petit Law**, i.e., that atomic heat (product of sp. heat and at. wt.) of all solid elements is the same, viz., about 6.4.

**Dulse**, (bot.) a red seaweed; grows on larger seaweeds and on rocks; used as food in parts of Scot. and Ir., and in Mediterr. cntrs.

**Duluth**, tn., Minnesota, U.S.A.; pop., 101,450; port, W. end L. Superior; manuf.: iron and steel; commerc. centre for coal, grain, cement, and motorcars.

**Dulwich**, dist., S.E. London, Eng.; part metrop. bor., of Camberwell; picture gallery; park; public school for boys, fndd. by Edw. Alleyn, 1619, divided, by Act of Parliamt., 1857, into Dulwich College and Alleyn's School. **D. Picture Gallery**, art gallery in S.E. district of London; built (1811) by Sir J. Soane (q.v.) for collection of Sir Francis Bourgeois, R.A.; fine examples of Dutch, Flemish, Spanish, French, and Brit. schools.

**Duma**, Russ. parliament or legislative assembly, first instituted by Nicholas II, 1905, with power to legislate and control administration of civil laws. Fourth and last Duma (1912-17) abolished by Bolsheviks.

**Dumas**, Alexandre, two Fr. writers; 1) (1802-70), auth. of *The Three Musketeers*; *The Count of Monte Cristo*.

2) His s. (1824-95), **D. fils**, the younger: *La Dame aux Camélias*.

**Du Maurier**, George (1834-96), Brit. artist and author; *Peter Ibbetson*; *Trilby*; *The Martian*; illustrations in *Punch*. His son, **Sir Gerald** (1873- ), Brit. actor-manager.

**Dumbartonshire**, formerly *Lennox*, co. W. Scot., on Firth of

Clyde; area, 244 sq.m.; pop., 147,800; mountainous in N. (*Ben Vorlich*, 3,092 ft.); more level round Clyde, with industrial *Valley of Leven* (cotton, dyeing, paper-making, coal-mining, shipbldg.); sheep farming, fisheries; includes W. part of *Loch Lomond*. Largest tn., Clydebank. **Dumbarton**, co. tn., seapt., and royal burgh, 13m. N.W. Glasgow; shipbldg.; pop., 21,500.

**Dumb-bell**, short bar with weight at each end for muscle-exercises, etc.

**Dumbness**, inability to speak; may be due to hysteria, congenital deafness, etc. See DEAF and DUMB.

**Dum-dum bullet**, projectile with nose cut across so as to expand on impact, causing serious wounds; forbidden in civilised warfare by Hague Convention.

**Dumfriesshire**, border co. in S. Scot., almost sep. from Cumb. by Solway Firth; includes Nithsdale, Annandale, and Eskdale; 1,063 sq.m.; pop., 81,060; agric. and pastoral; mountainous in N. (*Hart Fell*, 2,650 ft.). Co. tn. **Dumfries**, pop., 22,795; chief cattle mkt. in Scot.; wool industry. Tomb of Robert Burns.

**Dumont**, Alberto Santos (1874-1932), Brazilian pioneer in airship construction; built c. 14 non-rigid airships, most of which came to grief; with his "No. 6," won Deutsch Prize for flying round Eiffel Tower and back, c. 7 m., in less than half an hour (1901).

**Dumping**, selling goods to foreign countries at very low prices, often below cost of prod., to gain a market; customs tariffs to defeat D. have been set up in many countries.

**Dumpy level**, spirit-level with sighting-telescope and compass attached; used in surveying (q.v.).

**Dum spiro spero** (Lat.), while I breathe, I hope:

**Dun**, col. of horse, dull greyish-brown.

**Dünamünde**: see UST DVINSK.

**Dunant**, Henri, Swiss philanthrop. (1828-1910), organ. Red Cross Soc.; Nobel Peace Prize, 1901.

**Dunavska**, dept. of Yugoslavia, on the Danube; 11,645 sq.m.; pop., 2,310,900; cap., *Novi Sad*.

**Dunbar**, Wm. (c. 1460-1513), Scot. poet and Franciscan monk; wandered through France, 1479-1500; attached to Court of James IV of Scot.; *The Goldyn Targe*; *The Thrissil and the Rois*.

**Dunbar**, royal burgh and port, E. Lothian, Scot.; pop., 3,800; **battle of D.**, 1650, defeat of Scottish Royalists by Cromwell.

**Dunblane**, police burgh (former city), S. Perthsh., Scotland, on Allan Water, 5 m. N. Stirling; pop., 2,700; 13th-cent. cathed. (now par. church); manuf. woollens.

**Duncan**, Isadora (1878-1927), Amer. dancer; fndd. school of interpretative dancing, 1911.



A. Dumas, père



**Duncansby Head**, promontory (210 ft.), Caithness, Scotland, extreme N.E. point Scottish mainland.

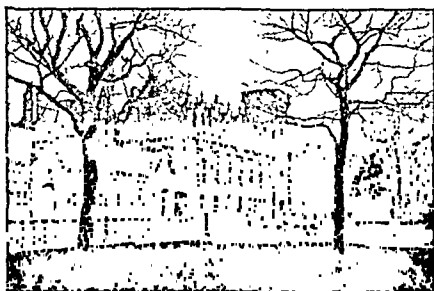
**Dunce**, pers. of weak intellect; simpleton; orig. applied to followers of Duns Scotus, by disciples of Thomas Aquinas.

**Dunciad**, satirical poem agst. contemporary writers, by Alexander Pope (*q.v.*).

**Dundalk**, cap., Co. Louth, Leinster, I.F.S., on Dundalk Bay; seapt.; locomotive works; pop., 12,000.

**Dundee**, Viscount: *see* GRAHAM, JOHN.

**Dundee**, third city in Scot.; pop., 175,583, on Firth of Tay; *Tay Bridge*, 2 m. 73 yds.; univ. college (part of St. Andrews univ.);



Photo, Valentine

Royal Exchange, Dundee

centre of jute and flax industry; manuf. include marmalade, linoleum, machinery; important fisheries.

**Dune**, stretch or mound of sand, usu. heaped up by wind, near seashore.

**Dunedin**, tn. and seapt., S. Island, New Zealand, at head Otago Harbour; cap., Otago prov.; pop., 86,500; chief commercial city, New Zealand; Anglican and Rom. Cath. catheds.; univ.; woollens, frozen meat, ship-ping.

**Dunelm.**, abbr. *Dunelmensis* (Lat.), of Durham (signature of Bp.).

**Dunfermline**, royal burgh, Fifesh., Scot.; abbey; birthplace Andrew Carnegie; centre linen industry; pop., 35,000.

**Dungeness**, low headland, S. coast Kent, Eng.; lighthouse.

**Dunkery Beacon**, hill (1,707 ft.), W. Somerset, highest point of Exmoor; National Trust property, 1932.

**Dunkirk**, *Dunkerque*, Fr. seapt. tn., dépt. Nord, on Strait of Dover; pop., 33,000; harbour (third Fr. port); fisheries; shipbuilding. Fndd. 10th cent.; freq. changed hands betw. Fr. and Span.; ceded to Eng., 1658, sold by Chas. II to Louis XIV, 1662 (last Eng. possession in France); heavily bombarded in World War.

**Dun Laoghaire**, (Kingstown), seapt. tn., Co. Dublin, I.F.S., 6 m. S.E. Dublin; harbour; mail service to Holyhead; pop., 20,000.

**Dunlop**, John Boyd (1839-1921), Scot. inventor; veterinary surgeon in Belfast;

patented pneumatic tyre, 1887; sold patent to Du Cros, who developed it commercially.

**Dunmow**, Great, mkt. tn., Essex, on rt. bank Riv. Chelmer, 10 m. N.W. Chelmsford, pop., 2,500. **Little D.**, vil., on l. bank Riv. Chelmer, 2 m. S.E. of above; Norman church, formerly belonging to Augustinian priory (fndd. c. 1100), which used to present a flitch of bacon (**D. Flitch**) to any couple who could prove that they had lived a year and a day without once regretting their marriage. First award, c. 1445; custom revived by Harrison Ainsworth in 1855.

**Dunnet Head**, promontory, Caithness, Scot.; northernmost point Scottish mainland (346 ft.; lighthouse).

**Dunois**, Jean, Ct. (1402-68), "Bastard of Orléans," Fr. warrior; recovd. Normandy and Guienne from English.

**Duns**, co. tn., Berwicksh., S.E. Scot.; pop., 1,800.

**Dunsany**, Edward J. M. D. Plunkett, 18th bn. (1878- ), Irish poet and dramatist. Plays: *A Night at an Inn*, 1916; *lf*, 1921. Tales: *The Gods of Pegana*, 1903; *Tales of Wonder*, 1916.

**Dunsinane**, estate, E. Perthsh., Scotland, 8 m. N.E. Perth. **D. Hill** (1,012 ft.), traditional seat of the Thane Macbeth, and associated with Shakespeare's play of that name.

**Duns Scotus**, John (c. 1265-1308), Brit. mediaev. philos.; surnamed "Doctor Subtilis"; fndd. Scotist school of philosophy.

**Dunstable**, John (?-1453), Eng. composer, early pioneer of polyphonic music.

**Dunstable**, mun. bor., Beds, on Holyhead road (Watling Street), 34 m. N.W. London; pop., 9,000; Norman and E.E. church; straw-plaiting. Whipsnade lies 3 m. south.

**Dunstaffnage Castle**, ruined cas. Argyllsh., Scotland, on Loch Etive; on site of trad. cap. of Scotland, 500-843; Stone of Destiny (*q.v.*) removed here from Tara (Ire.) and hence to Scone.

**Dunstan**, St. (909-988), Abp. of Canterbury; exercised great politic. influence in England. Said to have composed number of plainsong melodies.

**Dunster**, tn., Somerset, Eng.; pop., 500; castle, built 11th cent. by William de Mohun on site of Saxon fortress, owned by Luttrells since 14th cent.; yarn market bldg., c. 1600, in main street.

**Duo**: *see* DUET.

**Duodecimo**, abbr. 12mo; format of book in wh. sheet is folded into 12 leaves.

**Duodenum**, (anat.), first part of small intestine leading from pylorus; 8-12 in. long. The pancreatic and common bile-ducts open into duodenum. **Duodenal ulcer**, damaged area of the inner surface of small intestine near the stomach. Gives rise to the symptom of hunger-pain, *i.e.*, pain relieved by

taking food. Bleeding may occur from the ulcer, or the ulcer may perforate the wall, so that peritonitis results. Treated by joining the stomach directly to another part of the small intestine, by the operation of *gastrojejunostomy*.

**Dupleix**, Joseph François (1697-1763), Fr. statesman; gov.-gen. of Fr. India, 1742-54; conflicts with English led to his recall; wrote *Contre la Compagnie des Indes*, 1751, in defence of his policy.

**Duplicating**, mechanical reprod'n. of written or (esp.) typewritten matter, performed either by production of several copies simultaneously with original, by inserting carbonised paper between sheets of ord. paper, or by cutting impressions with typewriter on a stencil, or sheet of wax-covered paper, wh. is then placed in a *D. machine* over a revolving inked pad, which forces ink through design on to paper. Cf. **HECTOGRAPH**.

**Dupré**, Jules (1811-89), Fr. painter, leading member of Barbizon School (q.v.): *Morning and Evening at Louvre*, Paris; *River Scene* in Tate Gallery, London.

**Duralumin**, alloy contg. 94 % aluminium, 4 % copper, 1 % manganese, 1 % magnesium, and a small amount of silicon. One of the strongest alloys of Al, stronger than best steel, weight for weight; can be hardened, and tempered for use as spring.

**Duramen**, heart-wood of a tree; see **ALBURNUM**.

**Duran**, Carolus (1837-1917), Fr. painter, inspired by Velasquez; *La Dame au Gant* (Luxembourg).

**Durance**, riv., France, longest trib. of Rhone; rises Mont Genève (Hautes-Alpes); joins Rhone below Avignon; length, 235 miles.

**Durante bene placito** (Lat.), during our good pleasure; condition of the grant of certain official positions by the Crown.

**Duration of life**: see **LONGEVITY**; **EXTENSION OF LIFE**.



By courtesy of the High Commissioner for South Africa  
The Esplanade, Durban

**Durazzo**, **Durrës**, port, Albania; pop., 5,175. On site of anc. *Epídamnus*, fndd. 625 B.C. (later *Dyrrachium*).

**Durban**, **Port Natal**, seapt. and largest

tn. in Natal, S. Africa, on S.E. coast; fine public buildings, marine esplanade, harbour; chief trading port in prov.; pop., 180,000 (86,300 whites).

**Durbar**, audience chamber of Indian princes; also ceremonial reception held by them, by viceroys or governors.

**Dürer**, Albrecht (1471-1528), Ger. painter



Dürer Self-portrait

and engraver. Copper plates: *Death and the Devil*; *St. Jerome in his Study*; *The Knight and Death*.

**Durham**, 1) marit. co., N.E. Eng.: area 1,015 sq.m.; pop., 1,486,000; mountainous moorland in W. (*Pennine Chain*), fertile plains in E.; cattle-breeding, coal-mining, shipbldg.; 2) co. tn., on Wear; pop., 16,223; Norm. cathed., castle, univ. (1833); hardware and textile industry.



Durham Cathedral

**Duse**, Eleonora (1859-1924), celebr. It. tragic actress.

**Dusk**, twilight, light following immed. on sunset, caused by diffusion of sunlight in upper strata of atmosphere.

**Düsseldorf**, indust. tn. and riv. port, Rhineland, Germany; pop., 476,310; Academy of Art; iron, textiles, engineering, chemicals. Occupied by Fr. troops, 1921-25.

**Dust-extractor**, apparatus for sep. dust from air in factories, etc.; gen. by suction through pipes, dust being precipitated by centrif.



Eleonora Duse

force; filtering thr. filters (cloth, wire netting, woodwool, coke, etc.), water sprays, or high-tension elec. fields.

**Dutch East Indies**, Dut. archipelago betw. Indo-China and N. Australia; comprises *Great Sunda Isls.*, viz., Sumatra, Java, Borneo (exc. Brit. N. Borneo, Brunei, and Sarawak), Celebes, *Lesser Sunda Isls.* (E. part of Timor Portuguese); *Moluccas*; *Dutch New Guinea*; and several smaller groups. Area, 733,458 sq.m.; pop., 60,367,000 (207,800 Europeans). Exports sugar, rubber, petroleum, tin, tea, coffee, tobacco, copra, spices, medicinal herbs; rlys. 4,600 m.; 26 wireless stations; cap., *Batavia*, in Java. **D. language**: see LANGUAGE SURVEY, L. German.

**Duval**, Claude (1643-70), highwayman of Norman birth; came to England at Restoration; notorious for his daring robberies and gallantry to women; hanged at Tyburn.

**Duveen**, Joseph, 1st Bn. D. of Millbank (1869- ), Brit. art dealer, connoisseur, and benefactor; trustee of National Gallery and Wallace Collection; presented galleries for works of Turner and Sargent to Tate Gallery, and addtnl. galleries to Nat. Gall., Nat. Port. Gall., and Brit. Mus.; created bn., 1933.

**D.V.**, abbr. *Deo volente* (Lat.), God willing.

**Dvina**, 1) most import. river (c. 500 m.) of N. Eur. Russia; rises in Vologda Forest and falls into White Sea; navigable six months; timber-floating. 2) Southern D. (c. 640 m.), rises near source of Riv. Neva and Riv. Volga, Russia; forms part of Russo-Polish frontier, passes Latvia and falls into Gulf of Riga.

**Dvinsk, Daugavpils**, fortress tn., Latvia, on Riv. Dvina; pop., 43,225.

**D.V.M.**, abbr. Doctor of Veterinary Medicine.

**Dvořák**, Anton (1841-1904), Bohemian composer; widely known through his *New World Symphony* and *Humoresque*.

**D.V.S.**, abbr. Doctor of Veterinary Surgery.

**Dwarf**, person, animal or plant considerably below normal size of species. **D. palm**, *Champeros humilis*, fan-palm of S. Europe and N. Africa. The fibre from leaves is used to stuff upholstery, and in N. Africa (where it is known as *crin d'Afrique*) to make ropes. **D. pine**, *Pinus pumilo*, small pine, growing on mountain slopes up to c. 4,000 ft., in S.E. Europe. **D. races**, or *pygmies*, prim. peoples found in Africa (negrillos—Aka and Vatva of C. Africa; Bushmen of S. Africa) and in S. Asia (negritos—Veddass of Ceylon, Andamanese, Sunda Islanders); small in stature (under 5 ft.); repres. of least developed cul-



Dwarf Palm

tures; gen. hunters and collectors. **D. stars**, unusually small stars; of two kinds, red and white. *White Dwarfs* are always companions of red giants; their density is enormous, estmd. at 50,000 to 300,000. Consist of bare atomic nuclei (*q.v.*) and electrons. *Red dwarfs* are stars in last stage of evolution.

**Dwt.**, abbr. pennyweight.

**Dy**, chem. symbol of dysprosium.

**Dyaks**: see DAYAKS.

**Dyeing**, process of imparting colour to materials, yarns, and fabrics by dipping in baths so that dye is taken up into the fabric, often previously treated with mordants (*q.v.*). Insoluble dyes are caused to adhere by adhesive substances, or are 1st rendered soluble.

**Dyer's broom**, **Dyer's greenweed**, *Genista tinctoria*, leguminous shrub, flowers of wh. yield a yellow dye.

**Dyes**, coloured substances wh. can be used to impart colour to fibrous materials (textiles, leather, paper, etc.). Numerous *Natural D.* of animal and vegetable origin (indigo, murex, or Tyrian purple, madder, lac, saffron, fustic, logwood, cochineal) known from antiquity. *Modern Synthetic D.* made from coal-tar products.

**Dyetskoye Selo**, tn. in N. Russia (formerly Tsarskoye Selo), 15 m. S. of Leningrad, where Tsar Nicholas II and his family were imprisoned by Bolsheviks, Mar.-Aug., 1917. Imperial Summer Palace, rich in art treasures, now children's home.

**Dyke**, 1) ditch, channel for water made by digging; bank thrown up to exclude water from low lands. 2) (Geol.) Wall-like mass of mineral matter, filling up fissures in orig. strata.

**Dykes**, John Bacchus, Rev. Dyke, 1) (1823-76), Eng. composer of hymn-tunes, e.g., "Lead, Kindly Light."

**Dynamics**, (phys.) sc. of motion of matter under influence of forces. *D. of fluids*: *hydrodynamics*; of moving masses of gas: *aerodynamics*; of moving electricity: *electrodynamics*. Ant.: *statics*. See also KINEMATICS.

**Dynamism**, theory interpreting universe as manifestation of force.

**Dynamite**, explosive mixture of nitro-glycerol and diatomaceous earth (*q.v.*).

**Dynamo**, (elec.) electric generator, machine wh. generates an elec. current when driven by power (steam or Diesel engine, water turbine, etc.); consists of a *field magnet*, in the field of wh. an *armature* revolves; or armature may be stationary and field revolve (usu. in A.C. dynamo). Current is generated in armature by induction due to its motion in magnetic field. See ELECTRODYNAMICS.

**Dynamometer**, instr. for measuring output of power (in horse-power or kilowatts).

Simplest is **brake-d.**, in wh. engine or motor works against force of brake of some kind; brake is pivoted and prevented from rotating by spring or weight, which measures torque; revs. per min. of shaft are measured, and power output can be calculated.

**Dynasty**, race of kgs. of same line governing a partic. country.

**Dyne**, (phys.) the absolute C.-G.-S. unit (*q.v.*) of force, acting on 1 gramme produces an acceleration of 1 centim. p. sec. p. sec. Force of gravity on 1 gramme = 981 dynes; *see* **ERG**.

**Dysentery**, disease characterized by diarrhoea and passage of mucus and blood in stools, due to ulceration of large intestine. Two main types: **Bacillary d.**, caused by either of 2 groups of bacteria (*Shiga* or *Flexner*), wh. affect large intestine; **amœbic d.**, caused by *entamoeba histolytica* in caecum (*q.v.*) and large intestine. Both forms are infectious.

**Dysmenorrhœa**, painful and difficult menstruation.

**Dyson**, Sir Frank Watson (1868- ), Brit. astronomer; chf. assistant, Royal Observatory, Greenwich, 1894; sec. of Roy.

Astronomical Assoc., 1899; astronomer-royal for Scotl., 1905, and for Eng., 1910.

**Dyspepsia**: *see* **INDIGESTION**.

**Dysphagia**, (med.) difficulty in swallowing. **Dysphasia**, difficulty of speech due to some affection of the brain.

**Dyspnœa**, difficulty in breathing; occurs in asthma because the tiny tubes leading from the wind-pipe (or trachea) to the lungs become smaller in bore, so that the air gets through with difficulty; occurs in heart failure because the heart cannot pump the blood efficiently through the lungs, and the patient's tissues are deprived of sufficient oxygen.

**Dysprosium**, (chem.) sym. Dy, at. wt. 162.46; rare element occurring in gadolinite (*q.v.*), mineral found in Norway and Sweden.

**Dytiscus**, a genus of water beetle, carnivorous in both larval and adult stages; attacks small fish; strong swimmer.

**Dzungaria**, desert plain, centr. Asia, betw. Tien-Shan and Altai, 2,600-4,300 ft. abv. sea-lvl.; tn., Urumchi. Former Mongol kingdom, named after *Dzungars* or *Dsongars*, a Mongol race.

# E

**E.**, abbr., 1) east; 2) electricity (+E positive, -E. negative). **e.**, base number of Napierian logarithms (*q.v.*) (2.71829).

**Eagle**, 1) common symbol of imperial power, used on milit. standards of Rom. and Byzant. emps., adopted by Charlemagne (*q.v.*) as badge of Holy Roman Emp., thence developed into imperial symbol of former Germ., Austr. and Russ. emps. and of French Emp. (Napoleon I and III); also national emblem of U.S.A. 2) Gold coin of U.S.A., value \$10; no longer issued. 3) Birds of prey of Order *Aquilae* and of sub-family *Aquilina*.; true eagles include the golden, imperial, tawny, and spotted.



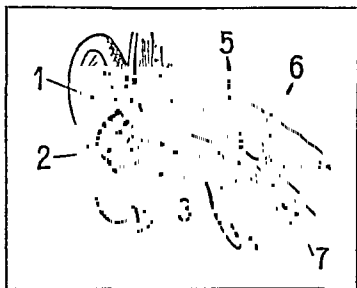
Golden Eagle

**Eagre**, a tidal bore (*q.v.*).

**Ealing**, munic. bor., Middx., Eng., residential sub. London; pop., 117,700.

**E. and O.E.**, (commer.) abbr. Errors and Omissions Excepted.

**Ear**, 1) (anat.) organ of hearing. Sounds are received by external E. and conducted by the *auditory passage* to the *drum*, thence



Ear

- 1) Muscle of the Ear. 2) Auditory Canal.
- 3) Drum of Ear. 4) Small bones of Ear: Malleus, Incus, Stapedial Bone. 5) Arches. 6) Labyrinth. 7) Eustachian Tube.

through the middle ear or *tympanum*, by means of the vibrations of the 3 small bones of the ear (*see* INCUS) to the fluid in internal ear or *labyrinth*, which in its turn excites the ends of the auditory nerve. Tympanum communicates with nasal cavity by Eustachian tube (*q.v.*). The internal E. contains the *cochlea*, the organ in wh. the auditory

nerve-endings are located and the *semicircular canals*, which help in the maintenance of equilibrium. 2) (Bot.) Fruiting spike of any cereal.

**Earl** (*fem.* = **Countess**), third order of the Brit. peerage and of greater antiquity than any (pre-Conquest); at first attached to possession of particular lands, but later created by patent. **E.-marshal**, Brit. officer of State whose functions include the arrangement of ceremonials and, as head of the Heralds' College (*q.v.*), the granting of armorial bearings. Since 1672 held hereditarily by the Dukes of Norfolk.

**Earl's Court**, district of London in Royal bor. of Kensington. **E. C. exhibitions** were held almost continuously for 30 yrs.; last in 1914.

**Early closing**, movement originated in Eng. by Early Closing Assoc., in 1842, resulting in gradual establ. of Saturday half-holiday; weekly half-holiday for shop assistants made compulsory by Shops Act (1912); compulsory closing 8 P.M. wk-days., 9 P.M. Saturdays, with certain exceptions (1920 and 1928).

**Early English**, (archit.) style of Gothic archit. distinguished by tall, narrow windows with lancet-shaped heads, often in groups of 3, the centre one being highest. **E. E. Text Society**, fndd. in 1864 by Furnivall (*q.v.*) for editg. and publicatn. of O.E. and M.E. tracts.

**Earth**, 3rd planet (*q.v.*) in distance of orbit from sun, mean dist. being c. 93 mill. m., (variation betw. perihelion and aphelion distances, c. 3 mill. m.); a sphere slightly flattened at poles; *circumference* at equator 24,902 m.; at meridian 24,860 m.; *diameter* (equatorial) 7,926.677 m.; (meridional) 7,899.988 m.; *volume* (excl. atmosphere), c. 260,000,000,000 cu.m.; *weight* (excl. atm.), c. 6,000,000,000,000,000,000 tons; *surface area*, 196,950,000 sq. m. of wh. 139,440,000 is water and 57,510,000 land (*see* COLOURED MAP OF THE WORLD). Completes one rotation on polar axis (*q.v.*) in one sidereal day (23 hrs. 56 min. 4 sec.), one circuit of orbit round sun (in contrary direction to that of rotation) in an elliptical path in 365.25636 sidereal days (*q.v.*). *History*: may be considered astronomically (earth regarded as a member of the universe) or geologically. The latter method more properly historical,

since geology can throw light on course of earth's history; see GEOLOGICAL FORMATION. For divisions of the E. see LITHOSPHERE (solid part), HYDROSPHERE (water), and ATMOSPHERE (gaseous); also the *Continents*—Europe and Asia, Africa, N. and S. America, Australia, Antarctica, and *Oceans*—Atlantic, Pacific, Indian, Arctic, Antarctic. **E.'s crust:** see LITHOSPHERE. **E. currents**, elec. currents flowing thr. the earth. Such occur nat. with a voltage of abt.  $\frac{1}{2}$  volt. p. mile. When due to leakage from elec. mains, tramways, etc., may be very destructive. **E. magnetism**, i.e., magnetic forces of terrestrial sphere, has regulating effect on magn. needle of compass. Its strength and direction at any one spot are given by: *total intensity*, *declination* (misdirection: E. or W. deviation of the magn. needle from astron. meridian), and *inclination* (tendency of free-moving magn. needle to the horizontal). Strength and direction of these forces are subject to daily and yearly variations, wh. increase to the intensity of *magnetic storms*; the result of sun-spots, tides, electric atmospheric currents, etc. Conceived as a magnet the earth possesses magnetic N. and S. poles. **E.-nut**, the peanut, seed of *Arachis hypogaea*, leguminous plant indigenous to Brazil, but cultivated in W. Africa and elsewhere; pods sink to the earth and ripen underground; seeds produce oil used in cookery, and sometimes to adulterate olive oil; they are also roasted and eaten. **E. pillar**, column of clay topped by stones; up to 100 ft. high; caused by rain washing away surrounding clay, leaving pillar protected by boulder at summit; common in Tyrol, Alps, etc. **E. temperature**, affected by air temp. only to a slight depth; then rises c.  $1^{\circ}$  C. for every 100 feet of depth.

**Earthenware**, objects of clay not fretted in firing, hence porous when unglazed. Glazed by throwing salt into kiln when firing nearly complete. Largely used for drain pipes and domestic utensils.

**Earthquakes**, concussions, vibrations, or upheavals of earth's crust, lasting only a few seconds; classified as *Tectonic* (90% of all Es.), due to displacement of steeper flexures of earth's crust, or to collapse of subterranean cavities; *Volcanic*, due to volcanic eruption; *Submarine*, in wh. the point of origin (*focus*) is under sea-bottom; the last usu. accompanied by destructive tidal waves. Investigation of Es. carried out in *seismological observatories*; measurement of tremors by *seismometer*; automatic recording by *seismograph*. Principl. earthquake areas: W. coast of S. Amer., Mediterran. countries, Japan, Asia Minor. *Memorable Es.*: Lisbon (1755), San Francisco (1906), Messina (1908), Japan (1923).

**Earths**, chemical designation of certain

oxides. See ALKALINE EARTHS; RARE EARTHS.

**Earthwork**, rampart, fortification made by throwing up a bank of earth, leaving a ditch in front and trench behind it.

**Earthworm**, earth-dwelling annelid, devours animal or plant remains; with this large quantities of earth are swallowed, and passing through the body help to form the so-called vegetable mould; the extensive burrowing operations also help to aerate soil.

**Earwig**, dark-coloured insect having, at the end of the abdomen, a pair of calliper-like pincers; metamorphosis incomplete; sometimes a minor pest in gardens. The common E. (*Forficula auricularia*) is found throughout Europe.

**Easement**, privilege held by deed or prescription by wh. one man has rights upon the property of another, e.g., right of way.

**East**, Sir Alfred (1849-1913), Brit. painter and etcher; R.A., 1913; *Passing Storm*; *The New Valley*; *A Haunt of Ancient Peace*; pubd. *Art of Landscape Painting in Oil Colours*.

**East Anglia**, anc. Anglo-Saxon kgdm. comprising mod. Norfolk and Suffolk. The N. part was the country of Boadicea and the Icenii in 1st cent. A.D. Kgdm. of E. Anglia, fndd. in 6th cent. by Angles from Schleswig. Subject to Mercia, c. 650-825, to Wessex, c. 825-870; conquered by Danes, 866; re-conquered by Edward the Elder, 920; thereafter part of England. **E. Flanders**, prov., Belgium, watered by rivs. Scheldt and Lys; 1,160 sq.m.; pop., 1,149,200; cap., Ghent.

**E. Friesland**, coastal region of Hanover, Ger., betw. Oldenburg and Holland; forms distr. Aurich; marshes and highland, cultiv. moorland. **E. Galloway:** see KIRKCUDBRIGHTSHIRE. **E. Ham**, co. bor., Essex, part Greater London; pop., 142,500. **E. India Companies**, incorpor. of Eng. merchants founded 1600 to develop trade. Extensive political and military powers, subseq. (1773) much curtailed. Dissolved, 1858. A sim. Dutch East India Co. existed 1602-1795. **E. Indies**, collective name for India, Indo-China, and Malay Archipelago.

**E. London**, port, Cape Prov., S. Africa, at mth. Riv. Buffalo; pop., 27,809; pleasure resort; exports wool. **E. Lothian**, Haddingtonshire, marit. co., S.E. Scot.; area, 280 sq.m., pop., 47,400; rich plains, rising in S. to *Lammermuir Hills* (1,733 ft.); drained by Riv. Tyne. Famous agric. co.; co. tn., *Haddington*. **E. Prussia**, N.E. prov. of Prussia, betw. the Vistula (W.) and Niemen (N.E.), the Baltic (N.) and Poland; 15,100 sq.m.; pop., 2,300,000; comprises part of the Baltic hill country, many lakes and large



Earwig

conifer forests. Horse-breeding, fisheries, and amber; rye, oats, potatoes. Cap., *Königsberg*. From 13th cent. to 1525 a prov. of Teutonic Order, then secular Duchy, united to Brandenburg, 1618; overrun by Russia, 1914-15; separated from rest of Ger. by Polish Corridor, 1919; Memel distr. to Lithuania, 1920. **E. River**, strait, U. S. A., btw. bors. Manhattan and Bronx and bors. Brooklyn and Queens; 650 yds. across; continuation of Long Island Sound. **E. Semitic**: see LANGUAGE SURVEY, *Semitic*.

**Eastbourne**, co. bor. and seaside resort, Sussex, on Eng. Channel; pop., 57,400; 3 m. S.W. is *Beachy Head*.

**Easter**, annual festival commemorating Resurrection of Christ, celebrated since 2nd cent. in all Christn. communities. **E. Sunday** occurs on 1st Sunday after full moon following the vernal equinox and may fall on any date betw. March 22nd-April 25th. Proposals have been made to establ. a fixed date for Easter, and in 1928 the Easter Act was passed in Eng. to this effect; as it has not been accepted internationally, this Act has not been put into force.

**Easter Island**, in E. Pacific, 2,000 m. W. of Chile, of wh. it is a possession; 45½ sq. m.; pop., 250. Discvd. Easter Day, 1722, by Dut.; many prehistoric statues (3-36 ft.) and megalithic remains of undecided origin.

**Easter Oratorio**, by J. S. Bach (*q.v.*), 1736.

**Eastern Alps**, section of the Alps betw. Tyrol and Hungarian frontier; includes Tauern, Carinthian, Styrian, N. Tyrolese, S. Tyrolese (Dolomites), Carnic, and Julian Alps. **E. Churches**, collec. term for Christian bodies outside the Western patriarchate, not in communion with Rome: 1) Orthodox Gr.; 2) Nestorian; 3) Coptic; 4) Abyssinian; 5) Jacobite; 6) Malabar; 7) Armenian; and 8) Maronite churches. **E. Empire**: see BYZANTINE EMPIRE. **E. Rumelia**: see RUMELIA. **E. Turkestan**: see TURKESTAN.

**Eastlake**, Sir Chas. Lock (1793-1865), Eng. painter; R.A., 1830; P.R.A., 1850; keeper of National Gallery, 1843-47; director, 1855; *Christ Restoring Life to the Daughter of Jairus*; *Haidee*; *Ippolita Torelli*; etc.

**Eastman**, George (1854-1932), Amer. manuf. and philanthr.; inv. photo. roll film, 1884, and Kodak camera, 1888.

**Eau de Cologne**, perfume made from alcoholic vegetable extracts, rectified spirits and essential oils; said to have been first prepared by Johann Maria Farina, Ital. chem. living in Cologne; now extensively manuf. in Gt. Britain. **E. de Javelle**, Fr. name for weak solution of *hypochlorite of soda*; excellent antiseptic, deodorant, and bleaching agent. Prep'd. by passing elec. current thr. common salt solution. Known in Eng. as *Dakin's solution*, or *Ensol*. **E.-de-vie** (Fr.), water of life; brandy.

**Eaves**, (bldg.) portion of a roof projecting over walls.

**Ebbfleet**, place on Pegwell Bay, Kent, 3 m. S.W. of Ramsgate; landing-place (now ½ m. inland) of St. Augustine in 597 and (possibly) of the Saxons Hengist and Horsa (c. 450).

**Ebbw Vale**, urb. dist., at head Riv. Ebbw, Mon., 2 m. E. Tredegar; pop., 32,000; coal and iron.

**Ebelians**: see MUCKERS.

**Ebenezer**, (O.T.) stone erected by Samuel as monument of defeat of Philistines.

**Ebert**, Friedrich (1870-1925), Ger. statesman; took over govt. from Prince Max of Baden, 1918; elected 1st Pres. of Repub., 1919.

**Ebionites**, early Jewish-Christian sect identified by some with the Nazarenes (*q.v.*), strictly observed O.T. law; held St. Paul to be apostate from the law, had their own "Gospel according to the Hebrews," wh. excluded any reference to the Virgin Birth of Christ.

**Ebonite**, or vulcanite. Vulcanised rubber having high propor. of sulphur (up to 35%); hard and takes a polish. Used for combs, med. and elec. accessories, insulators, etc.

**Ebony**, heavy, hard, durable wood yielded by certain tropical trees; dark in colour, taking a fine polish and becoming jet black when treated.

**Ebor.**, abbr. *Eboracensis* (Lat.), of York (signature of abp.).

**Eboracum**, Roman name for York (*q.v.*).

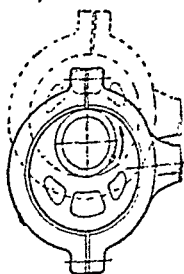
**Ebro**, riv. in Spain, from Cantabrian Mts. to the Mediterr., 443 m.; sandy, navigable only in parts.

**Écarté**, card-game for 2 players with "piquet" pack (*q.v.*), king being highest and ace counting below knave.

**Ecbatana**, *Hamadan* (*q.v.*), cap. of anc. Media.

**Ecce ancilla Domini** (Lat.), behold the handmaid of the Lord (Luke i. 38). **E. homo** (Lat.), "behold the man"; words of Pilate (John xix, 5); hence used as title of representations of Christ the Man of Sorrows.

**Eccentric**, (phys.) device for obtg. reciprocating motion from rotational motion; circular disc with a rectangular groove on its edge turns abt. an axis not passing thr. its centre; part to be reciprocated is attached to a metal strap fitting the groove.



**Ecchymosis**, a bruise, a bluish area of skin due to accumulation of blood in its lower layers.

**Ecclefechan**, vil., Dumfriessh., Scotland, 20 m. N.W. Carlisle; birthplace and burial-place, Thomas Carlyle.

**Eccles**, John (c. 1655-1735), Eng. composer; wrote pop. masques for the stage.

**Eccles**, munic. bor., Lancs., Eng.; pop., 44,400; cotton, silk, machinery, "Eccles cakes."

**Eccles.**, abbr. Ecclesiastes (Bible).

**Eccles., Com.**, abbr. Ecclesiastical Commissioners.

**Ecclesiastes**, (O.T.) Wisdom bk.; showing Hellenistic influence (c. 250 B.C.).

**Ecclesiastical Calendar**, system of regulating the incidence of Church festivals, based on a lunisolar (q.v.) year beginning on 1st Sunday of Advent (q.v.); includes *movable feasts*, wh. vary from year to year with date of Easter (q.v.), and *fixed feasts*, attached to a definite day of the month.

**Ecclesiastical Commissioners for England**, The, body formed in 1836 to administer the estates and properties of the C. of E.; composed of abps., diocesan bps., deans of Canterbury, St. Paul's, and Westminster, the Lord Chancellor, Chancellor of the Exchequer, Master of the Rolls, and certain other prominent office-holders.

**Ecclesiasticus**, a "Wisdom Book" of the Apocrypha (q.v.), translated into Gr. by "Jesus the son of Sirach" (grandson of orig. compiler) an Alexandrian Jew, prob. c. 110 B.C.

**Echegaray y Eizaguirre**, José (1830-1916), Span. dramat.; Nobel Prize (Lit.), 1904. Best known play: *El gran Calco*, 1881.

**Echidna**, or spring ant-eater, a terrestrial monotreme or egg-laying mammal; found in New Guinea, Australia, and Tasmania; has long, slender snout, and long, extensile, worm-like tongue; fur thickly intermingled with short, sharp-pointed, stout spines; during breeding season pouch of female increases in size and enables her to carry about the two eggs which are hatched by the heat of her body, young remaining in pouch until fully developed.

**Echinodermata**, group of marine invertebrates, having the skin strengthened by calcareous plates, from which, in the sea-urchins, spines of various sizes and lengths arise; includes the starfishes, sea-urchins, and so-called sea-cucumbers (Holothurians).

**Echmiadzin**, 1) Armenian monast. with cathed. (fndd. c. 303, rebuilt 618), 12 m. W. of Erivan; eccles. museum and library (6,000 vols. of early Christian MSS.). 2) Dist. of Armenian S.S.R.; 1,163 sq.m.; pop., 114,100.

**Echo**, (Gr. myth.) nymph who engaged Hera's attention, thus enabling Zeus to sport with nymphs. Hera (q.v.) punished her by causing her to hear and repeat the

last word only of anything she heard. Hence E. in sense of reverberation. **E-sounder**, device for measuring depths by echo of sound or elec. signals sent out from ship or aeroplane and reflected from the earth or sea-bottom; time taken for signal to traverse the distance is a measure of depth.

**Eckener**, Hugo (1868- ), Ger. aeronaut; comdd. "Graf Zeppelin" on its passenger flight to U.S.A., 1928; world flight, 1929; Arctic flight, 1931.

**Eckermann**, Johann Peter (1792-1854), Goethe's priv. sec.; *Talks with Goethe*, 1836-48.

**Eckhart**, Johannes (c. 1260-1329), "Meister Eckhart"; Ger. mystical philosopher; his doctrines declared partly heretical by papal bull, 1329.

**Eclampsia**, condition in wh. convulsions occur at end of pregnancy, or during childbirth.

**Electicism**, faculty of selecting and combining ideas from var. systems; implies lack of original thought. Applied esp. in philosophy and art.

**Eclipse**, (astron.) total or partial obscuration of one heavenly body by interposition of another. **E. of moon**, such occultation of full moon by shadow of earth when latter lies betw. sun and moon; occurs when moon, in opposition, is near one of her nodes (q.v.); cone of shadow cast by earth (umbra), surrounding partial shadow (penumbra); begins East of moon, finishes on West. **E. of sun** occurs when new moon comes betw. earth and sun in or near the plane of the ecliptic (q.v.), partial, total, or annular, the last when apparently size of moon is less than that of sun and so leaves a ring of light round centr. shadow on sun; begins W. of sun and finishes East. **Frequency and recurrence of E.**: see SAROS.

**Ecliptic**, apparent path of sun round earth, i.e., earth's orbit round sun; so called since eclipses occur only when moon is in, or near, this plane. **Obliquity of E.**, angle betw. plane of E. and that of the equinoctial (q.v.); see INCLINATION OF EARTH'S AXIS.

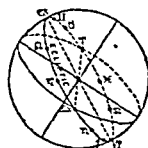
**Eclogue**, strictly, a selection; short pastoral poem, esp. in dialogue, e.g., Virgil's *Eclogues*, Collins's *Persian Eclogues*.

**Ecology**, science of relationship of plants and animals to their environment.

**Economic rent**, net yield from agric. or other land after deduction of the costs of production of goods thereon produced and interest on capital invested. Land and sites



Eckener



Ecliptic



yield a varying econom. rent accdg. to quality and position; difference betw. var. amts. of E.R. is known as *differential rent*.

**Economics**, science of study of use of given means for the attainment of given ends in so far as conditioned by security. In its application, involves study of principles governing prodn. and distribn. of wealth, esp. as affecting welfare of community. Systematic study of E. began with Fr. "physiocrats" (*q.v.*) in 18th cent., devlpd. by Adam Smith (*Wealth of Nations*, 1776), D. Ricardo, (*Princ. of Pol. Econ. and Taxation*, 1817), J. S. Mill (*Princ. of Pol. Econ.*, 1848), and A. Marshall (*Princ. of Econcs.*, 1890), as well as on Continent (in Vienna and Lausanne) and in U.S.A.

**Écru**, light brown colour; that of unbleached linen.

**Ecstasy**, enthusiastic frenzy, enraptured state in wh., according to mystical doctrine, the soul "stands out" of itself and is united with God. In med., term applied to state of abnormal mental excitement, sim. to *catalepsy*.

**Ectoderm**, the outer layer of skin of a multicellular animal, equiv. to the epidermis of mammals.

**Écu**, 1) in Mid. Ages small triangular shield, carried by man-at-arms. 2) Fr. silver or gold coin of 17th-18th cents., equal to 3-5 frs. 3) Obsolete Scots. gold coin, equal to £1 in England.

**Ecuá.**, abbr. Ecuador.

**Ecuador**, (Équateur) repub., N.W. coast S. America, betw. Colombia and Peru; area, incl. Galapagos Isl. (700 m. W.), 177,020 sq.m.; pop., c. 1,800,000 (half Indians, one-third half-breeds); coastal regions low-lying steppe country, sloping up to wooded hills; high plateaux (9,000 ft.) in the interior betw. double chain of the Andes (Chimborazo, 20,701 ft.; Cotopaxi, 19,686 ft.); E. of the Andes is trop. low-lying forest region of Amazon tribs.; exports cocoa, gold; cap., *Quito*. Span. colony until 1822.



Ecuador

**Eczema**, skin disease characterised by redness and swelling of the skin, the formation of vesicles (*q.v.*) and discharge of serum.

**Ed.**, abbr., 1) *editio* (Lat.), edition; 2) editor; 3) Edinburgh.

**Edam**, tn. in Holland on Zuider Zee; pop., 7,400; cheese.

**E.D.D.**, abbr. *English Dialect Dictionary*.

**Edda**, title of 2 great collectns. of O. Icel. lit.: 1) *Prose Edda*, 2) *Poetic Edda*, containg. poems on myth. and relig. legends of early Scand. culture.



Eddington

**Eddington**, Sir Arthur Stanley (1882-), Brit. astronomer; senior wrangler, 1904; chf. assis., Roy. Observatory, Greenwich, 1906-13; Plumian prof. of astron., Camb., 1913; awarded Hopkins prize, 1913-21; Pontécoulant prize, 1919, etc.; *Stellar Movement and the Structure of the Universe*, 1914; *Space, Time and Gravitation*, 1920; *The Mathematical Theory of Relativity*, 1923; etc.

**Eddy**, Mrs. Mary Baker (1822-1910), Amer.; fndd. Christian Science (*q.v.*).

**Eddy**, circling wavelet, or series of these; miniature whirlpool in surface of water; current of air, dust, mist, etc., moving in a kind of spiral. **E. currents**, (elec.) eddies of elec. current generated in metals when exposed to varying magnetic fields. Cause of loss in iron of transformers. **E. current (Foucault) brake**: disc (or other body) of copper or aluminium moving in strong magnetic field: experiences great resistance. Used on nearly all electr. meters and for many other purposes, as it is non-wearing.

**Eddystone**, dangerous reef in Eng. Channel, 15 m. S. of Plymouth; well-known light-house.

**Edelweiss**, *Leontopodium*, small perennial Alpine plant with white flowers and covered with white down.

**Eden**, 1) riv., Westmor. and Cumb.: rises in Pennines, flows past Appleby and Carlisle into Solway Firth; length 65 m. 2) Riv., Fifesh., Scot., flows into St. Andrews Bay; length 30 miles.

**Eden, Garden of**, Paradise; accdg. to the Creation-story ' of the O.T. (Gen. i, ii) the unsullied home of the first man and woman until cast out through sin.

**Edenhall, Luck of**, anc. glass goblet (prob. 10th - cent.

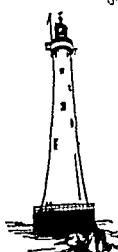
Venetian) formerly at Eden Hall, seat of the Musgrave family, Cumberland, Eng.; subject of a legend.

**Edentate**, order of mammals having no, or very rudimentary, teeth; mostly insect-eaters with long, thin tongues (ant-eaters, pangolins, echidnas, armadillos).

**Edessa**: see URFA.

**Edgehill**, ridge, Warwicksh., Eng., 7 m. N.W. Banbury; **battle of E.**, first engagement of the Eng. Civil War (indecisive), 23 Oct., 1642.

**Edge-runner mill**, apparatus for pulverizing materials, consisting of horizontal



Eddystone Lighthouse



Edelweiss

rotating circular trough, in which run 2 rollers on edge.

**Edgeworth, Maria** (1767-1849), Anglo-Irish novelist; wrote *Essays on Practical Education* and *Essay on Irish Bulls* in collaboration with her father; chf. independent works: *Castle Rackrent* (q.v.); *Moral Tales*, 1801; *Belinda*, 1801.

**Edgware**, resid. suburb, N.W. London, part of mun. bor. of Hendon.

**Edinburgh**, royal burgh, cap. Scot., on Firth of Forth; pop., 439,000; famed for its situation, hist., education, and lit. associations; "the modern Athens." Castle, with Scottish National War Memorial; Holyrood House; univ. (1582);



Photo F. C. Leith  
Edinburgh Castle, from the East

National Gallery; Princes Street. Industries: printing, publishing, brewing, distilling; centre of Scottish banking and insurance. Port, *Leith*. **E. Academy**, The, Scot. publ. school for boys; inc. by Royal Charter, George IV, 1825.

**Edinburghshire**: see MIDLOTHIAN.

**Edirne**: see ADRIANOPLE.

**Edison, Thomas Alva** (1847-1931), Amer.

inventor of phonograph, 1877; incandescent elec.-light bulb, 1879; and of numerous devices in connection with the telegraph, telephone, megaphone, metallurgy, electric accumulator, etc.



Edison

**Edition**, the entire number of copies of a book or other publication printed at one time from the same type. Subsequent reprints from this same type, without alteration, are *Impressions*. **New E.** (2nd, 3rd, etc.), printings from type which has been corrected or revised and/or partly or wholly reset. **Limited E.**, one of wh. numbers printed are restricted (and sometimes numbered). **E. de luxe**, printed, bound, or illustrated in a style superior to that of the ordinary issue.

**Editto princeps** (Lat.), first edition of a book.

**Edmonton**, 1) urb. dist., Middx., Eng., suburb, N. London; pop., 77,700. 2) City, cap. Alberta, Canada, N. Saskatchewan Riv.; univ.; agric., coal-mining, fur trade; pop., 78,800.

**Edom, Idumea** (O.T.), name given to Esau, then to the low-lying land S. of the Dead Sea, inhabited by his descendants (*Idemites* or *Idumeans*).

**Edmund**, 1) St. and Kg. of E. Anglia (c. 840-70), enshrined at Bury St. Edmunds; commemor. Nov. 20th. **E., Kg. of Eng.**, 040-46, son of Edw. the Elder. **E. Ironside** (c. 080-1016), Kg. of Eng.; divided kgd. with Canute, shortly before his death. **E. Rich**, St. and Abp. of Canterbury (c. 1175-1240); obtained dismissal of foreign favourites of Henry III; left his see after quarrels with kg. and pope, 1240; d. at Soissy; commemor. Nov. 16th.

**Education**, training of mind and body, aiming at ideal of development, wh. varies with conditions of time, nationality, culture, religion, etc. **HISTORICAL SURVEY**—*Ancient Greece*: Training for good citizenship, by means of philosophy, literature and physical culture. *Anc. Rome*: Early period, mainly military; from 3rd cent. B.C., influenced by decadent Gr. culture, and mostly in hands of Greeks, often slaves; chief studies, philosophy and rhetoric. *Dark Ages*: In 5th-8th cents. A.D.; collapse of ancient civilization owing to barbarian invasions. *Med. Ages*: Revival of learning under Charlemagne (742-814); development of monastic schools and rise of *scholasticism*: theology organized as philosophical system under influence of Aristotle, in Latin and Arabic translations brought from East during Crusades; instruction in 7 liberal arts (see TRIVIMUM and QUADRIVIVUM); foundation of univ. (12th cent.) and great increase of grammar schools, etc.; development of *chivalry* as means of training feudal classes in knightly virtues. *Renaissance*: Decay of scholasticism in 14th cent., followed by revival of classical learning (humanism) in It., with demand for intellectual liberty and revolt against authority, stimulated by invention of printing (c. 1450); introd. of humanism in Eng. univs. in 16th cent. by Erasmus, Colet, and others. *17th and 18th cents.*: Decline of schools and univs. owing to exclusive interest in classics and theology; educ. mainly aristocratic, aiming at artificial refinement; "grand tour" often preferred to univ. training. *19th cents.*: spread of ideal of popular educ. following Fr. Revolution; system of State-aided elementary educ. adopted in Prussia, 1809; in Eng., left to Church and voluntary organizations till 1870; curricula of schools and univs. modified by intrn. of scientific studies, etc. *20th cents.*: State system extended to secondary educ. and now general in W. Europe and U.S.A. **Board of E.**, Dept. of Brit. Govt. charged with supervising educ., provided or assisted, at public expense. Pres. of B. of E. is usu. a Cabinet Minister. See LOCAL EDUCATION AUTHORITY.

**Edward**, name of 10 kgs. of England: **Edw. the Elder** (1000-25), Kg. of Angles and Saxons; subjugated invading Danes; "chosen father and lord" by Scot. Ig. and nation and Strathclyde Welsh. **Edw. the**

**Martyr** (c. 963-75-79), elected through influence of St. Dunstan; murdered by step-mother to secure throne for her son, Aethelred. **Edw. the Confessor** (c. 1004-42-66), s. of Aethelred the Unready; came under Norman influence and paved way for N. Conquest. **Edw. I, Longshanks** (1239-72-1307), m. Eleanor of Castile; defeated Simon de Montfort, 1265; joined 7th Crusade; annexed Wales, 1290; deftd. Scots under Wallace at Falkirk, 1298; 1st Statute of Winchester, 1275; separation of King's Court into Court of Exchequer, Ct. of Kg.'s Bench, Ct. of Common Pleas. **Edw. II, of Carnarvon** (1284-1307-27), 1st Eng. Pr. of Wales; deftd. by Scots under Robert Bruce at Bannockburn, 1314; imprisoned by his qn., Isabella; murdered in Berkeley Castle. **Edw. III, of Windsor** (1312-27-77), recognised Bruce as Kg. of Scots, 1328; war with France (the Hundred Years' War), 1338; deftd. Scots at bat. of Neville's Cross, 1346; victory of Crécy over Fr., 1346; victory of Poitiers, 1356; peace of Brétigny, 1360; epidemics of the Black Death, 1348-49, 1361, 1369. **Edw. IV** (1441-61-83), known as Earl of March till accession; deftd. Lancastrians under Hy. VI, 1460; took Kg. prisoner; suppressed risings of Lancastrians at Barnet and Tewkesbury, 1471; m. Elizabeth Woodville, 1464. **Edw. V** (1470-83-83), murdered, with his

and Jane Seymour; publ. 42 articles of religion and introd. Book of Common Prayer. **Edw. VII** (1841-1901-10), s. Qn. Victoria; Kg. of Gt. Brit. and Ireland, Emp. of India; promoter of international friendship; *Entente cordiale* with Fr., 1904.

**Edward, The Black Prince** (1330-76), Pr. of Wales, s. of Edw. III; deftd. Fr. at Crécy, 1346; Poitiers, 1356.

**Edward, Pr. of Wales, E.** of Chester, Duke of Cornwall, Duke of Rothesay, E. of Carrick, Baron Renfrew, etc., K.G. (1894- ), eldest son of George V; travelled extensively throughout Brit. Empire, gaining reputation of Empire's greatest ambassador; notable sportsman.

**Edwards, John Passmore** (1823-1911), Brit. journalist, philanthropist; owned *The Echo* (London evening paper) 1876-96; Lib. M.P. for Salisbury, 1880-85; made gifts to hospitals and art galleries. **E., Jonathan** (1703-58), Amer. theologian; pres. Princeton College, 1758; *Essay on the Freedom of the Will*, 1754; *Doctrine of Original Sin Defended*, 1758.

**Edwin** (d. 633), Kg. of Northumbria, 617-33; son of Ella, Kg. of Deira; largely extended his kingdom and founded (or rebuilt) Edin-burgh, wh. is named for him; through his 2nd wife (dau. of Ethelbert of Kent) Christianity was introd. into Northumbria by Paulinus; slain at Heathfield by Penda, Kg. of Mercia.

**Edwin Drood**, novel by Dickens (q.v.), left unfinished at his death.

**E.E.**, abbr., 1) (commer.) errors excepted; 2) early English.

**Eel**, fish with snake-like body, belonging to the genus *Anguilla*, spending the greater part of its life in ponds and streams, but on the approach of sexual maturity passing down to the sea and out into the Atlantic, until it reaches a region in the W. Atlantic, nearly equi-distant between the Leeward Islands and Bermuda, where, at a depth of some 3,000 fathoms, spawning takes place and the eel perishes. From the eggs emerge small, transparent, willow-leaf shaped larvae, known as *Leptocephali*, which grow rapidly, and on reaching about 25 mm. in length, migrate to the upper water layers and start on their long journey back to Europe, which takes three years. They arrive off the coastal banks of Europe towards the end of the summer of the third year, and during the autumn and winter undergo a metamorphosis from the leaf-form to transparent tiny round-bodied eels or *clevers*, and the following spring ascend the rivers in countless millions,



Edward the Black Prince  
After the Effigy at Canterbury



From portrait by Tennyson Cole  
Edward VII

bro. Rich., Duke of York, by their uncle, Rich., Duke of Gloucester, in Tower of London. **Edw. VI** (1537-47-53), s. of Hy. VIII

making their way far inland, wriggling at night across damp meadows and so finding their way into smaller streams, ponds, and lakes. There they live for a varying period of 5 to 20 years or longer, accdg. to rate of growth and food supply, until the approach of sexual maturity calls them back to the sea.

**Eel-pout**, the burbot (*q.v.*).

**E.E.T.S.**, abbr. Early English Text Society.

**Effendi**, Turk. title for civil officials and persons of rank.

**Efficiency**, (phys.) ratio of useful output to energy consumed in a machine, *i.e.*, of steam locomotive, abt. 8.4%; of water turbine up to abt. 92%.

**Efflorescence** (chem.): *see* SALTS.

*e.g.*, abbr. *exempli gratia* (Lat.), for example.

**Egbert** (d. 839), Kg. of W. Saxons, 802; virtually, but not nominally, 1st Kg. of all England.

**Eger**, 1) *see* CHEB. 2) Left trib. of the Elbe, rising in the Fichtel Mtns., Thuringia, and joining the Elbe at Leitmeritz, Czechoslovakia. 3) *See* ERLAN.

**Egeria**, (Rom. myth.) water nymph; wife and adviser of Rom. Kg. Numa Pompilius.

**Egg**, the matured female germ-cell or ovum. **E. and dart**, (archit.) decorative moulding (*q.v.*), consisting of alternate arrows and oval or egg-shaped ornaments; also called *egg and tongue*. **Egg-plant**, *Solanum melongena*, native of E. India, and cultivd. elsewhere for its fruit (eaten as a vegetable).

**Egham**, urb. dist., Surrey, on Riv. Thames, 1½ m. W. Staines; pop., 16,000; parish includes field of Runnymede, with Cooper's Hill, Holloway Coll. for Women, Holloway Sanatorium, and the artificial lake, Virginia Water.

**Eglantine**, name given by herbalists to the sweet-brier and (by Milton and others) to the honeysuckle.

**Egmont**, Lamoral, Ct. of (1522-68), Flem. popular hero; Gov. of Artois and Flanders; exec. by Alva (*q.v.*) for alleged high treason agst. Philip II of Spain.

**Egmont**, opera by Beethoven (*q.v.*) (1811); based on Goethe's tragedy, *Egmont*.

**Ego et Rex Meus** (Lat.: "I and my King"), words used by Card. Wolsey on official documents; exception was taken to the order of the words, in which *my King* occupies second place, but no other order is possible in good Latin.

**Egocentrism**, (philos.) state of exclusive preoccupation with one's own problems and desires.

**Egoism**, (philos.) theory that aim of man's existence should be his individual

happiness, regardless of consequences to others.

**Egrets**, group of birds of the heron tribe; chfly. fnd. in sthrn. U.S.A. and S. Amer. A small species (**Little E.**) also fnd. in Eur. Distinguished by the long dorsal plumes wh. appear in the breeding season and are valued in the feather-trade as "ospreys" or "aigrettes." The threatened extinction of E., owing to slaughter by plumehunters, now prevented by legislation.



Egret, in Breeding Plumage.

**Egypt**, kgdm., N.E. Africa, bounded N. by Medit., E. by Palestine and Red Sea, S. by Anglo-Egyptian Sudan, and W. by Libya.

Divided by Gulf of Suez and Suez Canal into two unequal parts, E. proper and Sinai Peninsula. E. proper is divided into Upper E. (from S. frontier to Cairo) and Lower E. (the Delta, *see* below). The Nile, flooding and receding annually, deposits on both sides a stretch of rich alluvial sediment, which is the only part of the country amenable to cultivation (c. 13,600 sq.m.), all the rest being desert, with occasional oases (total area c. 400,000 sq.m.). Flooding regulated by systematic irrigation (Assuan Dam, Sennar Dam, and related constructions). At **Cairo**, the cap. the Riv. Nile divides into two (orig. seven) main streams, ending respectively at the Rosetta and Damietta mouths, and enclosing the Delta, with its salt-water lakes on the coast (Lower Egypt). Chief ports, Alexandria and Port Said. Rly. mileage, c. 2,000.

Indigenous inhab., mainly Hamites (Fellahin); foreigners include Negroes, Turks, Armenians, Syrians, Jews, and Bedouins (in the desert); pop., 14,151,000 (incl. 11,500,000 Mohammedans, 850,000 Copts, 230,000 Gr. Orthodox, R.C., and Protestant Christians, and 60,000 Jews). **HISTORY**: scientif. calendar came into use c. 4241 B.C. Upper and Lower E. united by Menes c. 3300 B.C.; 1st Dynasty begins. *Archaic Period*: Dyns. I-III. *Old Kingdom*, Dyns. IV-VI; cap., Memphis; Pyramids of Gizeh, King Cheops; absolute monarchy with subordinate nobles and civil service; throne grad. weakened by increasing power of nobles and governors, who become feudal barons. Fall of Old Kingdom (c. 2400 B.C.). Rise of *Middle Kingdom* under Kgs. from Thebes (c. 2000 B.C.); cap., *Ith-tau-i*; irrigation works; the barons crushed. Invasion by Asiatic hordes, the Hyksos (c. 1700 B.C.). The *Empire*, 1600-1100 B.C.; Syria, Palestine, and Nubia subjugated; zenith under Amenhotep III (*q.v.*); vain struggle of Amenhotep IV (Akhenaten)



against Amon priests (c. 1370 B.C.). Decline begins (c. 1100 B.C.), E. conquered by Libyans, Ethiopians, and Assyrians; secured by Alexander the Great in 332 B.C. Became Rom. prov., 30 B.C. Byzantine rule began A.D. 395. Conquered by Caliph Omar, A.D. 641, for Islam. From 1517 under Turk. rule. In 1798-99, Napoleon's expedition; 1805-48, Muhammed' Ali; 1873, independence from Turkey, but still under Brit. and Fr. financial control; 1896-98, Kitchener's campaign in Sudan; 1899, sep. of Sudan under Brit. rule; 1904, Brit. Protectorate; since 1922, independent under Fuad I. Nationalists plan complete independence and admission into League of Nations.

**Egyptian:** see LANGUAGE SURVEY, *Hamitic Languages*.

**Egyptian art**, goes back beyond 4th mill. B.C. *Prehistoric*: pottery, carved slate palattes and stone vessels; *Old Kingdom*: pyramids; diorite statue of Chephren; Sphinx at Gizeh; statues of nobles (e.g. Ranofar and Sheikh-el-beled). *Middle Kingdom*: granite obelisk of Senusert I at Heliopolis; portrait-statues of kings, e.g. Senusert III (British Museum); *New Kingdom*: great temples of Amon at Luxor and Karnak; colossal statues of Rameses II outside rock-temple at Abu-Simbel; portrait-heads from Tel-el-Amarna, esp. Nefertiti (Berlin); treasure from tomb of Tutankhamen (Cairo); at all periods from IIIrd Dyn. reliefs and paintings in tombs; of late periods, Isis-temple at Philae. After this, Gr., Rom., Byz., and Arab. influences. Characteristic of E. columns are lotus, palm, and papyrus forms. Revival of E. art forms in Eur. sculpture of present day.

**Eheu, fugaces . . . anni** (Lat.), "alas! the fleeting years"; a phrase extracted from one of Horace's odes.

**Ehrenberg**, Christian Gottfried (1795-1876), Ger. naturalist; noted for research into infusoria (q.v.).

**Ehrenbourg**, Ilya (1891- ), Russ. author; *The Love of Jeanne Ney*.

**Ehrenbreitstein**, tn. on Rhine, Prussia, opposite Coblenz; pop., 3,100; old fortress 380 ft. above river.

**Ehrlich**, Paul (1854-1915), Ger. bacteriologist; fndd. chemotherapy (q.v.); with S. Hata (q.v.), discvd. salvarsan (q.v.), 1909; Nobel Prize (Med.), 1908. with Mechnikoff (q.v.).

**Eichheim**, Henry (1870- ), Amer. composer: *Oriental Impressions*, etc.

**Eichhorn**, Johann Gottfried (1752-1827), Ger. theologian; pioneer of mod. O.T. criticism.

(Gr.), image; phantom; idea.



Ehrlich

**Eider-duck**, sea-duck, widely dispersed over N. Eur., Arctic islands, N. Siberia, Faeroes, Orkneys, Hebrides, and Atlantic coast of N. America. Also breeds in England as far S. as Holy and the Farne Isls., where it is called *St. Cuthbert's duck*. In N. Eur. the down is valued as a warm lining for quilts.

**Eiffel**, Alexandre Gustave (1832-1923), Fr. engin.; blt. E. Tower. **E. Tower**, Paris, iron framework structure, built for Paris

Exhibition by Gustave Eiffel, 1889; 984 ft. high; elec. lifts to three platforms. Important wireless and meteorological station. First illuminations for advertising purposes used on E.T. by Citroën Motor Car Co., 1929.

**Eight-hour day**, see HOURS OF LABOUR.

**Eijkman**, Christian (1858-1930), Dut. pathologist; Nobel Prize (Med.), 1929.

**Eildon Hills**, three peaks (to 1,385 ft.), Roxburghsh., Scot., rising S. of Melrose; subject of many legends.

**Elle mit Weile** (Ger.), haste with care; more haste less speed.

**Einsiedeln**, Switz., market tn., canton Schwyz; pop., 8,200; Benedictine monastery (fndd. 934); tourist resort.

**Einstein**, Albert (1879- ), Ger. physicist; formulated Theory of Relativity (q.v.), 1905-15; "light-quantum" hypothesis, 1905-11; see QUANTUM THEORY; MOLECULAR WEIGHT; awarded Nobel Prize (Physics), 1921.

**Eisenach**, tn. in Prussian Saxony, on N.W. slope of the Thuringian forest; pop., 43,400; Luther and Bach museums; saline springs.

**Eisenburg**, Vas, frontier comitat in W. Hungary; 1,270 sq.m.; pop., 267,810. Cap., *Steinamangar* (Szonibathely) (pop., 34,700).

**Eisner**, Kurt (1867-1919), Bavarian politic. and writer; pres. Bavarian revolut. and socialist govt., 1918; assassinated by Ct. Arco-Vally.

**Ejusdem generis** (Lat.), of the same kind.

**Ekaterinburg**: see SVERDLOVSK.

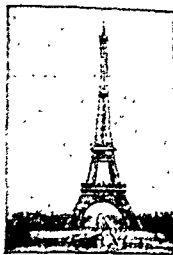
**Ekaterinenstadt**: see MARKSTADT.

**Ekaterinodar**: see KRASNODAR.

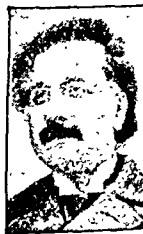
**Ekaterinoslav**: see DNEPROPETROVSK.

**Ekkehard** (fl. 10th cent. A.D.), monk of St. Gall; auth. of *Waltharius*, Lat. poem on Ger. legend of Walter of Aquitaine.

**Ek-tagh** or **Mongolian Altai**, E. branch



Eiffel Tower, Paris



Einstein

of the S. Altai Mtns.; max. height, 15,000 ft. **El**, "God" in Semitic languages.

**El Ahsa**, prov. of Nejd, on Persian Gulf, 22,400 sq.m.; pop., 75,000; chf. tn., El Hufuf, pop., 30,000; horse-breeding.

**El Arish**, port on Mediterr. coast, Sinai Penins., captured by Brit. from Turks, 20 Dec., 1916.

**El Capitán**, peak of Guadalupe Mts., Texas, U.S.A.; 8,700 ft.; highest pt. in State.

**El Dorado**, legendary country of northern S. Amer.; immensely rich in gold; popularly land of plenty.

**El-Ghor**, vall. from betw. Lebanon and Anti-Lebanon to Gulf of Akaba; includes Dead Sea and Jordan valley.

**El Morro**, New Mexico, U.S.A., sandstone rock, eroded into form of a castle, with inscription by Spanish explorers.

**El Paso**, tn. Texas, U.S.A.; on Rio Grande; pop., 102,400; health resort; meat-packing, copper-smelting; cotton. Taken from Mexico, 1836.

**El Teb**, place, Anglo-Egypt. Sudan, on route from Suakin to Tokar, 10 m. S.W. of Red Sea port of Trinkitat; scene of rout of Gen. Baker's mixed force by Sudanese, 4 Feb., 1884.

**Elagabal**, name of sun-god worshipped at Emesa in Syria. **Elagabalus**; see HELIOGABALUS.

**Eland**, largest of all the antelopes; horns, with close corkscrew-like spiral, present in both sexes; native of S. and E. Africa.

**Elastic**, springy, unresisting material, esp. fabric made of fibres woven with strands of rubber.

**Elastic and inelastic demand**, (econ.) demand for a commodity is said to be elastic if a much larger quantity can be sold at a cheap price than at a high price, and inelastic if a cheapening or a raising of price has little or no effect on the quantities wh. can be sold. Examples of I.D. are wheat or bread, and coal; of E.D. such goods as motorcars, clothing, etc.

**Elasticity**, quality or property of solid, liquid, or gas of recovering size and shape after release of forces acting to compress, distort, or deform it; rebound; power of resistance to or recovery from depression or overwork.

**Elba**, Ital. isl. in the Mediterr.; 86 sq.m.; pop., 26,000; mountainous, rich in iron ore. Chf. tn., Porto Ferrajo (pop., 12,000). Place of banishment of Napoleon, 1814-15.

**Elbasan**, 1) dist. in Albania; pop., 114,200; 2) cap. of dist.; pop., 10,250; Gr. Orthod. bpric.; metal industry.

**Elbe**, one of the greatest European rivs. (725 m.); flows from the S. slope of the Rie-

sengebirge through N. Bohemia, Saxony, and the N. Ger. plain into the North Sea at Cuxhaven (estuary over 9 m. wide); navigable for seagoing ships to Hamburg and for trading vessels to confluence of Riv. Moldau (500 m.). Connected by canals to Riv. Oder, the Fried.-Wilhelm and Berlin-Stettin canals, and to the Baltic.

**Elberfeld**; see WUPPERTAL.

**Elbing**, port., E. Prussia, on Riv. E., Frisches Haff, and Elbing-Oberland canal (wh. connects E. Prussian lakes with Baltic); pop., 700,900; machine industry, shipbuilding.

**Elbruz**, highest peak of the N. Caucasus, 18,480 ft.; first climbed in 1868.

**Elburz**, mountain range in N. Persia, nr. Caspian Sea; highest point, Demavend (g.t.).

**Elder**, 1) (eccles.) person of dignity and authority among Jews and in early Christian Ch.; one ordained to specific functions and authority in mod. Presbyterian churches.

2) (Bot.) *Sambucus*, trees or bushes belonging to the woodbine tribe. Common elder (*Sambucus niger*) has strong-smelling leaves, white flowers turning to dark purple berries, from which a wine is made; from the flowers is made Elder-flower water, a pleasant-smelling, slightly astringent lotion; from the leaves green elder ointment for bruises and oil of elder, sometimes known as oil of swallows. Dwarf elder (*S. cbulus*) has pink, sweet-smelling flowers and black berries.

**Eldon**, John Scott, 1st Earl of (1751-1838), Brit. lawyer and statesm.; solicitor-gen., 1788; attorney-gen., 1793; prosec. Brit. suptrs. of Fr. revolutionaries; cr. bn., 1799, and made chief justice; Lord Chancellor, 1801; cr. earl, 1821.

**Eleanor**, name of 3 Eng. qns.-consort: **E. of Aquitaine** (c. 1122-1204), m. 1st, Louis VII of France, 1137; divorced, 1152; m. 2nd, Hy. II of Eng., 1152; supported her sons in revolt, 1173; imprisoned, 1173-89. **E. of Castile** (d. 1290), m. Edw. I, 1254; sent from Engl. after battle of Lewes, 1264; returned, 1265; accomp. Edw. on crusade, 1270; crowned with him, 1274. **E. of Provence** (d. 1291), m. Henry III, 1236; unpopular through supporting Poitevin adventures; joint-gov. of Eng. with kg.'s bro., 1253.

**Eleatic school**, group of Gr. philos. (Xenophanes, Parmenides, Zeno, etc.) at Elea (S. Italy) in 6th and 5th cents. B.C.; taught the unchangeable unity of the Divine, and that knowledge can be gained only by thought and not thr. the senses.

**Elecampane**, scab-wort, *Inula denium*, herbaceous plant grows 5 ft. high; large leaves, bright yellow flowers. Cultivated for medic. purposes in Holland, Ger., etc.; root is used in medicine as a diaphoretic, diuretic, and expectorant, princ. for pulmonary disorders.



Eland

**Electors** (of Holy Roman Empire), from 13th cent., 3 eccles. E. (abps. of Cologne, Mayence, and Treves); and 4 lay princes, (Palatinate, Saxony, Brandenburg, and Bohemia). Bavaria 8th electorale, 1624; still later, Hanover and Hesse-Cassel added.

**Electra**, (Gr. myth.) dau. of Agamemnon and Clytaemnestra; sis. of Orestes, whom she assisted in avenging their father's murder. Tragedies on the theme by Euripides and Sophocles; opera by Richard Strauss.

**Electrical machine**, appar. for generation of static elec. by friction or influence (Wimshurst, etc.). **E. units:** *volt*, unit of electric force or pressure; *ampère*, current strength; *ohm*, resistance. One volt sends a current of 1 ampère through a resistance of 1 ohm (Ohm's law). Quantity, *coulomb* = 1 ampère flowing for one second. Rate of energy supply or consumption,  $Watt = 1$  ampère flowing under pressure of 1 volt. Energy, *Watt-second*, *Watt-hour*; *Kilowatt-hour* = 1,000 watt-hours = Brit. Board of Trade Unit. Consumption of any apparatus (lamp, motor) =

$\text{amps.} \times \text{volts} \times \text{hours}$  B.O.T. units.

1000

**Electric eel**, fish of family *Gymnotidae*, found in the fresh waters of the Guianas and Brazil, where it attains a length of six feet or more; has peculiar electric organs, which, in large specimens, are capable of inflicting powerful shocks. **E. heat**, generated by elec.



Electric Eel

current in a conductor, propor. to product of strength, tension, and duration of current. Princ. of all elec. cooking and heating apparatus. **E. incandescent**

(**glow**) **lamps**, glass bulb with vacuum or indifferent gas, cntg. a very thin filament of carbon or metal (tungsten) having a high resistance and becoming white-hot on passage of elec. current; 1st incandescent lamps invented (1854), by H. Goebel (1813-93); 25 years later invtd. anew by Edison. **E. lighting**, effected by means of incandescent or glow-lamps, arc-lamps, gas-discharge tubes (neon, mercury vapour). Glow lamps:

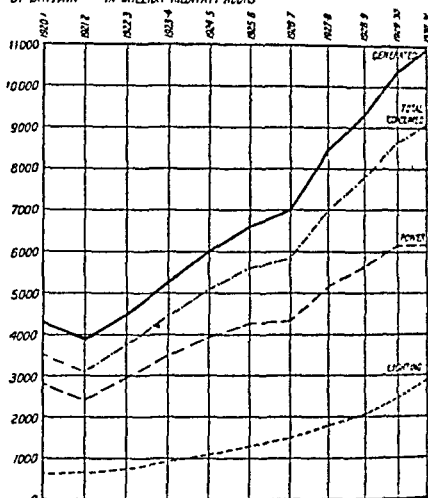
1) gas-filled, half-watt; 2) vacuum, metal filament, consumes twice as much current for same light as 1); 3) carbon filament, uses 7 times as much current. **E. rays**, large

clasmobranch fishes of the family *Torpedinidae*, widely distributed in the Mediterranean, Red Sea, Indian Ocean, and N. and S. Atlantic. All have remarkable electric organs capable of producing electric currents similar to those from a galvanic battery; rays of moderate size, belonging to this family, can give off a charge sufficiently powerful to disable a human being. **E. trains or trams**, propelled by elec. current

distributed from centr. station to transformer sub-stations, conveyed by live third rail, or overhead wires, to driving-motors. For long distances, alternating current supplied to sub-stations, there changed to lower voltage, or by rotary converters into direct current. Advantages: Great acceleration on level and up-gradients; no smoke; utilization of low-grade coal or of water-power.

**Electricity**. All matter is made up of atoms of positive (*protons*, *q.v.*) and negative

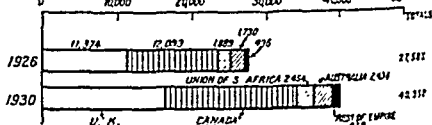
UNITS OF POWER GENERATED BY AUTHORIZED ELECTRICITY UNDERTAKINGS IN GREAT BRITAIN - IN MILLION KILOWATT HOURS



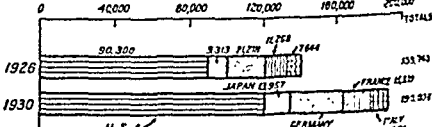
Progress unchecked since 1922. Large diffce. betw. units generated and consumed due to loss in transmission and consumption by generating plant.

(*electrons*, *q.v.*) electricity. Negative electrons permeate, like a vapour, all metals and metallically conducting bodies, and their motion constit. an elec. current; excess of them constitutes a negative charge; a

ELECTRICITY PRODUCTION OF BRITISH EMPIRE IN MILLIONS OF KWHS



ELECTRICITY PRODUCTION OF CERTAIN COUNTRIES IN MILLIONS OF KWHS



All countries without exception have rapidly extended their production; U.S.A. has enormous lead.

deficiency, a positive charge. In non-conductors they are bound, but can be separated by friction (frictional E., known to Grks. from friction of amber, Gr., *elektron*).

E. of like sign attracts, of unlike sign repels, other E. Moving E. generates a magnetic field, a moving magnetic field sets E. in motion, thus product. of current by *dynamo* (*q.v.*). Elec. current also prod. by chem. action (Volta, 1789, discov. of primary battery); acts on magnetic needle (Oersted, 1820; applied in elec. telegraph and telephone), produces chem. decomposition (*electrolysis*, *q.v.*), generates heat (applied in elec. furnace, domestic cooking, heating, and lighting). Varying current in one conductor generates current in neighbouring conductor (magnetic induction, Faraday, 1820; used in *transformer*, *q.v.*). When elec. and magnetic fields alternate rapidly in direc. and together *elec. waves* (*q.v.*) are prod. wh. travel thr. space with speed of light (Maxwell, Hertz; Marconi applied this princ. to wireless telegraphy, 1896). Light is of this nature, wave-length being extremely small. **E. works** (*generating station*) produces current by means of dynamos driven by steam or other engines, or water-power, etc., stores it, and transmits it to consumer municip., districts, etc.)

**Electro-cardiograph**: (med.): see **CARDIOGRAM**, and ill. **E.-chemistry**, sc. of relationship betw. chem. elec. actions. **E.-dynamics**, sc. of electr. in motion (forces betw. elec. currents and magnetic fields; electro-magnetic radiation, etc.). **E.-dynamometer**, appar. for measuring elec. power; usually moving coil pivoted or suspended, and acted upon magnetically by fixed coil, force being measured by tension of spring control. **E.-magnet**: see **MAGNETISM**. **E.-metallurgy**, production of metals and alloys by use of electricity; divd. into *wet* and *dry* E.M. Wet methods involve use of *electrolysis* (*q.v.*); chief branches: refining of copper, nickel, and lead. Dry involves use of *electric furnace*; use in metallurgy constantly increasing, owing to purity of product as compared with that of ordinary furnaces. **E.-motor**, machine revolving by means of an elec. current; converts electr. into mech. energy. **E.-plating**, deposition by electrolysis (*q.v.*) of one metal upon another (usu. nobler upon baser, e.g., gold, silver, nickel, upon copper, brass, iron). See **GALVANI**.

**Electrocution**, method employed in many States of the U.S.A. for inflicting capital punishment (*q.v.*); first legalized in New York, 1888. Criminal is bound in the "death

chair," electrodes are applied to his head and one calf, and sufficient electric current passed through his body to ensure instantaneous death.

**Electrode**, (phys.) metallically conducting body wh., in contact with other kinds of conductors (electrolytes, gases, living tissue), conducts electr. to them; when direct current is used, positive E. is the *anode* (*q.v.*); negative, the *cathode* (*q.v.*).

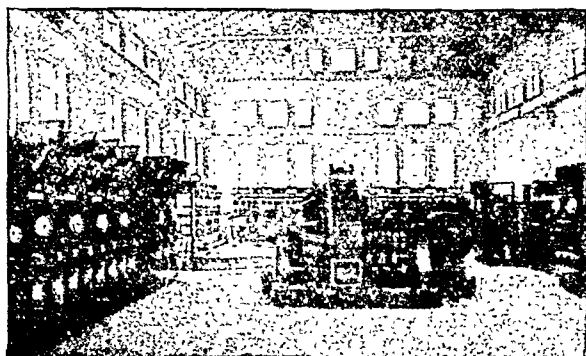


Photo L. M. S.

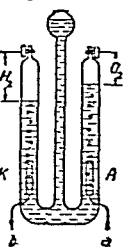
Interior of Electricity Substation

**Electrolysis**, decomposition of dissolved or fused chem. compounds (*electrolytes*) by elec. current, passed betw. two *electrodes* (*q.v.*) dipping into them. The *anion* (*q.v.*) is liberated at positive electrode (*anode*), the *cation* (*q.v.*) at the negative electrode or *cathode* (*q.v.*); e.g., in E. of water, oxygen liberated at anode, hydrogen at cathode. Incorrectly used for removal of hair by elect. destruction of root. **Electrolytic copper**, very pure copper, refined by electrolysis.

**Electron**, one of 2 fundamental constit. of matter; behaves in most respects like a minute particle of negative elec., but in other respects like a wave (see **WAVE MECHANICS**). Cathode rays in X-ray tube, and beta rays from radio-active substances (*qq.v.*), are both E.s moving with speeds approaching that of light, beta rays being the faster. Atoms of matter are made up of E.s and protons (*q.v.*). See **ELEMENTARY ELECTRIC CHARGE**; **NEUTRON**; **PROTON**.

**Electrophorus**, simple appar. for generating static elect. by "influence." Hist. interest only. **Electroscope**, appar. for detecting static electr.; gold or aluminium leaf repelled from fixed support when electrified; same princ. applied to measure elec. charge in **electrometer**.

**Electrosmosis**: see **OSMOSIS**.





**Electrostatics**, branch of science of physics wh. describes the phenomena exhibited by electricity at rest: attraction and repulsion of electrically charged bodies, capacity of condensers, dielectric constant, generation of electrostatic charge by friction and induction, etc.

**Electrotherapy**, curative treatment by (very various) electr. methods. See DIATHERMY; FARADIZATION; HIGH FREQUENCY; ULTRA-VIOLET; ACTINO-THERAPY; X-RAYS; IONISATION.

**Electrotypes**, facsimile printing plates of type or illustrations made by taking an impression in wax, depositing on this mould by an electrolytic process a thin copper sheet, and then backing up with type metal to make it the correct height from which to print. Any number of *electros* can be made from one original. An object (leaf, insect, etc.) may itself be covered with graphite and plated, negative copy thus obtained being used to form positive copy by plating.

**Electrum**, properly, a natural alloy of gold and silver, contg. 20-50% silver; also used for a kind of German silver (*q.v.*).

**Elegy**, orig. mournful song, accomp. by flute; expression of poet's own reflections; now esp. mourning song for dead friend.

**Elektra**, opera by R. Strauss (*q.v.*), 1909; see ELECTRA.

**Elemental**, basic, fundamental. **E. Spirits** of legend live in the Four Elements: Fire (salamanders), Water (undines), Air (sylphs), Earth (gnomes). **E. force**, natural force.

**Elementary electric charge** (abbr. *e*) =  $4,774.10^{-10}$  electrostatic units of charge; smallest unit (atom) of positive or negative elec., being charge on a *proton* or *electron* (*qq.v.*). In electrolysis, this charge or multiple of it carried by each single univalent or multivalent *ion* (*q.v.*).

**Elementary school, public**, State-aided School in Gt. Brit. for elementary educ. of children from 5-14 yrs.; Educ. Act, 1870, created school boards, with power to provide schools out of rates and compel attendance; principle of universal compulsory free educ. adopted, 1891; school bds. abolished by Educ. Act, 1902; authority transferred to county, county borough, borough, and urban district councils; central senior schools now provide more advanced instruction for scholars over 11.

**Elements**, bodies wh. cannot be further decomposed by chem. means; 92 assumed, 90 known (see PERIODIC CLASSIFICATION). Many elements consist of 2 or more isotopes (*q.v.*); constitution of chem. compounds is shown by chem. formulae in wh. number of atoms of each E. is shown, e.g.,  $H_2SO_4$  (sulphuric acid).

## LIST OF ELEMENTS—ARRANGED ACCORDING TO ATOMIC WEIGHT

No.	Element	Sym.	At. Wt.
1	Hydrogen	H	1.0078
2	Helium	He	4.002
3	Lithium	Li	6.940
4	Beryllium or Glucinum	{Be or } {Gl }	9.02
5	Boron	B	10.82
6	Carbon	C	12.00
7	Nitrogen	N	14.008
8	Oxygen	O	16.00
9	Fluorine	F	19.00
10	Neon	Ne	20.183
11	Sodium	Na	22.997
12	Magnesium	Mg	24.32
13	Aluminium	Al	26.97
14	Silicon	Si	28.05
15	Phosphorus	P	31.02
16	Sulphur	S	32.06
17	Chlorine	Cl	35.457
18	Argon	Ar	39.944
19	Potassium	K	39.10
20	Calcium	Ca	40.08
21	Scandium	Sc	45.10
22	Titanium	Ti	47.90
23	Vanadium	V	50.95
24	Chromium	Cr	52.01
25	Manganese	Mn	54.93
26	Iron	Fe	55.84
27	Cobalt	Co	58.94
28	Nickel	Ni	58.69
29	Copper	Cu	63.57
30	Zinc	Zn	65.38
31	Gallium	Ga	69.72
32	Germanium	Ge	72.60
33	Arsenic	As	74.93
34	Selenium	Se	79.2
35	Bromine	Br	79.916
36	Krypton	Kn	83.7
37	Rubidium	Rb	85.44
38	Strontium	Sr	87.63
39	Yttrium	Y	88.92
40	Zirconium	Zr	91.22
41	Niobium or Columbium	{Nb or } {Cb }	93.3
42	Molybdenum	Mo	96.0
43	Masurium	Ma	c. 98.0
44	Ruthenium	Ru	101.7
45	Rhodium	Rh	102.91
46	Palladium	Pd	106.7
47	Silver	Ag	107.88
48	Cadmium	Cd	112.91
49	Indium	In	114.8
50	Tin	Sn	118.7
51	Antimony	Sb	121.76
52	Tellurium	Te	127.5
53	Iodine	I	126.932
54	Xenon	Xe	131.3
55	Caesium	Cs	132.81
56	Barium	Ba	137.36
57	Lanthanum	La	138.9
58	Cerium	Ce	140.13

LIST OF ELEMENTS—ARRANGED ACCORDING TO ATOMIC WEIGHT—*Cont.*

No.	Element	Sym.	At. Wt.
59	Praseodymium	Pr	140.92
60	Neodymium	Nd	144.27
61	Illinium	Il	—
62	Samarium	Sm	150.43
63	Europium	Eu	152.0
64	Gadolinium	Gd	157.3
65	Terbium	Tb	159.2
66	Dysprosium	Dy	162.46
67	Holmium	Ho	163.5
68	Erbium	Er	167.64
69	Thulium	Tm	169.4
70	Ytterbium	Yb	173.5
71	Lutecium or Cassiopeium	{ Lu or } { Cp }	175.0
72	Hafnium	Hf	178.6
73	Tantalum	Ta	181.4
74	Tungsten or Wolfram	W	184.0
75	Rhenium	Re	186.31
76	Osmium	Os	190.8
77	Iridium	Ir	193.1
78	Platinum	Pt	195.23
79	Gold	Au	197.2
80	Mercury	Hg	200.61
81	Thallium	Tl	204.39
82	Lead	Pb	207.22
83	Bismuth	Bi	209.00
84	Polonium	Po	210.00
85	—	—	—
86	Radon or Emanation	{ Ra or } { Em }	222.0
87	—	—	—
88	Radium	Ra	225.97
89	Actinium	Ac	—
90	Thorium	Th	232.12
91	Protactinium	Pa	—
92	Uranium	U	238.14

**Elemi**, pungent, resinous substance obt'd. from an E. Indian tree; used in ointments and varnishes.

**Elephant**, large, thick-skinned ungulate mammal in which the nose and upper lip are pulled out into a very long, flexible trunk, at the end of which lie the nostrils; a pair of incisors or front teeth in upper jaw grow throughout life of animal and form the long tusks; two species now exist: 1) the Indian, restricted to forest lands of India, African Elephant S.E. Asia (including Ceylon and Sumatra); 2) the African, inhabiting greater part of Africa south of the Sahara, the larger of the two; easily distinguished by its larger ears and arched fore-



head. **E. Butte Dam**, on Rio Grande, New Mexico, U.S.A. (1916); water-supply. **Order of the Elephant**, oldest Dan. order of knighthood, fndd. 1458.

**Elephanta**, small isl. in Thana Riv., India, betw. Bombay and mainland; rock-hewn temple caves.



Indian Elephant

**Elephantiasis**, tropical disease in wh. the lower extremities thicken and swell; caused by presence in the blood of *filaria*, worms wh. effect a stoppage in the flow of lymph in the lymphatic vessels.

**Elets**, tn. in Orel prov., Russia, on Riv. Sosna; pop., 43,240; grain trading; junction of five rly. lines. Farthest point attained by Tamerlane's horde, 1395.

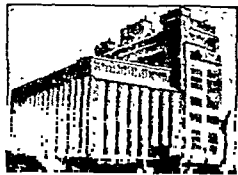
**Eleusinian Mysteries**, anc. Gr. secret cult of Demeter (Ceres) and Persephone (Proserpine), at Eleusis.

**Eleusis**, ancient Gr. tn. in Attica, 20 m. W. of Athens.

**Eleutherius**, St., Pope (c. 176-89), accordg. to *Liber Pontificalis*, had relat. with Brit. kg. Lucius who wished to be converted.

**Elevation**, 1) (astron.) angular height of celestial body; 2) (gunnery) angular height of line of fire; 3) (generally) vertical rise above ground or sea-level; 4) (archit.) drawing, to scale (*i.e.*, not in perspective) of any vertical face of a building or part thereof.

**Elevator**, 1) machine for raising persons or material. For vertically travelling cages used in buildings, *see* LIFT. 2) (Aeronaut.) Hinged flap, usu. at tail of aeroplane, controlling angle of flight. Operated by the rudder bar (*q.v.*).



Grain Elevator

**Bucket**, endless chain with buckets, driven by power, for raising all kinds of solids and liquids. **E.-conveyor**, usu. bucket type, lifts material and also moves it horizontally. **Grain e.**, lift for corn, etc., in large quant. emplg. dredger-like bucket-conveyors, suction, comprd. air, worm conveyors, and similar contrivances, connected with large silos (*q.v.*).

**Elf**, personification of natural forces in legend; a diminutive fairy.

**Elgar**, Sir Edward (1857- ), Eng. composer; oratorios: *The Dream of Gerontius*, 1900; *The Apostles*, 1903; *The Kingdom*, 1906; two symphonies, 1908 and 1911; "Enigma" Variations, 1899; overtures, *Cockaigne*, 1901; *In the South*, 1904; concertos: Violin, 1910; 'Cello, 1919; Symphonic Study, *Falstaff*, 1913; Violin Sonata, 1919; String Quartet, 1919; String Quintet, 1919; since 1924 "Master of the King's Musick."



Elgar

**Elgin**, 1) co. tn., Moray; royal burgh; pop., 8,800; cathedral. 2) City, Ill., U.S.A.; manuf. watches, cheese; pop., 36,000.

**Elginshire**, see MORAY.

**Elgin Marbles**, sculptures from the Acropolis, Athens, acquired by 7th E. of Elgin (1766-1841), with permission of the Porte and bought by Brit. nation in 1816 for £36,000. Include portions of the Parthenon frieze and a Caryatid from the Erechtheum (q.v.); now in Brit. Museum.

**Eli**, (O.T.) priest at Shiloh, Judge of Israel (I Sam.).

**Elia**, pseud. of Chas. Lamb (q.v.).

**Elias**, see ELIJAH.

**Elijah**, 1) (O.T.) prophet (I, II Kings). Denounced Ahab and Jezebel; caused divine fire to consume his offering, thus triumphing over priests of Baal; taken up to heaven in fiery chariot. 2) (Mus.) Oratorio by Mendelssohn (1846).

**Elimination**, (math.) removal of a quantity from an equation.

**Elinometer**, instrument used for determining dip of rock strata.

**Eliot, Chas. Wm.** (1834-1926), Amer. publicist and educator; pres. of Harvard Univ., 1869-1919; pub. *The Religion of the Future*, 1909; *A Late Harvest*, 1924; etc.

**E., George**, pen-name of Mary Ann Evans (1819-80), Eng. novelist: *Adam Bede*, 1859; *The Mill on the Floss*, 1860; *Middlemarch*, 1872.

**E., John** (1604-90), Eng. missionary to Amer. Indians in Massachusetts, U.S.A.; transl. Bible into Algonquin language.

**Elisabethville**, cap. prov. of Katanga, S. Belgian Congo, on rly. to S. Rhodesia.

**Elisha**, (O.T.) prophet, successor of Elijah (I, II Kings).

suppression of vowel or syllable and hiatus (q.v.).



George Eliot

**Elite** (Fr.), the selected best of anything.

**Elixir**, in alchemy, magic liquid, said to change base metals into gold; also a cordial supposed to bestow perpetual youth on those partaking of it.

**Elizabeth**, St., 1) mother of St. John the Baptist; wife of Zacharias; feast-day, Nov. 5th. 2) **E. of Hungary** (1207-31), dau. of Andrew II of Hung. celebrated for piety, self-sacrifice, and good works; canonized, 1235.

**Elizabeth, (Petrovna)** Empress of Russia (1709-41-62), dau. of Peter the Great; joined Maria Theresa in War of Austr. Succession, 1747, and in Seven Years' War, 1759-61. Fndd. Univ. of Moscow. **E., Empress** (1837-98), wife of Emp. Francis Joseph of Austr. (m. 1854); crowned Qn. of Hung., 1867; assass. at Geneva.



Queen Elizabeth

**Elizabeth** (1533-58-1603), Qn. of Eng., "the Virgin Queen"; dau. of Henry VIII and Anne Boleyn; extended Brit. commerc., polit. and naval power; signed death-warrant of Mary Qn. of Scots, 1587; defeat of Span. Armada, 1588.

**Elizabeth**, qns.-consort; **Belgium: E.** (1876- ), wife of Kg. Albert of Belg. (1900); nursed wounded in World War. **Bohemia: E. Stuart** (1596-1662), dau. of James I of Eng.; wife of Fredk. V, Kg. of Bohemia and Elector Palatine. **England: E. Woodville** (c. 1437-92), wife of Edw. IV, mother of Edw. V; **E. of York** (1465-1603), dau. of Edw. IV, wife of Henry VII (1486); marriage united houses of Lancaster and York. **Prussia: E. Christine** (1715-97), wife of Fredk. the Great, Kg. of Pr. (1733). **Rumania: E.** (1843-1916), wife of Kg. Charles of R. (1869); authoress under pen-name of Carmen Sylva (q.v.).

**Elizabeth**, Princess (1926- ), elder dau. of Duke of York and, at birth, third heir to the British Crown.

**Elizabeth**, tn., New Jersey, U.S.A.; pop., 114,600; fndd., 1665; coal, oil; sewing-machines, shipbldg., iron goods.

**Elk**, or **Moose**, largest living deer; male with palmated antlers; found in the swampy forests of N. Europe, N. Asia, and N. America; also in small numbers (preserved) in E. Prussia. See also WAPITI.

**Elk Mountains**, Colorado, U.S.A., part of Rocky Mtn. system (q.v.); North Italian Peak, 13,225 feet.



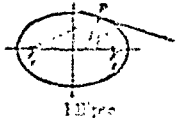
Elk (Moose)

**El**, obsolete measure of length, varying in different countries

(Eng., 45 in.; Flemish, 27 in.; Fr., 31 in.)  
**Ellesmere Island**, isl., Canada, in Arctic Circle, W. of Greenland; 77,200 sq.m.; tundras; musk-ox, fox, reindeer.

**Ellise Islands**, Brit. archipelago, Pacific, E. of New Guinea; forms crown colony with Gilbert Islands (q.v.) since 1902; c. 14 sq.m.; copra, guano.

**Ellipse**, (geom.) an oval figure so curved that the sum of the distances of any point on its circumference (e.g., P) from two given points (F<sub>1</sub>, F<sub>2</sub>) is constant; these two points are called the *Foci* of the E.; the E. is a *Conic Section* (q.v.). **Ellipsis**, in grammar, the omission of a word which has to be supplied in thought. **Ellipsoid**, solid figure formed by the rotation of an ellipse round one of its two axes.



**Ellis**, Henry Havelock (1850- ), Brit. physician, psychologist, editor, and author; *Studies in Psychology of Sex*, 6 vols., 1898-1910, etc.

**Ellis Island**, in Upper New York Bay, U.S.A., used as immigrant station.

**Ellora**, vill. in the Ind. State of Hyderabad; famous rock-temples.

**Ellore**, tn., Madras, India; carpets, salt-petre, rice; pop., 38,000.

**Elm**, tree of the genus *Ulmus*, ind. in most temperate regions; has clustered flowers; the common elm is *U. campestris*, and the Scotch or Wych elm is *U. montana*. A useful and ornamental, shady tree, which provides a valuable timber. Liable to be attacked by elm-leaf beetle (*Galerucella latifolia*), agst. wh. arsenic spray may be used.



**Elman**, Mischa (1891- ), Russ. violinist; 1st appeared in London, 1905; naturalized, U.S.A., 1920.

**Elmira**, tn., New York State, U.S.A. on Chemung River; pop., 27,400; railway plant; heavy machinery and accessories; reformatory; home of Mark Twain.

**Elohim**, (O.T.) name for God represents divine influence in material world. **Elohistic** parts of Pentateuch regarded as teaching natural religion; cf. *pantheism*.

**E. Long.**, abbr. east longitude.

**E.L.O.**, abbr. *École spéciale des Langues Orientales Modernes* (Fr.), "Special School of Living Oriental Languages."

**Elshelmer**, Adam (1878-1902), Ger. painter and etcher; *Fall of Troy*, in Munich; *Philomena at Breda*, at Dresden.

**Elstree**, see *ELSTREE*.

**Elstree**, vill., S. Herts., on Midlx. border; pop., 2,400; centre Brit. film industry.

**Elswick**, W. div. of Newcastle-upon-Tyne; engineering and ordnance works.

**Eltham**, par., N.W. Kent, 20 m. S.E. of London, part of Woolwich (q.v.); remains of *E. Palace*, res. of kgs. of Eng. from Henry III to Henry VIII; birthplace, John of Eltham, s. of Edward II (1316). **Earl of E.**, a title of Marquesses of Cambridge.

**Elutriation**, method of removing coarse particles from powdered material, by suspending it in water or other liquid, when coarse material settles quickly.

**Elvend**, mountain in N.W. Persia, nr. Hamadan, 11,500 ft.; oil and iron-ore deposits.

**Elver**, larva of the eel; ascend rivers from the sea in vast numbers in the spring.

**Ely**, Isle of, admin. co., Eng., N. part of Cambs; area 372 sq.m.; pop., 77,700; assoc. with Here-ward the Wake. **Ely**, city and co. tn., on Riv. Ouse; 12th-13th cent. cath., with centr. octagon; pop., 8,400.



Ely Cathedral

**Elymas**, or Bar-Jesus (N.T.), sorcerer struck blind by Paul.

**Elyot**, Sir Thos. (d. 1546), Eng. diplomat and scholar; sheriff of Oxfordsh. and Berks., 1527; publ. *The Boke named the Governour*, 1531, dedic. to Hy. VIII, etc.; ambass. to Emp. Chas V; M.P. for Cambridge, 1542.

**Elysée**, palace in Paris, seat of the Pr. President since 1871.

**Elysium**, paradise of Gr. mythology.

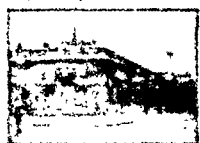
**Elz.**, abbr. Elzevir.

**Elzevir** (1583-1712), family of printers in Leyden and Amsterdam, found. by Louis Elzevir (1540-1612) c. 1583 and publishing till about 1712; they issued over 1,000 separate works.

**Emanation** (Lat. "flowing out"), fundamental principle of doctrine of Zoroaster, Neo-platonists and Gnostics that world is result of the overflowing of the Divine fullness; world represents, in graduated degrees of imperfection, the perfect Divine Being; thus E. offers itself as an explanation of presence of evil in the world.

**Embalming**, preservation of corpses against decay by balm, aromatic oils and spices, known to anc. Egypt, Ind., Assyria, Persia; see *WATSON*; present method, by injecting various chemicals into the blood vessels.

**Embargo**, (intermat. law) order prohibiting foreign ships from entering a home port, or any such ship from leaving a port.



Ellysée

**Embarras de richesses** (Fr.), embarrassment of wealth; the state of having too much to choose from.

**Ember Days**, days specially devoted in the R.C. and Angl. churches to fasting and prayer, viz., the Wednesday, Fri., and Sat. wh. follow Dec. 13th, the 1st Sun. in Lent, Whit Sunday, and Sept. 14th. The wks. in wh. these periods occur are **E. Weeks**, and the Sun. following each is a day of ordination of the clergy.

**Embezzlement**, fraudulent appropriation, to one's own use, of money or property held in trust for another; e.g., by a clerk, servant, or agent; penalty in Eng. law varies from seven years' penal servitude to imprisonment for not more than two years, with or without hard labour.

**Emblem-books**, selections of proverbs, sayings, fables, or reflections, chfly. on vanity of life, littleness of man, and nearness of death; usu. illustrated by wood-cuts; popular at time of the Renaissance.

**Embolism**, blocking of an artery by foreign matter, e.g., a cerebral artery by means of a blood clot; often associated with thrombosis (q.v.).

**Embonpoint** (Fr.), in good condition; plumpness, corpulence.

**Embroidery**, ornamentation of fabrics with needlework. Art practised from early times, fragments of embroidered linen having been fnd. in Egypt. tombs of c. 15th cent. B.C. In Fr. and Italy, art flourished in Mid. Ages, chfly. in connection with eccles. vestments and decoration of dresses; Span. E., of same period, strongly influenced by Arab art; Ger. E. by Byzantine traditions. In Eng., Jacobean E. (17th cent.) in silk or wool is most characteristic. Chinese and Japanese E. of anc. origin; elaborate work in silk, gold and silver, introducing mythical beasts, flowers, fruit, etc. Indian and Persian E. also dates from remote period; silk and gold brocade, woollen work (Kashmir shawls) in wh. effect sometimes produced by introdtn. of beetles' wings, bits of mirror, etc. See also TAPESTRY.

**Embryo**, the foetus (q.v.). **Embryology**, sc. of development of the embryo.

**Emden**, seapt. in Hanover; pop., 31,700; dist. Aurich; at end of Dortmund-Ems and Ems-Jade canals; cable sta., shipbldg., herring fisheries.

**E.M.D.P.**, abbr. Electro-motive Difference of Potential.

**Emerald**, green precious stone; true E. is a species of beryl (q.v.); Brazilian E. is green tourmaline (q.v.); Oriental E. is a variety of corundum (q.v.). Also (typog.) variety of type intermediate in size betw. minion and nonpareil.

**Emergency, State of**, when public order and safety are disturbed or endangered,

govt. can take steps to safeguard them, by means of armed forces if necessary. **E. money**, paper money or coins issued by bodies that are not licensed to do so. Object — temporary help in cases of shortage of funds; during inflation in Ger. industrial and trade undertakings in var. towns issued emergency money.

**Emeritus** (Lat.: having earned discharge), term applied to univ. professor who has vacated his chair, and to retired Presbyterian minister.

**Emerson**, Ralph Waldo (1803-82), Amer. essayist and poet; lifelong friend of Carlyle (q.v.); *Essays*, 1841 and 1844; *Representative Men*, 1850.

**Emery**, pulverized corundum (q.v.); see ABRASIVES. **E. paper, e. wheel**, means for applying emery for cutting and polishing.

**Emetics**, drugs or other substances taken to induce vomiting; administered in cases of poisoning to empty the stomach, or in cases of asphyxia or difficult breathing (diphtheria, etc.) to clear the air passages. Principal E. are: alum, ammonium carbonate, zinc sulphate, tartar emetic, ipecacuanha, squill; also tablespoonful of mustard in cold water, tablespoonful of salt in warm water. E. must not be administered in cases of poisoning by corrosive acids. See ANTIDOTES: *Poisoning, Treatment of*.

**Émeute** (Fr.), riot, disturbance.

**E.M.F.**, abbr. electro-motive force.

**Emigrant**, one who leaves his own country and settles in another.

**Emigration**, deliberate change of dwelling to a foreign country, usually piecemeal, as opposed to migration, wh. is used of large-scale movements, often instinctive.

**Émigré**, (Fr.) exile, refugee, esp. of aristocrats during the Fr. Revolution, and anti-Soviet Russians.

**Émile**, treatise on education in romantic form, by J. J. Rousseau (1762); title from chief character.

**Emilia**, regional div. of N. Italy, betw. Adriatic, Riv. Po and Apennines; 8,565 sq.m.; pop., 3,034,000.

**Eminence**, height, elevation; elevated situation among men; distinction; title of honour applied to cardinal in R.C. Church.

**Eminescu**, Mihail (1850-89), Rum. lyric poet; *Venus and Madonna*.

**Emin Pasha** (1840-92), originally *Eduard Schnitzer*, Ger. explorer and official in Egypt and Centr. Africa; prisoner of Mahdi (q.v.) from 1883-89; murdered by the Arabs.



Emin Pasha

**Emir**, Arab. title, given to independent chieftains in Moslem countries; *see* AMEER.

**Emmanuel**, (O.T.) symbol. name for the Messiah (Isaiah vii. 14); (N.T.) designation of Jesus (Matt. i. 23). **Emmanuel College**, Cambridge; fndd. 1584 by Sir Walter Mildmay, Chanc. of Exchequer. Chapel by Sir Christopher Wren. John Harvard, fndr. of Harvard College, among alumni.

**Emmaus**, 1) (N.T.), vill., c. 7 m. from Jerusalem, on way to wh. Christ appeared to



Christ at Emmaus

2 disciples after the Resurrection (Luke xxiv).

**Emmenthal**, valley, in canton Berne, Switz.; chf. tn., Langnau; cheese.

**Emmet**, Robt. (1778-1803). Irish revolutionary; leader of the United Irishmen; led unsuccessful rising in Dublin, 1803; escaped to Wicklow Mtns.; captured and hanged.

**Emotion**, agitated or excited attitude adopted by the mind in view of a situation which either hinders or furthers its purposes.

**Emotionalism**, morbid tendency to emotion.

**Empedocles** (c. 490-430 B.C.), Gr. philos., statesm., and poet; developed theory akin to that of evolution (*q.v.*); some fragments of his poems are extant.

**Emperor** (*fem.*, **Empress**), title of supreme temporal power, which may include sovereignty over other kgs. or princes. **E. moth**, handsome moth with greyish-brown wings marked with an eye-like spot; frequents heath-land. Distribtd. throughout Europe and N. Asia.

**Emphysema**, expansion of the lung alveoli (*see* LUNG), giving rise to barrel-shaped chest seen in those suffering from asthma, and in glass-blowers.

**Empire**, orig. State est. by milit. power;

Mid. Ages, status of ruler claiming succession to Rom. Emp.; in mod. usage an aggregation of States or countries, usu. of diff. race, formerly separate but brought under the rule (actual or nominal) of an Emperor through colonization, conquest, or peaceful annexation, etc.; in this sense esp. the British Empire (*q.v.*). **E. Day**, May 24th (Qn. Victoria's birthday), est. (1902) to further imperial unity. **E. Marketing Board**, Brit. organizatn., 1926-33, Board apptd. by Cttee. for Scientific and Industrial Research, and controlled by Dominions Office; investigated questions affecting trade within Emp.; made research-grants to Brit. depts. and universities; on dissolution publicatn. of market reports and world surveys of productn., etc. undertaken by Imp. Econ. Committee. **E. State**: *see* GEORGIA. 2) NEW YORK. **E. style**, in furniture, decoration, etc., style introduced in France under régime of Napoleon; based on Graeco-Roman models and supposed to symbolize the revival of Roman virtues.

**Empirical sciences**, those branches of science which rely on experience (and hence experiment); *see* NATURAL SCIENCE. **Empiricism**, (philos.) acquisition of knowledge solely from experience; doctrine that no knowledge can be gained except thr. the senses and by experience, excluding theoretic induction as a legitimate source of knowledge.

**Employers' associations**, started in opposition to growing trade unions in late 19th cent. in particular bodies representative of employers in var. industries, formed for the purpose of standardizing wages, hours of labour, etc. In Gt. Brit., co-ordinated under National Confederation of Employers' Organizations. **E. liability**, principle of making employer compensate injured employee. In Eng., term used espec. when claimant has to prove fault by employer, and thus disting. from system of holding employer liable though not at fault. *See* WORKMEN'S COMPENSATION.

**Employment exchange**, office for collecting and furnishing information in regard to employment, by keeping registers, etc., and for bringing unemployed workers in touch with suitable vacancies. Establd. in Gt. Brit. under *Labour Exchanges Act* (1909). Given further functions in connection with unemployment insurance as result of Unemployment Insur. Act (1911).

**Empyema**, (med.) abscess between two layers of the pleura or membrane covering the lung; usu. a sequel to pneumonia.

**Ems**, 1) riv. of N.W. Germany (210 m.); rising nr. Paderborn, navigable below Greven, lower course canalized as far as Meppen; Dortmund-Ems Canal, along middle course, flows into the Dollart (N. Sea). 2) *See* BAD EMS.

**Ems, Congress of** (1786), whereat the abps. of Mayence, Treves, Cologne, and Salzburg drew up a pronouncement (the Punctuation of Ems) against papal interference in eccles. affairs in Germany.

**Emu**, large flightless bird inhabiting Australian region, next in size to ostrich; 3 existing species; wings rudimentary, three toes, no tail; body feathers with after-shaft as long as actual plume, so that latter has appearance of a double feather; female is larger and more courageous than male.

**Emulsin**, (chem.) extract of almonds wh., when combined with water, converts glucosids (e.g., amygdalin) into benzoic aldehyde, hydrocyanic acid, and glucose.

**Emulsion**, distribution of an insoluble liquid (oil, fat, etc.) in water or water in oil; often thr. agency of a protective colloid (*q.v.*), which coats surface of globules and prevents their coalescing.

**Enamel**, 1) (tech.) glass paste, coloured with various oxides, fused and applied to metal surfaces; much used in decorative art of the East and during Mid. Ages and Renaissance. In *cloisonné* the enamel is poured between wires soldered to the metal ground and forming the pattern; in *champlevé* into incisions in the ground. 2) (Dental) Hard outer covering of teeth.

**En avant!** (Fr.), Forward! **En bloc** (Fr.), wholesale, as a whole. **En déshabillé** (Fr.), in undress, carelessly attired. **En évidence** (Fr.), in view of the public, conspicuous. **En famille** (Fr.), as in the family circle; without ceremony. **En garçon** (Fr.), as a bachelor; often applied to convivial meetings of married men without their wives. **En masse** (Fr.), in a body. **En passant** (Fr.), in passing; by the way. **En rapport** (Fr.), in sympathy with; well posted in a subject. **En règle** (Fr.), according to rule; in due order, correct. **En revanche** (Fr.), in revenge; in compensation. **En route** (Fr.), on the way; on the road; forward! **En-tout-cas** (Fr.), in any case; combined sunshade and umbrella. **En train** (Fr.), in full swing, under way. **En vogue** (Fr.), in fashion.

**Encaustic** (Gr.), art of painting, known to the ancient Egyptians., whereby colours are rendered permanent by being applied while hot.

**Enceladus**, (Gr. myth.) hundred-armed giant, son of Tartarus and Ge; (astron.) 2nd of satellites of Saturn (*q.v.*).

**Encephalitis lethargica**, disease of the brain, popularly known as *sleepy-sickness*; cause unknown. Characterized by drowsiness and headache; in acute stage, may lead to permanent disability, tremor, paralysis of muscles, and changes in temperament.

**Encke**, Johann Franz (1791-1865), Ger. astronomer; disc. orbit of *E.'s Comet*.

**Enclave**, region or country surrounded by terr. of a foreign State.

**Enclitic**, word or particle, so united with another as to seem part of it, e.g., "thee" in "prithee."

**Encyclical**, letter addressed by the Pope to his bishops, intended for the whole Church, and laying down lines of conduct to be followed by the faithful in particular circumstances.

**Encyclopædia**, survey of all knowledge, or collection of articles on one particular subject; most anc. E. extant, Pliny's *Natural History*; in Mid. Ages, Vincent of Beauvais' *Speculum majus*, Bartholomew de Glanville's *De proprietatibus rerum*; 1st Eng. alphab. E. by Harris, *Lexicon Technicum*, 1704; followed by Eph. Chambers's *Universal Dictionary of Art and Sciences*, 1728; *E. Britannica*, 1st ed., 1768; *Ency. Metropolitana*, 1845; *English Cy.*, 1854-62; *Chambers's Ency.*, 1860-68; *Harmsworth Ency.*, 1905 (*Nelson's Ency.* in U.S.A.). Other E.s in U.S.A.: *Ency. Americana*, ed. Lieber, 1839-47; *New Amer. Cy.*, 1858-63; *Amer. Annual Cy.*, 1861-1902; *Amer. Cy.*, 1873-76; *Johnson's New Univ. Cy.*, 1893-95; *Enc. Americ.*, 1903-09; *International E.*, 1884, revised 1891, '04, '98; superseded by *New International Ency.*, 1902, revised 1906 and later.

**Encyclopédie**, great Fr. E. of 18th cent., based on Eph. Chambers's *Universal Dictionary*; ed. by Diderot and D'Alembert; Voltaire, Euler, Marmontel, Montesquieu, D'Anville, D'Holbach, Turgot, Louis, Dabenton, Toussaint, and Condamine among its contributors. **Encyclopedists**, those who took part in compiling the *Encyclopédie*, and in the controversy wh. its publication occasioned.

**Endemic disease**, one confined to a district or country, or to one section of the community; ant.: *epidemic*.

**Endery Land**, dist. in Antarctic reg., lat. 50° S.

**Endiometer**, apparatus for examination of gases; consists essent. of a graduated glass tube closed at one end.

**Endive**: see CHICORY.

**Endocardium**, (anat.) inner membrane of heart, from folds of wh. the valves of heart are formed. **Endocarditis**, inflammation of endocardium.

**Endocrine glands**, glands of internal secretion, ductless glands; organs manufacturing secretions which are passed directly into the blood stream, e.g., thyroid, pituitary, thymus, suprarenal glands, etc. The secretion of each of these glands is different, and carries out some special task. See GLANDS.

**Endogamy**, compulsory marriage betw. members of the same social unit—clan, tribe, or race (e.g., Jews); ant.: *exogamy*.

**Endometrium**, mucous membrane lining

the uterus. **Endometritis**, inflammation of the endometrium.

**Endor**, (O.T.) site of caves in wh. dwelt witch consulted by Saul (I Sam. xxviii), c. 7m. S.E. of Nazareth.

**Endorsement**, (commer.) signature on back of bill or other document, writer of wh. thus accepts responsibility for it. Bills of exchange, etc., may bear several Es. by way of guarantee.

**Endoscope**, instrument for examining a body cavity through its natural outlet.

**Endosmose**: *see* OSMOSE.

**Endowment**, grant by deed or will of a permanent income to a person or institution.

**E. Insurance**: *see* LIFE INSURANCE.

**Endymion**, (Gr. myth.) beautiful youth beloved of Selene, the moon-goddess.

**Enema**, a clyster; any liquid subs. injected into rectum, to cause movement of bowels or to administer nourishment. Nutrient Es. are given occasionally when no food can be taken by mouth, but amount of nutriment capable of being absorbed by walls of bowel is comparatively small.

**Energy**, strength of will, force; in physics: one of 2 fundamental entities constituting material universe, other being matter. Known to us in many forms; in mech., *kinetic E.*, possessed by a moving mass; *potential E.*, of position, as of water at a height above earth's surface, or contained in a compressed gas or stretched spring; *electr. E.*; *chemical E.*, stored in coal, released when it is burnt; *radiant E.*, in light, heat, and elec. waves; *heat E.*, consisting in kinetic E. of molecules of a body, and propor. to its temp.; *magnetic E.*, stored in a magnetic field (*q.v.*). All forms of E. can be transformed one into another, hence all can be measured by mech. E. Tech. unit of E. is the *kilogram-metre (q.v.)*; the scient. unit the *erg (q.v.)*. By law of *conservation of E.*, E. can neither be created out of nothing (*i.e.* perpet-

*perdus*, lost children; forlorn hope. **Enfant terrible**, child who makes embarrassing remarks and asks awkward questions. **L'E. prodigie**, opera by Auber (*q.v.*) (1850).

**Enfield**, urb. dist., Middx., Eng., part Greater London; small-arms factory, ruins palace blt. c. 1550 by Ed. VI for his sister (Qn.) Elizabeth. Pop., 67,900.

**Engadine**, vall. of Riv. Inn, Swiss Alps, canton Grisons; 56 m. long; alt. 3,250-3,900 ft.; dry mountain climate, mineral springs and spas (St. Moritz, Pontresina, Sils, etc.).

**Engels**, Friedrich (1820-95), Ger. socialist; author, with Karl Marx (*q.v.*), of *Communist Manifesto (q.v.)*, 1847; Co-finder, and 1st sec. of First International (*q.v.*).

**Engbien**, Louis, Duc d' (1772-1804), son of Pr. of Condé and nephew of Philippe "Égalité"; after Fr. Revol. a Bourbon exile; executed by Napoleon I on unfounded charge of conspiracy.



Engels

**Engbien-les-Bains**, health resort 8 m. N. of Paris; pop., 10,000; mineral springs; race-course, aerodrome.

**Engineering**, application of theoretical and experimental physical science, and accumulated experience, to moulding and controlling any physical environment. *Civil E.* comprises means by wh. earth's surface is modified to adapt it to man's use; *mechanical, electrical, mining, chemical, railway E.*, etc., all deal with special techniques; new branches of E. are constantly arising, *e.g.*, *sound (gramophone and talking pictures)*. **E. drawing**: *see* MACHINE DRAWING. **E. School**: *see* TECHNICAL COLLEGE.

**Engineers**, (milit.) troops who carry out milit. engineering work; *see* ROYAL ENGINEERS.

**Engine-turned**, peculiar design in intersecting circles on surface of metal for purpose of improving appearance and preventing visibility of small scratches.

**England** (*see* Map of Gt. Brit.), S. portion of isl. of Great Britain, sep. from Scot. by Solway Firth, Cheviots, and Riv. Tweed; from France by Str. of Dover, and arbitrarily from Wales by the W. border of counties of Cheshire, Salop, Herefordsh., and Monmouthshire. Area, 50,939 sq.m.; pop., 37,789,700 (Anglicans, 69.5%; R.C., 5.7%). Centr. mountainous backbone formed by *Pennine Chain*, extending from Cheviots to Peak District in Derbysh., with Cumbrian Mtns. in Lake District (*Scafell Pike*, 3,210 ft., highest summit in Eng.); in S.W., hills of Exmoor (*Dunkery Beacon*, 1,707 ft.) and Dartmoor (*Yes Tor*, 2,027 ft.); Mendip Hills (*Blackdown*, 1,068 ft.) and Quantock Hills (1,261 ft.) in Somerset; Malvern Hills



The Engadine, Lake Sils

ual motion, *q.v.*, imposs.) nor be annihilated, but can only be transformed; heat can never be completely transformed into other forms. Accdg. to theory of relativity (*q.v.*), mass can be transformed into energy.

**Enfant gâté** (Fr.), spoilt child; **enfants**

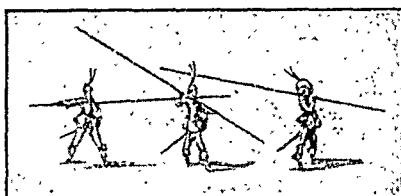


(*Worcestershire Beacon*, 1,395 ft.) in Worcs.; *Cotswolds* (1,134 ft.) in Glos.; the *Wrekin* (1,335 ft.) and *Clee Hills* (1,790 ft.) in Salop; the *Black Mountain* (2,310 ft.) in Herefordsh.; *Sugar Loaf* (1,955 ft.) in Monmouthsh.; *North and South Downs* (800 ft.) in S.E. Eng.; and *Chilterns* (850 ft.) in Oxon., Bucks., Bedfordsh., and Herts. E. Eng. is flat or undulating (*Fen District* in Lincs.) and fertile (agric.). The W. coast is deeply indented by the *Bristol Channel*, the *Dee* and *Mersey* estuaries, *Morecambe Bay*, and *Solway Firth*; the E. coast by estuaries of *Thames* and *Humber* and by the *Wash*. Longest riv., *Severn* (220 m., rises in Wales); most important riv., *Thames* (210 m.). Largest lake, *Windermere*, in *Lake District* (10½ by ½-1½ m.). Only 5% woodland; 40 (49 admin.) counties. Rlys. (incl. Scot. and



Van Dyck

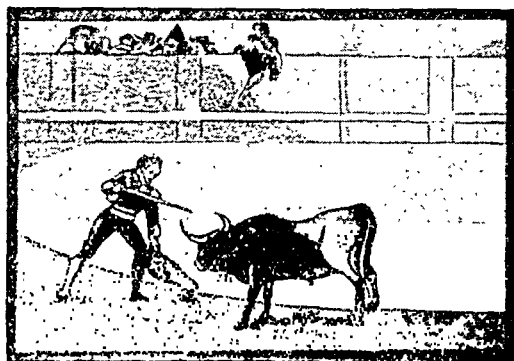
to support Cath. doct. and ritualistic practices in C. of E., and to assist clergy prosecuted for such doct. or practices. **E.-speaking Union**, fndd. 1918 by (Sir) Evelyn Wrench to promote friendship and intercourse betw. Eng.-speaking nations. Headquarters in Eng.; *Dartmouth House*, Charles St., London; branches also in N.Y. and Boston, U.S.A.



Callot: Military Exercises

**Engraving**, art of cutting designs, inscriptions, etc., on wood, metal, or stone, esp. for reproduction by a printing process. *Wood E.* (the earliest) was practised as fine art during 15th. cent.; metal E. came into vogue with Renaissance. See *MEZOTINT*; *ETCHING*; *LINE ENGRAVING*; *WOOD ENGRAVING*; *PHOTO-ENGRAVING*.

**Enlightenment**, name given to the period of intellectual revival in Eur. of 18th



Goya: Bull-fight



Rembrandt: Landscape

## MASTERPIECES OF ENGRAVING

Wales), 19,336 m.; canals (incl. Wales), 3,641 m.. Great mineral wealth: coal and iron in the Pennine Chain; tin, lead, and copper in Cornwall. The cotton industry and trade of Lancs. are of great importance (Liverpool a world mkt., Manchester the industrial centre). Birmingham is centre of metal-working industry. Principal seapts.: London, Liverpool, Southampton, Plymouth, Newcastle, Manchester, Hull, Bristol, Harwich, Middlesbrough, Grimsby. Cap., London. History: see GREAT BRITAIN.

**English Church Union**, formed in 1860

cent.; equiv. to Ger. term *Aufklärung*. Movement was inspired by Lessing, Mendelssohn, etc., and Locke, Newton, and the Fr. Encyclopedists (Diderot, Voltaire, etc.) are also sometimes connected with it; in politics it found expression in the "enlightened despotism" of Frederick the Great, and esp. of Joseph II of Austria (1741-90).

**Ennis**, cap. Co. Clare, Munster, I.F.S.; pop., 5,500.

**Enniskillen**, cap. Co. Fermanagh, on isl. betw. Upper and Lower Lough Erne; pop., 5,000.

**Ennius**, Quintus (239-170 B.C.), Rom. epic poet, a founder of Latin literature. Some fragments are extant of his *Annales*, an epic of early Rom. hist. in 18 books.

**Ennui** (Fr.), boredom.

**Enoch**, (O.T.) son of Jared and father of Methuselah; 7th in descent from Adam; translated to heaven at age of 365. **Books of E.**, apocr. writings attribtd. to above.

**Ens**, (Lat.) the abstract concept of being, in contradistinction to *entity*, i.e., to an object conceived of as having existence.

**Ensemble**, (mus.) company of players; united singing by soloists and chorus, with orchestra; quality of playing or singing together with common understanding.

**Ensign**, (milit. and naval) 1) formerly, a probationer for rank of officer; entrusted with the colours; 2) the colour or flag itself, esp. the *White* (Navy), *Blue* (R.N. Reserve) and *Red E.* (Army and genrl. use), having the field of the colour with the Union Jack in top corner next to staff. 3) 2nd Lieut. in H.M. Foot Guards. 4) Sub-lieut. in the U.S. Navy.

**Ensor**, James, (1860- ), Belg. painter.

**Enstatite** (mineral), silicate of magnesia, dark green orthorhombic crystals, first found in Norway.

**Entablature**, (archit.) that part in the order (*q.v.*) or style of archit. carried by column (*q.v.*); consists of 1) *architrave*, surmounted by 2) *fricze*, or *fascia*, and 3) *cornice*.

**Entail**, inheritable property in land wh. cannot be disposed of, but is to be handed down. In Eng., since Law of Property Act (1925), E. can only be effected thr. a trust.

**Entasis**, (archit.) swelling towards the middle of the shaft of a column.

**Entebbe**, cap. of Uganda, East Africa, on L. Victoria; cotton.

**Entelechy**, perfect actualization or realization of a potentiality; product of the Aristotelian principle of energy. Thus, the soul (*entelechy*) is the goal or real meaning of the body (*potentiality*).

**Entente** (Fr.), "understanding" alliance.

**E. cordiale**, "cordial understanding" formed in 1904 betw. Gt. Brit. and France; during the World War, used by the Germans as a gen. term for the Allied and Associated Powers. **Little Entente** (since the War): Czechoslovakia, Poland, Rumania, and Yugoslavia.

**Enteric fever**: see TYPHOID FEVER.

**Enteritis**, inflammation of the intestine.

**Enteroptosis**: see VISCEROPTOSIS.

**Entertainments tax**: see TAXATION.

**Entomology**, scientific study and classification of insects.

**Entozoa**, invertebrate animals, generally of parasitic habit, living in the intestines of higher animals.

**Entrecôte** (Fr.), beefsteak, cut from between the ribs.

**Entre deux vins** (Fr.), "between two wines"; half drunk.

**Entre Minho e Douro**, prov. of Portugal, 2,790 sq. m., on coast at extreme N.; pop. 1,419,000; chf. tn., Oporto.

**Entre nous** (Fr.), between ourselves.

**Entre Rios**, prov. of Argentine Rep. (29,240 sq.m.); cap., Paraná.

**Entrée** (Fr.), right of entrance; subsidiary dish served betw. two principal courses, usually after the fish, at dinner.

**Entrepôt** (Fr.), bonded warehouse.

**Entresol**, intermediate story of a building.

**Entropy**, (phys.) property of a body; change in E. of a body is defined as the gain or loss of heat divd. by absolute temp.; a factor of grt. imp. in scient. and tech. calculations in connec. with heat engines.

**Ent. Sta. Hall**, abbr. Entered at Stationers' Hall.

**Enuresis**, incontinence of urine (*q.v.*).

**Envelope**, 1) sheath, cover, esp. for letter. 2) (Math.) Curve or surface to wh. another curve or surface is invariably tangent. 3) (Aer.) Bag for holding gas in balloon or airship, or for enclosing smaller gas containers.

**Enver Pasha** (1881-1922), Turk. statesm. and gen., leader of Young Turks; c.-in-c. agst. Italy in Tripoli (1911); army commdr., 1914; killed while leading abortive insurrection agst. Soviet Govt. in Russ. Turkestan.

**Enzeli**: see PAHLAVI.

**Enzio** (c. 1220-72), natural s. of Emp. Frederick II; thr. marriage became titular Kg. of Sardinia, 1238; never reigned; a prisoner to Bologna, 1249 till death.

**Enzyme**: see FERMENT.

**Eoanthropus**: see PILTDOWN SKULL.

**Eocene**, (geol.) earliest division of Tertiary Period; see GEOLOGICAL FORMATIONS.

**Eolith**, flint chipped by human agency referred to Pre-Chellean Culture. **Eolithic Period**, (archaeol.) "Dawn of the Stone Age," designation (not universally accepted) for the beginning of the Palaeolithic Period (*q.v.*).

**Eon de Beaumont**, Charles G. T. (1728-1810), known as the "Chevalier d'Eon"; Fr. diplomat and secret agent of Louis XV; so successfully assumed feminine disguise that his sex became a matter of dispute. Hence **Eonism**, psychol. term for impulse on part of men to clothe themselves as women.

**Eos** (Rom., *Aurora*), in Gr. myth., personification of dawn.

**Eosin**: see FLUORESCEN.

**Eosine**, compound of carbon, hydrogen, oxygen and bromine; red coal-tar dye used for wool and silk.

**Eothen**, account of travels in the East by Kinglake (*q.v.*), 1844, by route including

Serbia, Constantinople, Smyrna, the Aegean, Palestine, Egypt.

**Epact**, 1) excess of solar year over 12 lunar months. 2) Age, in days, of moon on 1st day of year.

**Epaminondas** (c. 418-362 B.C.), Theban gen. and statesm.; deftd. Spartans at Leuctra, 371 B.C., overthrowing their predominance in the Peloponnese.

**Eparch**, gov. of province, in both Byzantium and mod. Greece. Also bp. of Orthodox Church.

**Epaulette**, naval or milit. shoulder-ornament.

**Épée**, (fencing) heavy kind of foil (*q.v.*); in *E.-fencing* a hit on any part of the body scores a point.

**Épernay**, tn. in dépt. Marne, France; pop., 20,500; centre of champagne production.

**Ephebi**, *Epheboi*, in anc. Greece those just entering man's estate; youths aged 18-20.

**Ephemera**, the may-fly (*q.v.*).

**Ephemeral**, lasting one day only, transitory.

**Ephemeris**, (astron.) calendar or almanac; table giving positions of a celestial body on successive days.

**Ephesians**, **Epistle to the** (N.T.), written by Paul during 1st imprisonment; deals with history and destiny of Christianity.

**Ephesus**, anc. Ionian city on W. coast of Asia Minor, with famous Temple of Artemis, fndd. 6th, burnt and rebuilt 4th cent. B.C.; destr. A.D. 262. *Ayasuluk* (sm. vill.) is on site. **Council of E.**, 3rd general council, 431. Defined the dogma that Mary is the Mother of God, thus condemning the *Nestorian* heresy (*q.v.*).

**Epialtes**, 1) (fl. 480 B.C.), Gr. traitor; betrayed Leonidas to Persians at Thermopylae (*q.v.*); 2) (d.-457 B.C.), Gr. statesm.; with *Pericles* (*q.v.*) establd. democr. govt. in Athens.

**Ephod**, sacred vestment worn by Jewish high priest, and later by other priests, with "breastplate" containing *urim* and *thummim* (*q.v.*).

**Ephors**, in anc. Sparta, body of five magistrates, having administrative and judicial powers.

**Ephraim**, (O.T.), 2nd son of Joseph. Tribe of E. headed secession of 10 tribes under Jeroboam.

**Epic**, poem of semi-dramatic character narrating series of heroic achievements as poetic whole, coloured by personality of narrator; 2 main types: 1) *national* or *popular*, e.g., *Iliad* (*q.v.*), *Mahabharata* (*q.v.*), *Nibelungenlied* (*q.v.*); 2) *literary*, e.g., *Aeneid* (*q.v.*), *Jerusalem Liberata* (*q.v.*), *Paradise Lost* (*q.v.*).

**Epictetus**, (1st cent. A.D.), Gr. Stoic philosopher. His maxims collected in *En-*

*chiridion* and *Commentaries* of his pupil Arrian (*q.v.*); taught that freedom and contentment were highest goal of human desire and that unavoidable evil was only apparent.

**Epicurus**, (341-270 B.C.), Gr. philos.; fndd. Epicurean school; taught materialistic view of life, and that the highest good consisted in physical and mental happiness obtainable by satisfaction of some desires and suppression of others.

**Epicyclic gear**: see PLANE-TARY GEAR.

**Epidauros**, in anc. times, seapt. on E. coast of Argolis, Greece; flourishing 600 B.C.; Temple of Asklepios, health resort.



Epicurus

**Epidemic**, a prevailing disease, one that affects a large number of persons at the same time: cf. ENDEMIC.

**Epidermis**, outer skin.

**Epidiascope**, apparatus for projecting pictures or objects on to screens directly, without use of photographic slides.

**Epididymis**, (anat.) convoluted tube leading from testicle to vas deferens (*q.v.*) of spermatic cord.

**Epidot**, (mineral) a silicate of calcium, alumin. and iron,  $\text{Ca}_2(\text{AlOH})(\text{Al}, \text{Fe})_2(\text{SiO})_4$ , with crystallisation in the monoclinic system; a rock-forming mineral found in metamorphic schistose rocks and crystalline limestones; varies in colour and in degree of transparency; dark green transparent variety has been cut as a gemstone.

**Epiglottis**, cartilage wh. closes the windpipe during swallowing, and thus prevents solid or liquid food from entering the respiratory passages.

**Epigram** (Gr.), inscriptn. usually on tombs, and orig. composed in distichs (*q.v.*); short, witty, or sarcastic poem; pointed saying.

**Epigraphy**, science of study of inscriptions on anc. monuments.

**Epilepsy**, disease characterised by sudden fits or convulsions. The patient falls without warning and this is followed by spasmodic contractions of the muscles during which the tongue may be bitten; treated by giving bromides or luminal.

**Epilogue**, concluding part of a literary, dramatic, or musical composition.

**Epimenides**, legend. prophet of Crete. Inventor of the plough; fell into a sleep of 57 years. *The Awakening of Epimenides*, by Goethe.

**Epimetheus**, (Gr. myth.) brother of Prometheus; ignoring his brother's advice, married Pandora (*q.v.*).

**Épinal**, cap. dépt. Vosges, France; pop., 26,850; fortress.

**Epipalaeolithic Period** (archaeol.): see MESOLITHIC PERIOD.

**Epiphany** (Gr., "manifestation"), Christian fest. commem. Adoration of the Magi before the infant Christ; observ. Jan. 6th, i.e., 12 days after Christmas, hence known also as *Twelfth Night*.

**Epiphora**, (rhet.) repetition of a word at end of several sentences, for sake of emphasis.

**Epiphysis**, the growing end of a bone; attached, at first, to the rest of bone by cartilage, wh. is later replaced by bone. *E. cerebri*, pineal gland (q.v.).

**Epiphytes**, (bot.) plants wh. grow on others, but not parasitically; air plants, e.g., cert. orchids.

**Epirus**, prov. of Greece, on Ionian Sea; 3,350 sq.m.; pop., 312,650; cap., *Janina*, pop., 20,500.

**Episcopalian**, member of an Episcopal Ch.; one who believes that bps. are essential; esp. a member of the C. of E., in contrast with Presbyterian or Nonconformist bodies.

**Episode**, (lit.) in Gr. drama corresponded to modern "act," denoting portion between 2 choral odes; hence digression not causally connected with sequence of story.

**Epistaxis**, (med.) bleeding from the nose; may be symptom of haemophilia (q.v.) or high blood-pressure. In severe cases, nostrils should be plugged.

**Epistemology**: see COGNITION; ONTOLOGY.

**Epistle** (Gr.), a letter, esp. one of the letters of St. Paul, St. Peter, etc., included in the N.T.; portion of one of these appointed to be read in ch. on a partic. day. **Epistle side**, the (south) side of the altar from wh. the E. is read during Mass.

**Epistolae Obscurorum Virorum**, humanist polemical treatise by Ger. "unknown men" (*virī obscuri*) agst. the Papacy (1515).

**Epitaph**, inscription on a tomb or cenotaph with ref. to the person buried or commemorated.

**Epithalamium**, a marriage hymn, anc. form of poetic composition in celebration of the nuptial night; see esp. the 18th Idyll of Theocritus, the 41st and 42nd Odes of Catullus, and the Epithalamia by Spenser, Herrick, and Shelley. *Prothalamium*, a similar poem in anticipatory celebration of an approaching marriage.

**Epithelium**, 1) (biol.) cellular tissue forming superficial layer of skin and mucous membrane. 2) (Bot.) Thin lining of inner cavities of plants.

**Epithet**, phrase or word used adjectivally to express some quality of its object, e.g., "golden fleece", "the myriad-minded Shakespeare".

**Epitome**, brief summary, abridgment, or abstract of composition.

**E pluribus unum** (Lat.), one out of many; motto of the U.S.A.

**Epode**, passage of Gr. lyric poetry following strophe (q.v.) and antistrophe; 2nd line of distich (q.v.).

**Epping**, tn., Essex, Eng., 16 m. N.E. London; pop., 5,000. **E. Forest**, remains (5,600 ac.) anc. forest preserved by the City of London for public use.

**Eppur si muove** (e pur si muove) (It.), and yet it does move; phrase attrib. to Galileo, after forced recantation of Copernican theory of the universe.

**Epsom**, tn. in Surrey, Eng.; pop., 27,100; sulphate of magnesia springs, from which *E. Salts* were formerly made. Famous race-course, on which the "Derby" and the "Oaks" are run. **E. salts**, common name for magnesium sulphate,  $MgSO_4 \cdot 7H_2O$ . Used as purgative medicinally; also added to hot baths to promote perspiration.

**Epstein**, Jacob (1880- ), Russ.-Pol. sculptor; works chiefly in Eng.; *W. H. Hudson Memorial* (Rima), Hyde Park, 1925; *Genesis*, 1931; series of bronze portraits.



Jacob Epstein

**Equation**, mathematical equalization of values: **Identical e.**, either number equation,  $2.6 = 3.4$ , or algebraical equation,  $a+b = c+d$  with any numerical values; **Simple e.**,  $x+7 = 12$ , only correct when  $x = 5$ ; concept of the simple equation is algebraic; *E.* depends on the number of the unknown quantities (equation with 1, 2, 3, etc., unknowns) and on the power of the unknowns (equation of the first, second and third degree). The values of the *Es.* must correspond with the values of the unknowns, otherwise solution is impossible.

**Equation of time**, the difference betw. mean solar time as indicated by clock and apparent solar time as shown by sundial. See SOLAR TIME.

**Equator**, of the earth; imaginary line round the earth,  $90^\circ$  distant from the poles at all points; divides earth into N. and S. hemispheres; Cf. EQUINOX. **Celestial e.**: see EQUINOCTIAL.

**Equatorial**, or **e. telescope**: see ASTRONOMY.

**Equerry**, officer attached to a Royal household; orig., one in charge of horses.

**Equilibrist**, an acrobat (q.v.).

**Equilibrium**, (phys.) state of balance between opposing forces. *Stable E.*, when orig. state restores itself after being slightly disturbed by extraneous interference; e.g., a ball resting in a cup. *Unstable E.*, when orig. state is disturbed slightly and not restored, but a series of changes take place, e.g., a ball balanced on a point. *Neutral E.*,

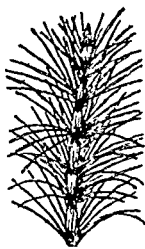
disturbance causes slight propor. change and nothing more, e.g., ball on billiard table. *Kinetic or statistical E.*, when a constant state is maintained by balance of gain and loss, e.g., pop. of a country when no. of births equal no. of deaths.

**Equinoctial**, or **celestial Equator**, (astron.) great circle of heavens formed by producing plane of terrestrial Equator (*q.v.*) to meet celestial sphere; equi-distant from celest. poles; divides celest. sphere into N. and S. hemispheres. **E. gales**, storms usu. coinciding with periods of the Equinox. **E. line**, the Equator (*q.v.*).

**Equinoxes**, (astron.) points of intersection of ecliptic (*q.v.*) with the equinoctial; termed *vernal* or *autumnal* according as sun appears to cross equinoctial twds. the N. or S., c. March 21st and Sept. 23rd, respectively, at wh. times day and night are of equal duration.

**Equipage**, furniture; esp. f. and supplies of vessel or army, body of troops or single soldier; equipment; accoutrements; attendance, retinue.

**Equisetum**, (*pteridophyta*), (bot.) var. of plant known as the horsetails, with a creeping rootstock and hollow jointed stems. In carboniferous age they grew in form of large trees and formed imp. part of vegetation; now, only a few stunted varieties, gen. in marshy ground and N. temperate zones. *Equisetum arvense*, or shave-grass, found on dry ground; its ashes contain silicon; used in cleaning and polishing.



Equisetum, or Great Horsetail

**Equity**, word usu. applied to system of Eng. law administd. in Chancery Division of the courts and orig. intended to remedy defects in common law. Till the 2nd half of 19th cent. (1873) the two systems of law were distinct and administd. by sep. courts. Now they are fused. **E. of redemption**, right of a mortgagor or borrower to get back his property, conveyed as a security, from mortgagee or lender, though time for repayment of loan has strictly passed.

**Equivalent**, equal in value. In chem., *E. weight* = atomic or molecular weight divided by its valency, the amount of any element wh. will combine with unit weight of hydrogen. See VALENCY.

**E. R.**, abbr., 1) East Riding of Yorkshire; 2) *Edwardus Rex* (Lat.), King Edward.

**Er**, (chem.) symbol of erbium.

**Era**, an epoch or period beginning from a fixed point of time to which subsequent or preceding years are referred in their enumeration; invariably determined by some historical or legendary event of supreme importance to the nation or nations concerned.

Thus the Christian Era starts from the birth of Christ; the Jewish from the creation of the world (3761 B.C.); the era of the Olympiads from the institution of the Olympic Games (776 B.C.); the Roman Era from the foundation of Rome (753 B.C.); the Mohammedan from the Hejira (A.D. 622).

**Erasmus**, Desiderius (c. 1467-1536), Dut. humanist and man of letters; *Praise of Folly*; *Colloquies*.



Erasmus of Rotterdam

**Erastianism**, the theory that the Church is subservient to the State; takes its name from Thos. Erastus (1524-83), a Ger.-Swiss theologian.

**Erato**, muse of Erotic and Lyric Poetry.

**Erbium**, (chem.) sym. Er; at. wt. 167.64; one of rare earth elements.

**Erckmann-Chatrian**, composite literary signature of 2 Fr. authors: **Émile Erckmann** (1822-99), **Alexandre Chatrian** (1826-90), joint authors of novels and plays; *L'Ami Fritz*, novel, 1864; play, 1876.

**Erebus**, 1) (myth.) son of Chaos; personification of darkness. 2) Active Antarctic volcano on Ross Isl., off Victoria Land, 13,350 ft. high; climbed in 1908 by Shackleton.

**Erechtheum**, **Erechtheion**, temple (5th cent. B.C.) on Acropolis at Athens; dedicated to Athena and Erechtheus (legend. Kg. of Athens); portico of Caryatides (*q.v.*).

**Eregli**, Black Sea port, Turkey; pop., 7,500; coal mines.

**Erewhon**, satire by Samuel Butler (*q.v.*), 1872, describing experiences of a traveller who discovers an imaginary community in New Zealand. Its sequel, *E. Revisited*, describes visit paid by son of original discoverer.

**Erfurt**, 1) distr. of Thuringia, Pruss., Saxony (1,365 sq.m.), and 2) its cap. (pop., 141,800) on Riv. Gera; many factories; mkt. gardening. Seat of a bp., 742-55; Hanse Town, 14th-15th cents.; seat of a univ., 1392-1816; Prussian since 1802. *Congress of E.*, betw. Czar Alexander I and Napoleon, 1808 (renewal of Treaty of Tilsit).

**Erg**, unit of measurement applied to work (*q.v.*); amount of energy reqd. to move a body 1 cm. agst. resistance of 1 dyne (force which, appld. to 1 gram for 1 sec., would give it veloc. of 1 cm. per second).

**Ergosterol**, sterol present as impurity in cholesterol (*q.v.*), and obtainable from yeast and other substances; when irradiated by a mercury vapour lamp yields a prod. rich in vitamin D (*q.v.*).

**Ergot**, a drug prepared from a fungus infecting rye; contains number of complex

substances, chief of wh. is ergotoxine, used in midwifery to stimulate expulsive action of uterus and check haemorrhage following birth. Regular consumption of infected grain causes painful, disfiguring and dangerous disease known as **ergotism**, at one time prevalent in Russia and N. and centr. Eur., but now, thanks to improved methods of cultivation, of infrequent occurrence.

**Ericaceae**, (bot.) large family of plants wh. includes azalea, rhododendron (*qq.v.*), etc.; also **Erica**, or heath (*q.v.*).

**Eridanus**, 1) (Gr. myth.) large riv. (Rhône or Po) connected with myth of Phaëton. 2) (Astron.) Constell. containing star Achernar; see PL. ASTRONOMY, S.C.H., G and H.

**Erie**, port on Lake E., Pennsylvania, U.S.A.; pop., 115,950; heavy machinery, domestic appliances; distributing centre for wood-pulp, fruit, grain, coal. **Lake E.**, one of the five great lakes on the United States-Canadian frontier (see CANADA); area, 10,000 sq.m.; linked to Lake Ontario by the Welland Canal and to Albany and New York by the *E. Canal* (240 m. long), the most important canal in N. America. **E. Railroad**, U.S.A., operates between New York, Chicago, and district: 2,316 miles.

**Erigena**, Johannes Scotus (c. 815-c. 877), Ir. philos. and theologian. Auth., *De Divisioni Naturae*.

**Erlin**, anc. and poetical name for Ireland (*q.v.*).

**Erlines**: see EUMENIDES.

**Eris**, (Gr. myth.) goddess of Discord; threw golden *Apple of Discord*, inscribed "To the Fairest," among guests at wedding of Peleus and Thetis. See PARIS.

**Eristics**, (Gr.) art of controversial disputation.

**Erlith**, urb. dist., Kent, Eng., 14 m. E.S.E. of London on Riv. Thames; engineering, gunpowder; pop., 32,800.

**Eritrea**, Ital. colony (45,940 sq.m.) on S.W. coast of Red Sea, formerly part of Abyssinia. Cool highlands in N., trop. plains in S.; exports: coffee, skins. Pop., 393,000 (4,300 Ital.). Cap., *Asmara* (pop., 150,000; 3,500 Europeans).

**Erlivan**, cap. of Armenian S.S.R., and of admin. dist. (1,565 sq.m.; pop., 176,819); lies in mountain valley 3,400 ft. abv. sea-lvl.; pop., 64,625; vineyards, orchards (peaches), and kitchen-gardens.

**Erlangen**, tn. in Bavaria; pop., 29,600; on Riv. Regnitz and Main-Danube Canal; univ. since 1743; brewery. Hohenzollern fief, 1416; Bav., 1810.

**Erlau**, tn. in Hungary, 62 m. N.E. of Budapest; pop., 29,200; tobacco, wine, candles. Hung. name, *Eger*.

**Erlking**, in Dan. legend, king of elves; ballad by Goethe, set to mus. by Schubert.

**Ermine**, name given to the stoat when in its white winter pelage; small, carnivorous mammal common to Europe, N. and Centr. Asia, and N. Amer.; fur brown in summer, changing in winter to pure white with black-tipped tail in Northern range, where winter is severe.



Ermine

**Ermine Street**, name now given to line of Roman roads which connected London, Lincoln, and York; followed partly by Great North Road.

**Ernani**, opera by Verdi (*q.v.*) (1844).

**Erne**, riv. (72 m.) I.F.S. and N. Ire.; rises in Lough Gowna (Co. Longford); flows N. through L. Oughter (Co. Cavan), **Upper Lough E.** (13 m. by 4 m.; Co. Fermanagh), and **Lough E.** (20 m. by 2-5 m.); whence it discharges W. into Donegal Bay (Co. Donegal).

**Erne**, altern. name of white-tailed sea-eagle.

**Ernestine line**, elder line of House of Saxony, desc. from Ernest, Elector of S. (d. 1486); dominions and elect. dignity passed to Albertine line (*q.v.*), 1547. Successors of E. line, grand-dukes of Saxe-Weimar, dukes of Saxe-Meiningen, Saxe-Altenburg, Saxe-Coburg-Gotha.

**Eroica**, Beethoven's Third Symphony, dedicated to Napoleon I.

**Eros**, 1) (Gr. myth.) god of love. 2) (Astron.) Minor planet, discovered 1898, unique among planetoids (*q.v.*) in having orbit betw. those of Earth and Mars; when in opposition to sun, an important factor in calculating distance betw. earth and sun.

**Erosion**, (geol.) wearing away and levelling of surface formations of the earth by means of water, wind, ice, etc.; factor in formation of valleys.

**Erotic**, qualification implying an unbalanced amativeness. **Erotics**, science and art of love.

**Erratic boulders**, (geol.) rocks that have been transported from their orig. position by natural forces, e.g., glaciers, etc.; found in *boulder clay*, the deposit of glaciers of the Ice Age (*q.v.*).

**Er Riyadh**, chief tn. of Nejd, Arabia; pop., 20,000; oasis; see HEJAZ: NEJD.

**Erse**, a corruption of "Irish," designating that branch of the Celtic group of languages spoken in Ireland. It has received a largely artificial revival since the creation of the Irish Free State. The name sometimes includes also the Gaelic spoken in the Scot. Highlands.

**Ersine**, Thos. E., 1st bn. (1750-1823), Brit. lawyer and orator; attained celebrity with his pleading in support of charges of corruption agnst. Ld. Sandwich; defended Stockdale (1789), Thos. Paine (1792), etc.;

M.P. for Portsmouth, 1790-1806; Ld. Chancellor, 1806-07.

**Eruption**, 1) (geol.) outburst of ashes, gas, lava, etc., from a volcano; of water from a geyser (*q.v.*), etc. 2) (Med.) Rash, outbreak of pustules, etc., upon the skin; breaking through of teeth.

**Erysipelas**, contagious disease caused by streptococcal infection of skin (usu. of face); characterized by high fever and tendency of the inflammation to spread; may form blisters. A notifiable disease (*q.v.*).

**Erythema**, reddening of the skin, due to various causes, e.g., excessive exposure to sunlight or to bacterial infection.

**Erythrocytes**, red blood corpuscles.

**Erzberger**, Matthias (1875-1921), Ger. pol. econ. and statesm.; Sec. of State, 1918, in govt. of Pr. Max of Baden; ch. of Ger. Armistice Commission; Min. of Finance, 1919-20; transferred control of State rlys. and direct taxation to centr. govt.

**Erzerum**, 1) vilayet in Turkish Armenia (10,170 sq.m.; pop., 270,950). 2) Fortified tn., cap. of vila., 5,760 ft. abv. sea-lvl.; pop., 30,850; caravan trade centre.

**Erzgebirge**, mtn. range betw. Saxony and Bohemia (*Keilberg*, 4,850 ft.); dense forests, thickly pop.; rich in minerals; indus. incl. embroidery and wood and metal goods.

**Esarhaddon** (d. 668 B.C.), Kg. of Assyria; succeeded his father, Sennacherib; rebuilt city of Babylon; conq. Egypt; blt. grt. palace at Nineveh; abdic. in favour of his son, Asurbanipal.

**Esau**, **Edom**, (O.T.) elder son of Isaac and Rebecca; sold birthright to bro. Jacob for mess of pottage (*q.v.*); cf. **EDOM**.

**Esbjerg**, seapt. in Denmark, on North Sea, S.W. Jutland; pop., 24,150; exports dairy prod. to England.

**Escalator**, endless, moving staircase used in underground railways, large stores, etc., in place of lifts.

**Escallonia**, genus of S. Amer. shrub bearing clusters of white or red flowers.

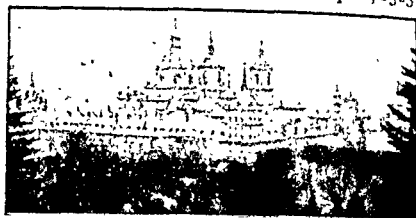
**Escapement**, in a clock (*q.v.*), fastest wheel of a clock train; wh. is allowed to move (escape) in jumps as the pendulum or balance-wheel swings; reacts on latter and gives them impulses at each swing.

**EscarPMENT**, (fort.), scarp, abrupt slope on outer side of rampart.

**Escaut**: see **SCHeldt**.

**Eschatology**, branch of theology dealing th. Judgment, Heaven, and Hell ("Last Things"), and the final mankind.

**Escorial**, **Escurial**, palace and monastery near Madrid, built by Philip II, 1563-



Escorial

86; mausoleum of Span. kings; famous library and art gallery (Titian, Velasquez, El Greco).

**Escudo**, 1) obsolete Span. silver coin, equal to 10 reals (*q.v.*). 2) Portug. monetary unit, equal to abt. 4s. 5d. (\$1.0805) at par. 3) Gold or silver coin used in S. Amer. States wh. were formerly Span. and Portug. dependencies, value at par being: *Bolivia* \$1.87 (7s. 6d.); *Chile* and *Repubs. of Centr. America*, \$1.84 (7s. 7d.); *Ecuador*, \$1.78 to \$1.95 (7s. 4d.-8s. 6½d.); *Mexico*, \$1.96 (8s. 1d.); *Peru*, \$1.93 (7s. 11½d.).

**Escutcheon**, **scocheon** (heraldry), a shield borne as a charge upon the shield itself.

**Esdrae**, **Books of**, 2 books of Apoc. attribtd. to Ezra; **Ist. E.**, written betw. 100 B.C. and A.D. 100, relates return of Jews from Babylon; **IInd. E.** (A.D. 90-96), apocalyptic; divided into 7 visions.

**Esher**, res. tn., Surrey, on Riv. Mole, 15 m. S.W. London, in urb. dist. of Esher and the Dittons (pop., 17,000); gate-house of Esher Place (15th cent.; occupied by Card. Wolsey, 1529); Claremont Palace, built by Clive (1769); race-course at Sandown Park.

**Esk**, 1) riv. (24 m.), N. Riding, Yorks; flowing from Cleveland Hills into N. Sea at Whitby. 2) Riv. (18 m.) W. Cumberland, flowing from Esk House (betw. Scafell Pike and Bow Fell) through **Eskdale** into Irish Sea at Ravenglass. 3) Riv. (40 m.), E. Dumfriessh., Scotland; formed by confluence of *Black* and *White Esk* on **Eskdalemuir**; flows into Solway Firth 2 m. S.E. of Gretna.

**Eskar**, **Esker**, (geol.) deposit of gravel left by stream coming from glacier.

**Eskilstuna**, tn. in prov. of Södermanland, Sweden; pop., 32,275; guns and cutlery.

**Eskimo**, Mongolian-Indian race in Greenland and on N. coast of America (c. 40,000); fishermen and hunters of seals, walruses, and reindeer, flesh of which often eaten raw; communistic; see **LANGUAGE SURVEY**, *Alcut-Eskimo*. **E. dog**, large, shaggy wolf-like breed used as sledge-dogs in N. Canada, etc.



Eskimo Woman

**Eski-Shehr**, 1) vil. in W. Anatolia,

Turkey, (5,150 sq.m.; pop., 154,200). 2) Cap. of vil.; pop., 32,125; junction of Anatolian Rly. (to Angora); meerschmum deposits.

**Esmarch**, elastic rubber band wound round the limb to be amputated, so as to drive the blood away from it; appliance named after inventor, F. von Esmarch, Ger. surgeon (1823-1908).

**Esmeraldas**, maritime prov., N. Ecuador (c. 5,645 sq.m.; pop., 35,000), and its cap. (pop., 6,000), a naval port.

**Esoteric**, term applied to doctrines, rites, etc., designed only for the initiated. Ant.: *Exoteric*.

**Espalier**, (hortic.) barred or wired frame along wh. climbing plants or trees are trained; esp. fruit trees; often placed against a wall; fruit is thus fully exposed to sun and ripens more quickly.

**Esparto grass**, *Stipa tenacissima*, N. African and Spanish grass used in paper-making; fibres also made into cordage, etc.

**Esperanto**, univers. auxil. lang. composed of word-roots taken from princ. European langs.; spellg. phonetic; invented by Dr. Zamenhof (1859-1917).

**Espèglerie** (Fr.), attractive roguishness, frolicking, bantering.

**Esprito Santo**, maritime prov. of Brazil (c. 17,380 sq.m.; pop., 500,000); cap., *Victoria* (pop., 22,000), a naval port. Plantations, forests, minerals (gold, iron, etc.).

**Esplanade**, level open space in front of bldgs.; a promenade, esp. along a sea-front.

**Esplandian**, Span. hero of chivalric romance-fiction; son of Amadis (*q.v.*).

**Espressivo**, (mus.) with expression.

**Esprit** (Fr.), spirit, wit. **E. de corps**, loyalty and devotion to one's fellows, craft, undertakings, etc.; the spirit of comradeship.

**Esq.**, abbr. esquire, esp. as a complimentary adjunct to a man's name in addresses of letters, etc.

**Esquiline**, one of Seven Hills of Rome.

**Esquimault**, seapt. and naval base, in S. of Vancouver Isl., B.C., adjoining Victoria.

**Esquire**, orig., attendant on a knight. Later used by all gentlemen below knightly rank, though perhaps strictly applicable only to those entitled to coats-of-arms or dignified by special callings, *e.g.*, military and naval officers and barristers.

**Essad** (1863-1920), Turkish pasha; Albanian Min. of War and Interior under

Pr. William of Wied; pres. Albania, deleg. Paris, 1914-16; killed in Paris by an Albanian.

**Essay**, prose composition of moderate length, limited to a single subject.

**Esseg**: see OSIEK.

**Essen, Essen-Ruhr**, chf. tn. of Ruhr area, in Rhine Prov., Prussia; pop., 648,530; Krupp steel-works; engin., rolling mills. Occupd. by French, 1923-25.

**Essence**, concentrated extract of active ingredients of nat. products, used to impart special properties (smell, taste, colour) to foodstuffs, etc.; *e.g.*, solution of lemon oil in alcohol; many essences may be prep. synthetically.

**Essenes**, sect of 1st cent. B.C.-1st cent. A.D. Palestinian Jews who practised baptism and lived under strict monastic rule.

**Essential (ethereal, volatile) oils**, aromatic volatile oils, mostly hydrocarbons, gen. obtd. by distilling plant products with steam, *e.g.* rose petals produce attar of roses, and cloves, oil of cloves.

**Essex**, Robert Devereux, 2nd E. of (1567-1601), favourite of Qn. Elizabeth; exec. for high treason.

**Essex**, marit. co. in E. Eng., orig. kingd. of E. Saxons; area, 1,542 sq.m.; pop., 1,755,200. Flat or undulating, well wooded (*Epping Forest*); agric.; oyster fisheries; breweries; docks at Tilbury; Harwich a Continental port; incl. large indus. area (E. Ham, Barking, etc.) on borders of London. Co. tn. *Chelmsford*.

**Essig**, Hermann (1878-1918), Ger. playwright: *Cattle Trade*.

**Established Church**, ch. holding spec. posit., *e.g.*, exclusive performance of State relig. ceremonial; exclusive or special rights over marriage, educ., etc., and usu. holding special endowments. Ch. of Eng. has Episc. govt.; Ch. of Scot. is Presbyterian. No other est. ch. in Brit. Emp. See **DISESTABLISHMENT**.

**Estate**, 1) (polit.) social or polit. group and class; the 3 Es. of the realm: *Lords Spiritual, Lords Temporal and Commons*.

**Third e.**, name applied to Fr. bourgeoisie prior to Rev.: **Fourth e.**, phrase indicating factor in State outside the 3 Es.; applied in 18th cent. to the mob; now sometimes applied satirically to the Press. 2) (Law), Of a dec. person: 1) property; 2) interest in property either for life or a period. **E. duties**, taxes levied (in Gt. Brit. since 1894) on property passing to another on death of former owner, incl., in certain cases, gifts made during life; rate varies with amt. of property, from 1 to 50 per cent. See **DEATH DUTIES**.

**Este**, ancient princely family of Italy, fndd. by Alberto Azzo II, who m. sister of Welf (Guelph) III, Duke of Carinthia; after Azzo's death in 1097, fam. split into Ger. and It. branches. *Former*: desc. from Welf IV,



Espaliers



Duke of Bavaria (1070), incl. Este-Guelphs of Brunswick and Hanover, and Eng. Guelph dynasty. *Latter*: fndd. by Falco I (1060-1135), bro. of Welf; became heads of Guelph (*q.v.*) party. **Beatrice d'E.** (1475-97), Duchess of Milan, noted diplomat and patroness of arts and letters. **Alfonso I** (1486-1535), Duke of Ferrara, m. Lucrezia Borgia (*q.v.*). Male line extinct on death, in 1803, of **Ercolo III.**

**Ester**, (chem.) compound of an acid with an organic base (alcohol); Es. of mineral acids, e.g., chloroform ( $\text{CHCl}_3$ ), ethyl chloride ( $\text{C}_2\text{H}_5\text{Cl}$ ), ethyl nitrate ( $\text{C}_2\text{H}_5\text{NO}_3$ ), vary more in properties than those of organic acids, wh. are usually neutral liquids of pleasant odour, if any. Of great economic importance; most flavouring substances are Es., e.g., amyl acetate ( $\text{CH}_3\text{COOC}_5\text{H}_{11}$ ), "pear-drop" flavour; fats are glycerin Es. of fatty acids.

**Esterházy**, noble Magyar family div. into several branches. **E. de Galántha**, Prince Nicholas (1765-1833), diplomat, refused Hung. crown, 1809.

**Esther**, 1) (O.T.) Jewish wife of Ahasuerus (*q.v.*); saved Jews of Persia from massacre planned by Haman. **Book of E.**, relates her story. 2) (Mus.) Oratorio by Handel (*q.v.*), 1720; enlarged Eng. version, 1733.

**Esths**, Finnish-Ugrian race (1 million), repub. of Esthonia, on Baltic; Finno-Ugrian language; Lutherans.

**Eston**, urb. dist., N. Riding, Yorks, Eng., 4 m. S.E. of Middlesbrough; ironworks; pop., 31,100.



Estonia

**Estonia, Eesti**, repub. on E. coast Baltic Sea, N. of Latvia, separated wholly from Finland by Gulf of Finland and, partly, from

Russia by Lake Peipus; area, incl. isls. of Vormsö, Dagö, and Oesel, 18,354 sq.m.; pop., 1,115,000 (Esths, Russians, Germans, Swedes; over 75% Lutherans). Surface flat and well wooded; lakes, 898 sq.m.; corn and flax, cattle-breeding, fisheries; industries unimportant; exports (mainly to Gt. Brit.), butter, flax, paper, wood; cap., Tallinn (Reval). Orig. in possession of Livonia, acquired by Teutonic Knights, 1346; Russian, 1721; indept., 1918.

**Estonian**: see LANGUAGE SURVEY, Finno-Ugrian.

**Esto perpetua** (Lat.), "May she last for ever!" dying utterance attrib. to Fra Paolo, referring to Venice.

**Estrambot**, (lit.) class of Fr. mediaeval satirical songs.

**Estremadura**, 1) former prov. of Spain, now divided into prov. Badajoz and Cáceres; betw. Portugal, Castile, and Sierra Morena; barren plains, sheep-breeding. 2) Atlantic prov. of Portugal (6,940 sq.m.), incl. Lisbon; wine, fisheries.

**Estuary**, broad mouth of river, into wh. tide flows, widening out before reaching sea; often, esp. at high tide, practically indistinguishable from sea.

**Étagère** (Fr.), ornamental piece of furniture with shelves; a what-not.

**Et al.**, abbr. *et alii* (Lat.), "and others," or *et alibi* (Lat.), and elsewhere.

**Étaples**, tn., dépt. Pas-de-Calais, France, at estuary of Riv. Canche; pop., 5,900; important. British base-depot during World War.

**Etc.**, abbr. *et cetera* (Lat.), and the rest.

**Etching**, method of engraving on copper, steel, or zinc. The plate is evenly covered with wax on wh. the drawing is made with etching-needle, it is then placed in acid, wh. bites into the exposed parts of plate. After the wax has been removed the plate is covered with a thick ink wh., when wiped from the surface, is left in the depressions; damp paper is then placed in position and impressions obtained by pressure between the steel rollers of a copper-plate press. In *dry-point Etching* the design is made directly on the plate without use of ground or acid. The two methods often used in combination.

**Et ego in Arcadia** (Lat.), I, too, have lived in Arcady; i.e., I also have had my visionary ideals.

**Ethandun, Battle of**, victory of Alfred the Great over the Danes, 878; followed by peace of Wedmore (*q.v.*); battlefield identified with vil. of Edington, Wilts, 6 m. S.E. of Trowbridge.

**Ethane**, (chem.) sym.  $\text{C}_2\text{H}_6$ ; inflammable gas present in petroleum districts; sim. to methane, or "marsh gas" (*q.v.*).

**Ethelbald**, 1) Kg. of Mercia (716-57). 2) Kg. of West Saxons (c. 856-60), ancestor of Matilda, wife of Wm. the Conqueror.



**Ethelbert**, Kg. of Kent (560-616), baptized by St. Augustine, 597; first Christian kg. in England.

**Ethelfleda** (d. c. 918), "The Lady of the Mercians," dau. of Alfred the Great, m. Ethelred, E. of Mercia, leader in struggle against Welsh, Irish, Scots, Norsemen.

**Etheling**, *see* **ÆTHELING**.

**Ethelred I**, Kg. of Wessex and Kent (866-71), deft. Danes (battle of Ashdown, 871); **E. II** "The Unready," Kg. of England (978-1016).

**Ether**, 1) (phys.) substance wh. ancients believed composed the heavenly bodies; now hypothetical medium filling all space (luminiferous E.), primarily regarded as the carrier of light, and later of electric and magnetic effects, since light was shown to be electro-magnetic in nature. No proof of existence of E. can be found, and theory of relativity (*q.v.*) has now superseded belief in a concrete E., which is a necessary assumption only if it is hoped to "explain" nature by a purely mechanical model, in which E. transmits pulls and pushes and wave-motions. 2) (Chem.) Sulphuric ether, ethyl ether ( $C_2H_5O C_2H_5$ ), made by action of sulphuric acid on alcohol; colourless, inflammable liquid, b.p.  $35^{\circ}C$ ; valuable anaesthetic and solvent of oils, fats, resins, iodine, guncotton. Spirit of E. (Hoffman's Drops) contains E. 1, alcohol 3. Only purest E. may be used for narcosis.

**Etheral oils**: *see* **ESSENTIAL OILS**.

**Ethics**, science of moral values; a partic. theory of moral standards and aims by wh. behaviour should be actuated and governed.

**Ethiopia**, 1) anc. name for part of N.E. Africa, bounded on N. by Egy., E. by Red Sea. Indep. Negro tribes, subdued by Egypt, wh. they afterwards conquered (840-650 B.C.). Thereafter indep. kngdm. Cap., *Merawi*; later cap., *Dongola*, taken by Moslems A.D. 652; Christian kngdms. still existing in 14th cent. 2) Abyssinia (*q.v.*). **Ethioplans**, present inhab. of Abyssinia and Nubia.

**Ethiopian Languages**: *see* **LANGUAGE SURVEY**.

**Ethmoid bone**, (anat.) sieve-like, perforated bone-plate at base of skull traversed by olfactory nerve.

**Ethnography**, detailed study of phys. and cultur. characteristics of racial groups.

**Ethnology**, science of comparing, classifying, and generalizing from data of ethnography.

**Et hoc genus omne** (Lat.), and everything of this kind.

**Ethyl**, (chem.) sym.  $C_2H_5$ ; organic radical, present, e.g., in alcohol,  $C_2H_5OH$ , and ether,  $(C_2H_5)_2O$ . **E. chloride**, sym.  $C_2H_5Cl$ , important refrigerant, used in large plants, also for spraying on skin to produce anaesthesia by cold in small surgical operations.

**Ethylene**, olefant gas ( $C_2H_4$ ), pres. in coal gas; colourless, burns with a luminous flame.

**Etiology**, (med.) study of causation of a disease.

**Etiquette**, good behaviour; conformity to rules of professional conduct, espec. in diplomatic relations.

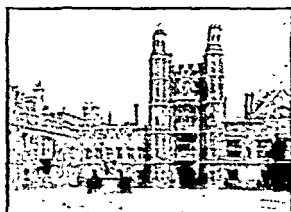
**Etna**, mtn. in Sicily, largest active volcano in Europe; circumference of cone, 90 m.



Mt. Etna

Height varies from 10,780 to 10,900 ft. Crater with steep inner walls, 1,750 ft. in diam. Eruptive craters on flanks of cone. Surrounded by fertile and populous country; vineyards and olive groves.

**Eton**, tn. on Riv. Thames, opp. Windsor; pop., 3,000.



Eton College

**E. College**, public school founded by Henry VI, 1440; prob. the most famous in the world and the *alma mater* of the greatest number of statesmen and national leaders.

**Etruria**, former name of part of N.W. Italy, roughly corresp. to Tuscany and Lazio. Rich and powerful state 8th-6th. cents. B.C.; after long wars, conquered by Rome, 309. **Etruscans**, inhabts. of Etruria, of uncertain but prob. oriental origin; their inscriptions have not yet been deciphered.

**Et sequentia** (Lat.), abbr. *et seq.*, and that which follows.

**Ettrick**, par., S. Selkirksh., Scot., on Riv. Ettrick (32 m.; trib. of the Tweed); birth-place James Hogg, the "Ettrick Shepherd."

**Et tu, Brute** (Lat.), "Thou too, Brutus!" Alleged cry of Julius Caesar on recognizing Brutus among his assassins.

**Etude** (Fr.), study, mus. exercise.

**Étui** (Fr.), case, box, sheath.

**Etymology**, science of the relationship and development of words.

**Everglades**, swamp (5,000 sq.m.), S. Florida, U.S.A., extending 140 m. S. from L. Okeechobee; now being drained.

**Eu**, tn., N.W. France, dépt. Seine-Inférieure, 11 m. N.E. of Dieppe; pop., 6,000. Château of former Orleans princes, dates from c. 1580.

**Eu**, (chem.) symbol of europium.

**Eu.**, abbr., Europe and European.

**Euboea**, prov. of Greece (1,645 sq.m.; pop., 154,450), and largest Gr. island (exc. Crete), in Aegean Sea; joined to mainland by bridges; mountainous and wooded; fertile plains; corn and wine, horticulture, honey, sheep, and goats. Cap., *Chalkis*, pop., 17,300. In anc. times, commerc. power; in 6th cent. B.C., dependency of Athens; 1470-1821, to Turkey.

**Eucalyptus**, myrtaceous tree, native of Australia and Tasmania, cult. in Mediterr. countries; distilled leaves yield an oil, used as an antiseptic and deodorant, as an inhalant in catarrh, etc.



Eucalyptus

**Eucharis**, (bot.) genus of S. Amer. plants of family *Amaryllidaceae*; Amazon Lily (*E. amazonica*) grows to 2 ft. high, having broad leaves and large, handsome white flowers.

**Eucharist** ("Thanksgiving"), Gr. term used for the sacrament of Holy Communion.

**Eucharistic Congress**, international assembly of R.C.s held periodically to promote devotion to the Blessed Sacrament; 1st held at Lille in 1881; London, 1908; Dublin, 1932.

**Euchre**, card-game for 2-4 players with "piquet" pack (*q.v.*), in wh. knave of trumps beats all other cards.

**Eucken**, Rudolf (1846-1926); Ger. philos.; *The Life of the Spirit*, 1909; Nobel Prize (Lit.), 1908.

**Euclid**, Gr. mathematician, c. 300 B.C.; *Stoicheia* (elements), manual of the entire mathematics of his time. See SPACE.

**Eudaemonism**, ethical theory wh. lays down that man's chief good consists in the attainment of happiness, power, and honour.

**Eudemos**, Gr. philos. of the 4th cent. B.C.; pupil of Aristotle; *Eudemic Ethics*.

**Eudiometer**, apparatus for analysis of gases; consists of a graduated glass tube closed at one end, and having platinum wires fused through the glass, between wh. electric spark can be passed. To determine amount of combustible gas in mixture contained in tube over mercury, excess of oxygen is added and spark passed, causing combustion.

**Eudoxia**, (d. A.D. 404), m. Arcadius, Byz. emp., 395. **E. Licina** (c.-422), m. Valentinian III, Emp. of the West. **E. Feodorovna Lopukhina** (1669-1731), m. Peter the Great, 1689; took the veil.

**Eudoxus** of Cnidus (408-355 B.C.), Gr. philos., mathemat., and astronomer.

**Eugène** (1663-1736), Austr. general, Prince (of Savoy); deftd. Turks at Zenta,

1697; invaded Italy at outbreak of war of Spanish Succession (*q.v.*); with Marlborough deftd. Fr. and Bavarians at Blenheim, 1704; expelled Fr. from Italy, 1706; with Marl. won battle of Oudenarde, 1708, Malplaquet, 1709; deftd. Turks at Peterwardein, 1716; and at Belgrade, 1717. **E. de Beauharnais**; see BEAUHARNAIS. **E. of Teschen** (1853-), Austr. archd. of Hapsburg family; c.-in-c. agst. Serbia, 1914; agst. It., 1915-18.

**Eugenics**, scientific application of knowledge of laws of heredity to improvement of human race; term first used by Sir. F. Galton (*Human Faculty*, 1885).

**Eugénie de Montijo** (1826-1920), m. Napoleon III, 1853; mother of Prince Imperial (1856-79); after fall of the Empire retired to Eng., living at Farnborough.

**Eugénie Grandet**, novel by Balzac, 1834.

**Eugenius**, name of 4 popes, of whom the most import., historically, are: **E. III** (1145-53), upheld temporal power agst. Arnold of Brescia (*q.v.*); beatified, 1872. **E. IV** (1431-47), engaged in struggle with Councils; reformer, patron of the arts.

**Eulalia**, *Miscanthus japonicus*, hardy, ornamental Japanese grass.

**Eulenburg, Friedrich, Ct. zu E.** (1815-81), Pruss. statesm. Min. of In. (1862-78).

**Philip zu E.-Hertefeld**, Pr. and Ct. (1847-1921), Ger. diplomat; one of most brilliant and witty figures of his day in Germany.

**Eulenspiegel**, Till, depicted in Ger. lit.

as typical knavish trickster; title of Ger. chapbook (1515) fndd. on reputed doings of a 14th-cent. peasant; appears in Eng. as *Howleglas*.



Eulenspiegel Fountain, Brunswick

**Euler**, Leonhard (1707-83), Swiss mathemat. and physicist; fndd. mod. science of pure mathematics; made notable contributions to optics, hydrodynamics, astronomy.

**Euler-Chelpin**, Hans von (1873-), Swed. chemist; Nobel Prize (Chem.), 1929.

**Eumenes II**, Kg. of Pergamum (197-159 B.C.), ally of the Romans; fndd. famous library at Pergamum.

**Eumenides**, *Erinyes*, (Gr. myth.) three avenging deities: Alecto, Tisiphone, Megaera; represented with wings, serpents coiled in their hair, and carrying torches. Name of Eumenides ("Well-Wishers") is euphemism (*cf.* EUXINE). Later identified with Rom. Furies (*q.v.*). Title of 3rd of great trilogy of tragedies by Aeschylus (*q.v.*), the other two being *Agamemnon* and *Choephora*.

**Eunomia**, (Gr. myth.) one of the Horae (q.v.); goddess of wise legislation.

**Eunuch**, castrated, emasculated male. Es. formerly employed as guards of Turk. harems and (until 1848) as choristers (*castrati*) at St. Peter's, Rome.

**Eupatoria Kozlov, Yevpatoriya**, seapt. on W. coast of Crimean penins.; pop., 23,525. Principal synagogue of Karaite Jewish sect. Mosque with 14 cupolas, built 1552.

**Eupatridae**, class of nobles in ancient Athens.

**Eupen and Malmédy**, frontier districts transferred after the World War from Rhenish Prussia to Belgium, together with neutral dist. of *Moresnet*. *Eupen*, cap. dist. of E.; pop., 12,500; textiles.

**Euphemism**, allusion to dangerous or unpleasant things by terms expressg. contrary characteristics; esp. in referrg. to evil or malicious spirits in hope of averting their danger; e.g., "the old gentleman," for the Devil; Gr. *Eumenides*, "kindly ladies", for the Furies.

**Euphonium**, brass wind instrument, known in orchestra as tuba (q.v.).

**Euphony**, assonance, tendency to assimilation of neighbouring sounds to facilitate pronunciation.

**Euphoria**, sense of well-being.

**Euphorion**, (Gr. legend) son of Helen and Achilles.

**Euphrates**, longest riv. in W. Asia (1,725 m.); rises in Armenia from two branches (Kara-Su and Murad-Su); after joining Tigris, is known as Shatt-el-Arab (94 m.); flows into Persian Gulf.

**Euphrosyne**, one of the Three Graces (q.v.).

**Euphuism**, affected Eng. prose style, named from *Euphuus*, romance by John Lyly (1578).

**Eurasia**, combined continent of Europe and Asia. **Eurasian**, offspring of European father and Asiatic mother.

**Eure**, dépt. N. France, 2,330 sq.m., pop., 308,450; watered by Riv. Eure, left trib. of Seine; agric., apples, horses; textiles, metals. Cap., *Évreux*.

**Eureka!** (Gr.), "I have found it!" Exclamation of Archimedes (q.v.) on discovering the law of displacement.

**Eure-et-Loir**, dept of N. France, S.W. of Paris; 2,291 sq.m., pop.; 255,220; agric. and cattle-breeding. Cap., *Chartres*.

**Eurhythmics**, art of expressing harmony by gesture, in wh. physical movement reflects musical notation. See DALCROZE.

**Euripides** (480-406 B.C.), Gr. dramatist; approached more nearly to

the modern conception of psychological drama than his 2 great predecessors, Aeschylus and Sophocles; *Medea*, *Iphigeneia*, *Bacchae*, *Troades*.

**Euripos**, narrow strait betw. Euboea and mainland of Greece.

**Europa**, (Gr. myth.) dau. of the Phoenician Kg. Agenor; abducted to Crete by Zeus, who appeared in the guise of a bull.

**Europe**, second smallest continent, strictly the E. penins. of Asia; separated by Str. of Gibraltar from N. Africa; by Dardanelles, Sea of Marmora, and Bosphorus from Asia Minor; and (in part) by Urals from Siberia. Caucasus Mtns. usu. taken as boundary betw. S.E. Europe and Asia; to the N. of the Caspian Sea (W. shore in Europe) the frontier follows an irregular line (partly betw. Rivs. Volga and Ural) until it reaches the Urals. Extremes: N., Knivskjaerodden Isl., (Magerö) N. of N. Cape, Norway; S., Cape Tarifa, S. Spain; W., Blasket Isls., S. Ireland; length, E.-W., c. 3,300 m.; N.-S., c. 2,400 m.; area, 3,750,000 sq.m.; pop., 462 mill. (mainly Germanic, Romanic, and Slavonic; 45% R.C., 26% Orthodox, 24% Protestants). E. is the most articulated of all the continents, with a relatively long coast-line; main portion, roughly triangular in form, with base on the Urals and apex in Brittany, takes up two-thirds of area; remaining third occupied by penins. and islands. In the N. the Scandinavian penins. almost meets that of Jutland; in the S. the Iberian forms W. limit of the Mediterranean, which is divided (in the N.) into three separate seas by Italy and the Balkan Peninsula. Chf. inland seas are Caspian, Black Sea, and Sea of Marmora (all shared with Asia), and Sea of Azov (wholly in E.). Most important isls. are Great Britain, Ireland, and Iceland, in the Atlantic; Novaya Zemlya and Spitsbergen in the Arctic; and Sicily, Sardinia, Corsica, and Crete in Mediterranean. Two-thirds of the surface is occupied by plains. Chf. mtn. systems (all in S. Europe), Pyrenees, Alps, (*Mont Blanc*, 15,780 ft.), and Carpathians, and (on borders of Asia) Caucasus (*Elbrus* 18,465 ft.). Longest rivs., Volga and Danube; largest lake, Ladoga. Innumerable lakes in Finland, Sweden, and Norway; others in Switzerland, N. Italy, Hungary (L. Balaton), and Brit. Isles (Lake District).

**Climate**: mainly temperate, W. Europe milder owing to influence of Gulf Stream. E. Europe has a continental, S. Europe a Mediterranean climate. Parts of Norway, Sweden, and Finland (Lapland) and of Russia are within Arctic Circle. Mean ann. temp., 48.2° F., Malaga (S. Spain) having highest av. (67° F.); lowest temperature at mouth of Riv. Pechora (N. Russia), falling to -60° F. Flora range from subtropical in Mediterranean (olives, oranges, vines, etc.) to



Euripides

subarctic; in the N. are the characteristic pine forests. Fauna equally diversified; in the Alps and Carpathians chamois and ibex; in Russia, bison, wolf, bear; in the far N., elk and reindeer.

**Chief political divisions:** Brit. Isles, France, Spain, Portugal, Holland, Belgium, Germany, Denmark, Iceland, Norway, Sweden, Finland, Russia (U.S.S.R.), Estonia, Latvia, Lithuania, Poland, Czechoslovakia, Rumania, Switzerland, Austria, Hungary, Italy, Yugoslavia, Albania, Greece, Bulgaria, and Turkey-in-Europe. For further topog. details and for details of production, industry, mineral wealth, etc., see articles on respective countries.

**Europium**, (chem.) sym. Eu; at. wt. 152.0; one of the rare earth elements.

**Eurotas, Iri**, riv. of the Peloponnesus, flows past Sparta.

**Euryale**, (Gr. myth.) one of the Gorgons (*q.v.*).

**Eurydice**, (Gr. myth.) wife of Orpheus.

**Eurymedon, Keupri-su**, riv. in Asia Minor; defeat of Persian fleet and army by Cimon, 465 B.C.

**Eusebius** (d. c. 340), bp. of Caesarea; called the "Father of Church History"; *History of the Christian Church*.

**Eusol:** see EAU DE JAVELLE.

**Eustachian tubes**, open ducts wh. admit air from throat to middle ear and thus preserve a balance of air on both sides of drum, allowing it to vibrate.

**Euterpe**, (Gr. myth.) muse of lyric poetry.

**Euthanasia**, easy death.

**Eutropius** (d. 370 A.D.), auth. of a History of Rome from its foundation up to 364 A.D.

**Eutyches, Euthychians:** see MONOPHYSITE.

**Eutychianus**, Pope (275-83), orig. epitaph discovered in catacombs.

**Euxine, Euxeinas**, anc. Gr. name of the Black Sea (*q.v.*); euphemism meaning "hospitable" (for *Axeinos*, "inhospitable").

**Ev.**, abbr. Evangelist, Evangelical.

**Evangelical**, connected with a school of thought in the C. of E. wh. emphasizes necessity of redemption by faith rather than by sacraments; belonging to *Low Church* party, distinctively Protestant, as contrasted with *High Church* or *Anglo-Catholic* party.

**Evangelist** (Gr.: bearer of good news), 1) title given to author of any of the four Gospels, *viz.*, Matthew, Mark, Luke, John. 2) Any Christian preacher, esp. a travelling preacher.

**Evans, Sir Arthur John** (1851- ), Brit. archaeologist; travelled in Finland and Lapland, 1873-74; in Balkans, 1875; keeper

of Ashmolean Mus., Oxford, 1884-1908; began investigations in Crete, 1893; discovered pre-Phoenician script; excavated palace of Knossos; pres. of Brit. Assoc., 1916, 1919. **E., Edw. R. Garth Russell** (1881- ), Brit. vice-admiral; 2nd in command, Brit. Antarctic Expedtn., 1909; commander, 1912; assumed command of expedtn. after death of Scott, 1913; commanded H.M.S. "Broke," when, with H.M.S. "Swift," she attacked and destd. 6 Ger. destroyers, 1917; rear-adm. in command of Royal Austral. Fleet, 1929-32. **E., Mary Ann:** see ELIOT, GEORGE.

**Evansville**, tn., Indiana, U.S.A., on Ohio Riv.; pop., 102,250; hardwood market; coal; agriculture; heavy machinery, cars, furniture.

**Evaporation**, (phys.) passage of liquid or solid into vapour. Reqs. *latent heat* of E. to be supplied, hence liquid cools itself by E.; made use of in refrigeration, also ether or ethyl chloride spray for freezing in minor operations. Very low temp. attained by E. of liquid gases (oxygen, hydrogen, helium) in a vacuum. E. of water from earth's surface and subsp. precip. by cold, forms clouds, rain, snow, hail.

**Evaristus**, Pope (c. 100-109), traditionally the 4th of the popes; immediate successor of St. Clement; suffered martyrdom under Trajan's persecution.



Mount Everest

**Eve**, (O.T.) 1st woman, created by Yahveh out of Adam's rib (Gen. i).

**Velina**, novel by Fanny Burney (Mme. d'Arblay), 1778.

**Evelyn**, John (1620-1706), Eng. author and diarist, collector and virtuoso; proposed fndtn. of Roy. Society, of wh. he was sec., 1672, his *Diary* pubd. 1818.

**Evening primrose**, *Oenothera biennis*, plant of order *Onagraceae*, with yellow flowers that do not open until the evening. **E. star**, any planet (usu. Venus) when near the sun and setting soon after it in west.

**Everdingen**, Allart van (1621-75), Dut. painter and etcher, chiefly of landscapes and

marine subjects: *Mouth of the Schelde*, in Hermitage at Leningrad.

**Everest, Mount** (Tibetan, *Chomolungma*, "Goddess Mother of the Land"), peak, Himalayas, borders Tibet and Nepal, India; 29,141 ft.; highest known mtn. in the world; ascent attempted 1922 and 1924; in 1924 Mallory and Irvine lost at 28,226 ft.; in 1933 members of Houston Expedn. (Air-Comm. Fellowes, Col. Stewart Blacker, Marq. of Clydesdale, and others) made two flights over summit securing photos. showing conformatn. of the mt.'s inaccessible declivities.

**Evergreen State:** see WASHINGTON 1).

**Everlasting flower:** see IMMORTELE.

**Everton**, N.E. suburb of Liverpool, Eng.; noted for toffee. The local Association Football club, fndd. 1879, became professional, 1885; one of original 12 members of Football League, 1888; won Assoc. Cup, 1906, '33; League Champions, 1891, 1915, '28 and '32.

**Everyman**, 14th-cent. Eng. morality play; Everyman, summoned by Death, is deserted by everyone except his Good Deeds.

**Evesham**, munic. bor., Worcs, Eng., on Riv. Avon; mkt.-gardening and fruit-growing; pop., 8,800; battle of E. (1265), resulting in defeat and death of Simon de Montfort and end of Barons' war (*q.v.*).

**Evidence**, legal means tending to prove, or disprove, any fact the truth of wh. is submitted to judicial investigation; see CIRCUMSTANTIAL EVIDENCE.

**Evil eye**, supposed power of some pers. to injure or bewitch by a mere look; pop., superstition in many countries.

**Evolution**, gradual unfolding. In biology, applied to course of development by natural processes. All living organisms on the earth are believed to have descended from very simple forms, origin of wh. is unknown (see SPONTANEOUS GENERATION). Variety of species produced, accdg. to *Lamarck*, by effect of environment; accdg. to *Darwin*, by natural selection of small variations; those individuals most favourably constituted as regards adaptation to environment and maintenance of struggle with other organisms for existence, having best chance of surviving and leaving offspring; accdg. to *de Vries*, only possible changes are by mutation (see HEREDITY), *i.e.*, sudden, often considerable, change in inheritable characteristics of individual, believed by *vitalists* (*q.v.*) to be caused by reaction of organism to environment. E. is proved by record of fossil species, wh. show progressive development; also by embryology, wh. shows that all organisms, before attaining maturity, pass through stages corresponding to simpler forms from wh. they have developed. Affinity of closely allied species (*e.g.* man and apes) shown by blood reactions.

**Évieux**, cap. dépt. Eure, France; pop., 18,840; cathedral.

**Evviva!** (It.), "Long may he live!"

**Ewe**, 1) Negro race in Togo and Gold Coast, W. Africa; small kgdm.; agriculturists. 2) Female sheep.

**Ewigkeit** (Ger.), eternity, everlastingness.

**Ex.**, abbr. 1) example; 2) Exodus (Bible).

**Exact sciences**, mathematics, astronomy, mechanics, physics, chemistry.

**Exanthema**, 1) eruption of the skin; 2) fever associated with a skin eruption, *e.g.*, measles.

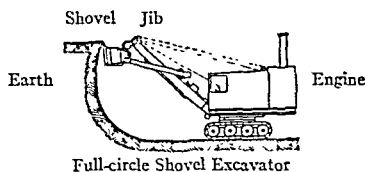
**Exarch**, 1) governor of a province in the Byzantine Emp. 2) Patriarch in Gr. Ch.; esp. supreme head of Bulgarian Ch., not under authority of Greek Patriarch. **Exarchate**, territory of an Exarch, in A.D. 555 comprised all Italy; later (till 751) only the coast of Ravenna.

**Exc.**, abbr. *excudit* (Lat.), (he or she) engraved abt.

**Excalibur**, in Arthurian legend, King Arthur's magic sword, given him by the Lady of the Lake.

**Ex cathedra Petri** (Lat.), "from the throne of Peter"; designation of an infallible pronouncement by the Pope.

**Excavator**, machine for removing earth; many types: 1) *Full-circle shovel*, or *Crane*



*navy* (see *Illus.*); 2) *Grab*, dropped on to earth, drawing together and filling itself when hoisted; 3) *Drag-line*, bucket wh. bites into and fills itself with earth; dragged by flexible rope and then hoisted by jib and emptied. Used for digging canals, foundations, cuttings for rlys., open mining of coal and minerals, etc.

**Excellency**, complimentary title borne by viceroys, colonial governors, and ambassadors.

**Exceptis excipiendis** (Lat.), with due exceptions.

**Excess Profits Duty**, tax levied in time of emergency (*e.g.*, World War) on the presumed amount by which the profits of an individual, firm, or company engaged in business exceed what would have been the standard profits in normal times. In force in Gt. Brit., 1915-21; in U.S.A., 1917-21. Rates varied betw. 40 and 80% of excess profits.

**Exch.**, abbr. *Exchequer*, or *Exchange*.

**Exchange**, organized gathering or assoc. of merchants for transac. of business; already in operation in Venice in 13th cent.; first large internat. E. at Antwerp (1531); now var. types of Es. in all princ. commer. centres of world, as *Stock E.*, for dealing in stocks and shares; *Produce E.*, corn, cotton, metal, etc.; see also FOREIGN EXCHANGE MARKET. **E. bank**, bank dealing in foreign exch.; modern E. bking. originated from money-changing business in Italy in Mid. Ages (12th cent.); E.Bs. were orig. in market-place and only changed coins; later written money remittances were sent to foreign places, from which bills of exch. (*q.v.*), and transaction of other banking business developed; see BANKS. **E. equalization account**, fund amtg. to £150,000,000, legally provdd. for by Brit. Govt. (April, 1932), to be used by Bk. of Eng. and Treasury in control of rate of exch. of £, thus preventing sudden sharp fluctuations.

**Exchequer**, State Treasury; Eng. *Court of E.* orig. dealt with matters relating to royal revenue; merged in King's Bench Div. of High Ct. of Justice (1881); see CHANCELLOR OF E. **E. bonds**: see NATIONAL DEBT.

**Excise duty**: see CUSTOMS DUTIES; TAXATION.

**Excommunication**, eccles. censure cutting off a Christian from communion of the Ch. Certain powers of E. are reserved to the Pope, others to bp., others not reserved. Those in force enumerated in the *Codex Juris Canonici* (see CANON LAW).

**Ex debito justitiae** (Lat.), as a matter of legal right. **Ex debito naturali**, as a matter of natural right.

**Ex-dividend**, term used in ref. to sale or transf. of securities, indicating that seller is to retain dividend due or declared: see CUM-DIVIDEND.

**Ex dono** (Lat.), by gift.

**Exe**, riv., S.W. Eng.; rises Exmoor, Som., flows S. across Devon past Exeter into Eng. Channel at Exmouth; length, 55 miles.

**Execution**, (law) enforcement of a judgm.; obtaining possess. of a thing acqd. by a judgmt.; collection of a fine by either the sheriff or the party entitled to it.

**Executive**, authority in govt. wh. carries out its policy and gives effect to the law. **E. government**, persons who carry out duties of govt., in contradistinction to legislature and judicature.

**Executor**, person apptd. by testator in his will to carry out his wishes and directions in regard to disposal of his property.

**Exegesis**, literary commentary, esp. the interpretations of biblical texts. Cf. HERMENEUTICS.

**Exempli gratia** (Lat., abbr. *e.g.*), for example.

, city, co. tri., Devon, Eng., on

Riv. Exe; cathed.; Univ. Coll. of S.W. Eng.; rly. centre; manuf. agric. implements; pop., 66,000. **E.**

**Book**, *Codex*

*Exoniensis*,

O. E. MS.

(11th cent.)

presented by

Bp. Leofric to

Exeter Cath.

libr. (c.1050);

contains

*Crist, Guthlac,*

*Phoenix, Jul-*

*iana, Wanderer,*

*Seafarer*, etc. **E. College**,

Oxford; fndd. 1314 by Walter Stapeldon, bp.

of Exeter; chapel by Sir Gilbert Scott. **E.**

**Hall**, bldg. in Strand, London, on site of

*Exeter House*, mansion of Lord Burleigh (d.

1598); built 1830 as concert and entertain-

ment hall, became annual meeting-place for

various relig. bodies (May Meetings); de-

molished 1907; site now occupied by Strand

Palace Hotel.

**Exeunt**, pl. of exit (*q.v.*).

**Exhaust**, passage through which a fluid (*c.g.*, steam, burnt gases, water) escapes from an apparatus such as an engine or heater, after having done its work. **E. steam**, steam after completion of its work in engine, turbine, heating plant, etc. Cf. FAN.

**Exhibition**, grant or scholarship (*q.v.*) made by a school or univ. to certain students.

**Exhibitionism**, perverted mental condition tending to sexual self-exposure.

**Ex hypothesi** (Lat.), by hypothesis.

**Exile**, banishment; form of punishment in Europ. legal systems.

**Ex in.**, abbr. ex interest, without interest (Stock Exch.).

**Exit** (pl., **exeunt**) (Lat.), stage direction he goes, they go, out; departure; way out.

**Ex libris**, abbr. *ex lib.* (Lat.), from the books; phrase often printed on book-plate, *i.e.* label with name (arms, etc.) of owner, attached to inside cover of book.

**Exmoor**, or **Exmoor Forest**, hilly dist., N.W. Somerset and N. Devon, Eng., barren moorland; *Dunkery Beacon* (1,707 ft.); ponies, red deer, horned sheep.

**Ex n.**, abbr. ex new, *i.e.* without right to shares (Stock Exch.).

**Exodus**, 1) end of an anc. Gr. drama; *i.e.*, all that followed the last choral ode.

2) (O.T.) 2nd bk. of Pentateuch, describes deliverance of Israelites from bondage in Egypt and their wanderings in wilderness.

**Ex officio** (Lat.), by virtue of office.

**Exogamy**, prohib. of marriage with a kinsman, *i.e.*, a member of same soc. unit, family, clan, totemic group; cf. ENDOGAMY. See TOTEMISM.

**Exon.**, abbr. *Exoniensis* (Lat.), of Exeter (signature of bp.).



Exeter Cathedral

**Exophthalmos**, protrusion of eyeballs; *Exophthalmic Goitre*, Graves' or Basedow's disease; see *GOITRE*.

**Exor.**, abbr. *executor*.

**Exorcism**, casting out of evil spirits by adjuring by some holy name.

**Exorcist**, member of one of the 4 Minor Orders (*q.v.*) of the R.C.Ch., charged with duty of expelling evil spirits and calming troubled spirits by relig. ceremonies, esp. by utterance of the Holy Name.

**Ex oriente lux** (Lat.), from the East cometh light, *i.e.*, enlightenment, Christianity.

**Exosmose**: see *OSMOSIS*.

**Exoteric**, for the uninitiated; capable of being generally understood. Ant.: *esoteric*.

**Exotics**, anything of foreign orig.: plants, animals, customs.

**Expansion**, (phys.) increase of volume with incr. of temperature, characteristic of almost all bodies. *Coefficient of E.*, expansion of a body having unit (cubical) volume at 0°C. when heated by 1°C. For solids also linear coefficient (of incr. of length) =  $\frac{1}{3}$  of their cubical coefficient. Gases all prac. identical in expansion;  $\frac{1}{273}$  of their vol. at 0° for each deg. Water betw. 0° and 4°C. contracts on heating, hence has max. density at 0°. *E. of liquids* (mercury, alcohol, toluene) made use of in thermometers. **E. bend**, (tech.) U-shaped piece of a steam pipe wh. yields when pipe is expanded by heat. **E. joint**, (mechan.) joint in pipes, etc., allowing play for expansion caused by change in temperature.

**Expectation of life**, average no. of yrs. persons of given age will live. With advance in medicine and hygiene *E. of L.* now higher than ever before; in Gt. Brit., for males at birth = 55.6 yrs.; for females—59.58 years.

**Ex pede Herculem** (Lat.), "from the foot (you may recognize) Hercules"; estimate the whole from a part.

**Expediency, doctrine of**, in polit. theory, synonym for utility or utilitarianism (*q.v.*).

**Experientia docet** (Lat.), experience teaches.

**Experto crede** (Lat.), trust one who has experience.

**Expert witness**, professional witness called to give evidence on some point connected with his profession.

**Explosive**, (chem.) any chem. compound or mixture, atoms of which are so arranged that re-arrangement results in liberation of heat and esp. gas. Single explosive compounds are *endothermic*, *i.e.*, formed from elements with absorption of heat. Nearly all useful explosives depend upon presence, either in same chem. molecule or as constituents of mixture, of a nitrate group ( $-\text{NO}_2$ ) as source of oxygen, and carbon, hydrogen, or sulphur which combines with O to form hot

gas ( $\text{CO}_2$ , steam, etc.) See also *GUNPOWDER*; *PICRIC ACID*; *TRINITROTOLUOL*.

**Exponent**, (algeb.) index number or quantity, written above and to right of another, to indicate power to which latter is to be raised, *e.g.*,  $a^3 = a \times a \times a$ . **Exponential equation**, one in which the unknown quantity is an exponent, *e.g.*,  $a^x = b$ . **Exponential function**, partic. case of expon. equatn. in which " $a$ " is given value " $x$ ".

Written thus— $1^x = 1 + \frac{x}{1} + \frac{x^2}{1 \times 2} + \frac{x^3}{1 \times 2 \times 3} + \dots + \frac{x^n}{1 \times 2 \times 3 \dots n} + \dots$  Val. of  $x$  can be obtained by putting exponent (*i.e.*,  $x$ ) equal to 1 in this equation.

**Export**, goods, securities, or services sent out of a country for trade purposes. *Es.* of last two classes are known as *Invisible Es.* **E. credit guarantees**, (commer.), facilities provided by Brit. Govt. for guarantee of credits granted by exporters to foreign purchasers. Similar in most ways to policies of *credit insurance* (*q.v.*) written by trade indemnity company.

**Exposé** (Fr.), explanatory statement; short treatise.

**Ex post facto** (Lat.), by reason of an act done afterwards; retrospective; retroactive.

**Exposure**, (photog.) time of illumination of plate or film in taking photograph. Varies as square of  $f$  number of aperture (*q.v.*); longer exposure reqd. early and late in day. *E. meter*, may be simple calculating apparatus, based on time of day, aperture, cloud conditions, speed of plate; or may depend on sensitive paper wh. darkens to standard tint as in Watkins' or Wynne's; most recent, photo-electric.

**Expressionism**, anti-realistic art movement originating in Germany, *c.* 1908; its aim, the expression of ideas underlying subject by exaggeration of significant characteristics and suppression of non-essentials. Influenced in technique by post-impressionists. Chief exponents, in painting: Kokoschka, Pechstein; in lit.: Kaiser, Werfel.

**Ex S.D.**, abbr. *ex Senatus Decreto* (Lat.), by decree of the senate.

**Ex temp.**, abbr. *ex tempore* (Lat.), without delay, on the spur of the moment.

**Extensors**, (anat.) muscles wh. extend or straighten parts of the body.

**Extenuating circumstances**, (law) conditions operating in fav. of a prisoner which may call for some modification of the sentence.

**External loans**, foreign loans, those raised by a State beyond its frontiers.

**Exterritoriality**, legal exemption of a place (and, by analogy, a person) from jurisd. of State wherein situate; *e.g.*, embassies and ambassadors, warships in foreign waters.



**Extracts**, solutions containing one or more substances removed from others by means of a solvent; solvents most used are water, alcohol, ether, and acetic acid. E. much used in pharmacy; process is also employed in prep. of alkaloids, natural dyes, separation of sugar from beet, and in recovery of fats and oils from bones, etc.

**Extradition**, delivery of alleged or convicted criminal by a govt. to another govt. within whose jurisdiction crime was committed. **E. treaty**, treaty between two countries setting forth conditions of mutual extradition.

**Extra muros** (Lat.), outside the walls.

**Extravasation of blood**, penetration of blood into the surrounding tissue through abrasion of the blood vessels, as consequence of a blow or other injury.

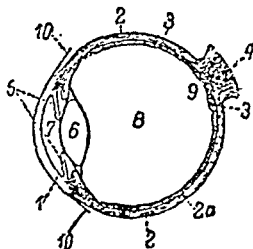
**Extreme unction**, sacramental anointing with Holy Oil (see CHRISM), confined, in R.C.Ch., to those who are dying, or in *extrema*. See SACRAMENTS.

**Ex ungue leonem** (Lat.), the lion (is known) by his claw; cf. EX PEDE HERCULEM.

**Ex voto** (Lat.), in accordance with a vow.

**Eyck, van**, Flem. painters. **Hubert** (c. 1366-1426) and his bro., **Jan** (c. 1386-1440). fndd. new school of painting, perfecting the mixture of colours with oil; worked in collaboration: *The Adoration of the Lamb*, altar piece at Ghent. Their sister, **Margaret**, said to have painted the miniatures in missal of Duke of Bedford.

**Eye**, organ of sight; consists of a hollow globe, the *eye-ball*, constructed of three opaque coats; light is admitted only thr. the *cornea*, a



Eye

- 1) Cornea. 2) Sclerotic.
- 2a) Choroid Membrane. 3) Retina. 4) Optic Nerve.
- 5) Iris. 6) Lens. 7) Anterior Chamber, containing aqueous humour. 8) Vitreous humour. 9) Blind spot. 10) Conjunctiva

transparent membrane in forepart of eye, shaped like a watch-glass and curved. Behind cornea, in front of eye, is the *iris*, the coloured diaphragm of eye, having in centre

a circular opening called the *pupil*, owing to opacity of eye-socket, appears black. Just behind pupil comes the crystalline lens of elastic structure wh. refracts incoming light-rays in such a manner that, having passed thr. the vitreous humor filling interior of eye-ball, a clear picture is formed at back of eye. The innermost lining of eye-ball is called the *retina*, because it contains a net-like distribution of nerves coming from brain and entering posterior section of pupil. The elastic structure of the crystalline lens enables eye to form pictures of objects both near and far; power of contraction and expansion possessed by pupil thr. action of muscular system of the iris permits of accommodation to various intensities of light. Power of seeing objects in depth can only exist thr. co-operation of both eyes. The eye is a delicate organ, easily damaged, and therefore protected partly by its position in bony cavity formed by the frontal bones and partly by the eyelids wh. act as blinds; these are lined on the inside by the *conjunctiva*. **E.-bright**, (bot) *Euphrasia officinalis*, small herb with leafy spikes of white or violet flowers with yellow eye. Used in folk med. as an eye lotion. **E.-piece**, (opt.) lens or combinatn. of lenses in an optical instr. by means of wh. the observer views the image of the object formed in the focus of the field-lens. **E.-tooth**, either of the canines in the upper human jaw.

**Eylau, Preussisch-Eylau**, tn., E. Prussia, Ger.; pop., 3,500. Indecisive battle betw. Napoleon and Russo-Prussian army, 1807.

**Eyre, Lake**, salt lake, S. Australia, fed intermittently by Cooper and Warburton (or Diamantina) rivs.; 95 m. long; the "Dead Sea of Australia."

**Eyrie**, place where birds of prey build nests and hatch their young.

**Ezekiel**, (O.T.), prophet of time of exile in Babylon (6th cent. B.C.). **Bk. of E.** foretells fall of Jerusalem and Israel's future restoration.

**Ezra**, (O.T.) Jewish scribe, possibly author of I and II Chron., led Jews back from Babylonian captivity (c. 536 B.C.), described in **Bk. of Ezra** (Vulgate, I Esdras).

**Ezzelino da Romano** (1194-1259), It. Ghibelline (q.v.) leader, podesta of Verona, noted for recklessness and cruelty.

# F

**F.**, abbr., Fahrenheit (thermometer); **F.**, (chem.) symbol of fluorine.

**F. A.**, abbr. Football Association.

**F.A.A.**, abbr. (commer.) free of all average.

**Faber, Fredk. Wm.** (1814-63), Brit. theologian and hymn-writer; rector of Elton, Hunts, 1843; joined R.C.Ch., 1845; *Lives of Modern Saints* (1847); *Spiritual Conferences* (1859). **F., Peter**, (or **Pierre Lefevre**) (1506-46), Savoyard; a co-founder of Soc. of Jesus; see JESUITS.

**Fabian Society**, Eng. group formed in 1884 to work for Socialism (*q.v.*) while avoiding precipitate action (named from Fabius, Rom. gen. who thus won campaigns). Favours espec. public ownership of essential services and permeation of local authorities. Best known members: George Bernard Shaw, Sidney and Beatrice Webb. *F. Essays in Socialism* pubd. 1889.

**Fabianus**, St. and Martyr, Pope (236-50), mart. in Decian persecution. Commem. 20 January.

**Fabius Maximus, Quintus** (*Cunctator*) (d. c. 203 B.C.), Rom. gen.; sent to demand reparation from Carthage for attack on Saguntum, 218; commdd. operations against Hannibal, 215-14; retook Tarentum, 209; oppd. invasn. of Africa by Scipio.

**Fable**, short story in prose or verse in which animals or inanimate things are made to act and speak with human interests and passions to inculcate a moral; *e.g.*, *Aesop's Fables*, and in modern times those of Gay, Lessing and La Fontaine.

**Fabliaux**, Fr., 12th cent. short versified tales, comic in spirit.

**Fabre, Jean Henri** (1823-1915), Fr. entomologist; *Social Life in the Insect World*, etc.

**Facade**, (archit.) face or front of a building.

**Face plate**, (tech.) in a lathe (*q.v.*), chuck for holding work consisting of circular plate with slots for bolts.

**Facet**, polished surface of a crystal, or of cut stone, glass, etc. **F. eyes**, optical organ peculiar to insects and crustaceans; number of facets varies greatly in different species; mosaic image formed is probably transmitted by optic nerve to brain as single image impression.

**Facia**: see FASCIA.

**Facile princeps** (Lat.), easily first; acknowledged leader.

**Facilis descensus Averni** (Lat.), easy is the descent to Avernus (Hades).

**Façon de parler** (Fr.), manner of speaking.

**Facsimile**, exact copy or reprod. of document, picture, signature.

**Factor**, any of the nos. or quantities wh., when multiplied together, form a particular product; contributing force or influence; agent, deputy, or representative; one who transacts business for others on commission. **F. of safety**, (phys.) ratio betw. the ultimate strength of a structure, and the maximum normal load which it is expected to receive.

**Factory**, workshop in wh. commodities are manufactd. on a large scale, usu. by machinery. **F. system**, concentration of production in Fs., as opposed to home-industries; developed during 18th and 19th cents. as result of increased use of power-driven machinery. **F. Acts**, Brit. laws passed at intervals from middle of 19th cent., enforcing inspection of factories, fixed hours, safeguards against dangers and for health of workers. Administered by staff of inspectors with headquarters at Home Office.

**Faculty**, 1) one of the main divisions of knowledge (divinity, law, medicine, arts); organized body of teachers representing such a branch of knowledge in a university; 2) authorization, by (*e.g.*) the Chancellor of a Diocese, of a person to perform some act which is legally beyond his normal powers.

**Faed**, Thos. (1826-1900), Brit. painter; R.A., 1864; *The Silken Gown*; *The Highland Mother*; *Faults on Both Sides*.

**Faenza**, tn. and episc. see, Italy; pop., c. 22,000; manuf.: variety of majolica (faience).

**Faërie Queene**, chivalric, allegorical poem by Spenser (*q.v.*); books I-III (1590), IV-VI (1596).

**Faeroe or Faroe Islands**, group 21 Dan. islands (self-governing), North Sea, betw. Shetlands and Iceland; area, 540 sq.m.; pop. 24,200; largest, Strömö; cap., *Thorshavn*. Coasts rugged, surface mountainous (2,800 ft.); climate mild; whaling, fishing, sheep-rearing.

**Fahr.**, abbr. Fahrenheit (thermometer).

**Fahrenheit**, Gabriel D. (1686-1736), Ger. physicist; inventor of *F. thermometer*; see THERMOMETER.

**F.A.I.**, abbr. 1) Fellow, Auctioneers' Institute. 2) (Fr.) Fédération Aéronautique Internationale.

**Faience**, Fr. pottery (*maïolica*) named from Ital. tn. Faenza; opaque, natural colours, often painted lead or pewter glazing. See CERAMICS.

**Fainting**, collapse; weakness with temporary loss of consciousness; due to a partial failure of the blood-supply to the brain.

**Fair**, market held periodically for sale of agric. and manufd. goods, usu. combined with amusements. Existed in Europe since 5th cent. and in Eng. from 11th century. Bartholomew F., London, establd. 12th cent., abolished 1855. Most noted Eur. F., Nijni Novgorod, Russia, attended annually by 100,000 persons.

**Fairfax**, Thos. F., 3rd bn. (1612-71), Brit. milit. leader; commanded parliamentary army, 1643; organized New Model army; in commd. at Marston Moor, 1644, and Naseby, 1645; headed commissioners sent to Charles II at The Hague, and assisted in the Restoration, 1660.

**Fairford**, parish in Gloucestershire, Eng., 9 m. E. of Cirencester; church famous for almost intact 15th-cent. stained glass.

**Fairway**, (golf) smooth track between teeing-ground at one hole and green at the next.

**Fairy**, in Celtic and Teutonic folklore, small, gen. benevolent, non-human creature with magical powers. Cf. ELF, PUCK. **F. ring**, green patch in field due to presence of fungi, popularly supposed site of fairies' dances at night.

**Fairy Falls**, in Mt. Rainier Nat. Park, Washington, U.S.A.; 700 feet.

**Fait accompli** (Fr.), accomplished fact.

**Faites vos jeux** (Fr.), make your play; place your stakes; cry of the croupier at roulette, etc.

**Faith**, belief as distinct from *knowledge*; independent of logical reasoning; fundamental conviction in contrast to mere opinion; honesty, sincerity. **F.-healing**, meth. of healing by means of faith or suggestion empld. by various sects, Christian Scientists, etc.; see SUGGESTION.

**Faizabad**, 1) see FYZABAD. 2) Cap., prov. Badakhshan, Afghanistan.

**Fakir**, (India) properly a Mohammedan relig. mendicant whose rule is mortification of the flesh; often applied to wandering tricksters and dealers in black magic.

**Falaise**, tn., N.W. France, dépt. Calvados; pop. 5,300; castle was birthplace of William the Conqueror; tanneries.

**Falcon**, a member of the genus *Falco*,



Faience

typified in the peregrine falcon and its various races distribtd. over the Old and New Worlds. All are handsome birds of prey, of medium size.

**Falconet**, Étienne-Maurice (1716-91), Fr. sculptor. *Nymph Entering Bath*, in Louvre, Paris.

**Falconry**, hawking, art of employing falcons (long-winged hawks) or hawks (short-winged) for the pursuit of game. A fav. sport of Mid. Ages in Eur., but practised in Egy. at least 500 yrs. B.C.; hawks used in Eng. are Greenland, Norw., and Icel. falcons, peregrine, hobby, goshawk, merlin, and sparrow-hawk. Hawks are usu. "hooded" and carried on gloved fist until quarry is sighted.

**Faldstool**, (eccles.) 1) armless portable folding chair, used by bp. in cathed. other than his own, or when visiting a ch. in his diocese; 2) desk with kneeling-stool attached, esp. a litany-desk.

**Falernian**, wine of classic Rom. times, made on Mt. Falernus, Campania, S. Italy.

**Falerno**, mod. Ital. wine, similar to sherry.

**Fallero**, Marino (1279-1355), doge of Venice; commanded Venetian land forces at Siege of Zara, 1346; deftd. Louis the Gt. of Hungary; elected doge, 1354; arrested for complicity in plot to murder chf. patrician; condemned and executed.

**Falkenhausen**, Louis von (1844- ), Ger. gen.; army com., 1914-16; gov.-gen. of Belgium, 1917.

**Falkenhayn**, Erich von (1861-1922), Pruss. general; served in China, 1900-03; war minister, 1913-15; succ. von Moltke as chf. of general staff, 3 Nov., 1914; advocated attack on Verdun and, on its failure, forced to resign in favour of von Hindenburg; leader of IX Army against the Rumanians and Russians, 1916-17.

**Falkirk**, parl. burgh, Stirlingsh., Scot., in coal and iron dist.; pop., 36,600; agric. (*Trysts*, cattle-fairs); battles of F., 1298 (defeat of Wallace) and 1746 (victory of "Young Pretender").

**Falkland**, anc. royal burgh, Fifesh., Scot.; castle; pop., 800. **F. Islands**, group, S. Atlantic, Brit. crown colony, 300 m. E. Strait of Magellan, S. America, comprising *E. Falkland* (2,580 sq.m.; with cap., Port Stanley; pop., 900), *W. Falkland* (2,038 sq.m.), and over 100 islets and reefs; total area, 4,600 sq.m.; pop., 2,100; sheep-rearing, whaling. Dependencies: *S. Georgia Isl.*, 800 m. E.S.E.; *S. Shetlands*, *S. Orkneys*, *S. Sandwich Is.*, *Graham's Land* (Antarctic). **Battle of F. I.**, Dec. 8th, 1914, destruction of



Peregrine Falcon



Faldstool

Ger. squadron (Von Spee) by British (Adm. Sturdee).

**Fall**, Leo (1875-1925), opera composer: *The Dollar Princess*.

**Falla**, Manuel de (1876- ), Span. composer; *Three-Cornered Hat*; *El Amor Brujo*; etc.

**Fallières**, Clément Armand (1841-1931), Pres. of French Repub., 1906-13; Deputy, 1876; Minister of Interior, 1882-3, 1887, 1889; Premier, 1883; Pres. of Senate, 1889-1906.

**Falling bodies**, **Law of** (Phys.). Bodies fall by force of *gravity* (*g.v.*), causing uniform acceleration; as this force is propor. to mass of body, and acceleration is equal to force divided by mass, all bodies would fall at equal rates, with an acceleration of about 1,000 centim. or 32 ft. p. sec. p. sec., but for variable resistance of air. In a vacuum a feather falls as fast as a stone.

**Fall of Man**, disobedience of Adam and Eve, resulting in loss of innocence and introd. of sin into the world (Gen. iii).

**Fallopian tubes**: see OVIDUCT.

**Fallopian**, Gabriello (1523-62), Ital. anatomist; prof. of anatomy at Ferrara, Pisa, and Padua; discovered function of Fallopian tubes (see OVIDUCT); discovered and described sphenoid sinus, chorda tympani, glossopharyngeal, trigeminal and auditory nerves.

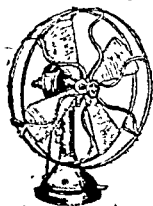
**Fallow**, (agric.) land ploughed but left unsown for a season. **F. deer**, small deer with palmed antlers and dappled coat; native of Mediterranean districts of Europe, Asia, and Africa; semi-domesticated in parks.

**Fall River**, port, Massachusetts, U.S.A.; pop., 115,250; cotton; petroleum; textiles; dyeing; coastal steamer lines.

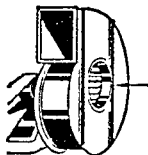
**Falmouth**, seapt. and watering-place, S. Cornwall, Eng.; docks, fisheries; pop., 13,500.

**Falsetto**, highest pitch of male voice, produced artificially by a special use of the larynx.

**Falstaff**, Sir John; appears in Shake-



Electric Fan



Centrifugal Fan

peare's *Henry IV* and *Merry Wives*; fat, sensual, and witty; a drunkard, swindler, braggart, and coward.

**Falster**, isl. (198 sq.m.) Denmark, lying S. of Zealand and betw. Lolland and Moen; pop., 128,000; cap., Nykjöbing (pop., 13,550).

**Fan**, implement for agitating the air for

cooling, winnowing, etc. **Centrifugal F.** (mech.), rotatory apparatus enclosed in pipe for causing a current of air for ventilation (in mines, etc.), for exhaustion of noxious gases, for absorption of dust, etc.

**Fandango**, Sp. dance for 2 people in 6/8 time, accomp. by castanets.

**Fanfare**, flourish; short, lively composition for brass instruments, esp. trumpets; also signal used in hunting.

**Fan fly**, (tech.) spindle with vanes for moderating speed of small machines (clocks, elec. motors); resistance of air checks the motion. **F. palm**, general name for several species of palm having broad, fan-like leaves, e.g., that of Ceylon, with enormous leaves measuring 14 ft. across; of Florida (*Sabal palmetto*); and of China (*Livistona chinensis*).

**F. tracery**, (archit.) type of vaulting find. in late 15th-cent. bldgs. in wh. the ribs diverge as they go upwards, producing effect of an open fan; examples are in Henry VII's Chapel, Westminster Abbey, in King's College Chapel, Cambridge, the Cloisters, Gloucester Cathedral, etc.



Fan Tracery

**Fang**, in venomous reptiles, tooth by which venom is injected into wound; canine tooth of carnivora.

**Fango**, mud from hot springs at Battaglio (It.); baths and applications of it are given in treatment of gout and rheumatism.

**Fangot**, package for transp., usu. of raw silk, weighing abt. 3 cwt.

**Fanning Island**, coral isl. (15 sq.m.), Pacific Ocean, N. of Equator; on line of Pacific cable from Vancouver to Australia; pop. (incl. *Washington Isl.*, 65 m. N.W.) 440 (40 Europeans); exports guano and mother-of-pearl. Under admin. of Gilbert and Ellice Islands.

**Fantasia**, mus. composition in free form.

**Fantin-Latour**, I. H. Jean Théodore (1836-1904), Fr. artist; noted for portraits and flower-pieces; best work in Tate Gall., London.

**Farad**, "practical" unit of electrical capacity =  $10^{-9}$  absolute electro-magnetic units. *Microfarad* is one-millionth of a farad.

**Faraday**, Michael (1791-1867), Eng. physicist and chemist; discv'd. electro-magnetic induction, laws of electrolysis, dia-magnetism; invented conception of lines of force upon which all later progress in theoretical physics was based.



M. Faraday

**Faradisation**, (med.) term used to descr. use of the current from an induction coil (*q.v.*) in electrotherapeutics.

**Farce**, orig. any interlude in a drama; now comedy based on situations of absurd or boisterous character.

**Far East**, Asiatic countries on Pacific Coast, collectively. **F. Eastern Area**, Soviet coastal territory in N.E. and S.E. Siberia, bounded W. by Yakutsk and Buriat-Mongol repubs.; S. by Mongolia and Manchuria; c. 910,000 sq.m.; pop., 1,853,100 (Russians and many indigenous races, Chuckchee, Kamchadal, Gilyaks). Tundra and forests; mtns.; rich in minerals, gold, platinum, silver, coal; naphtha; precious stones. Blue, red, black, and silver fox trapped; bears, seals, and reindeer. January mean temp.: -10°F. to -40°F.; summer below 60°F. Chf. tns., Vladivostok, Blagovyeschensk, Khabarovsk, and Chita.

**Farina** (Lat.: meal), 1) starchy food-substance ground from corn or roots, *e.g.*, wheat, barley; 2) (bot.) pollen of a flower; 3) (chem.) starch.

**Farisan, Farasan, or Farsan Islands**, group, Red Sea, forming part of Asir prov., Arabia; petroleum.

**Farm**, land and buildings occupied for agricultural purposes; arable, dairy, or mixed, according to nature of country. **Farming**: see AGRICULTURE.

**Farman**, Henri (1874- ), Fr. aviator; pioneer of biplane construction, with his bro. Maurice.

**Farmer, John** (1836-1901) Eng. composer, esp. of songs (*Forty Years On*, etc.); music-master, Harrow School, 1864-85.

**Farnaby**, Giles (c. 1560-1600), Eng. composer of pieces for the virginals: *Up Tails All; A Toye; A Gigge*.

**Farnborough**, 1) urb. dist., N.E. Hants; pop., 16,500; includes Aldershot N. Camp, Tank Corps barracks, and R.A.F. station; Napoleon III, Prince Imperial, and Ex-empress Eugénie buried in memorial church. 2) Par., Kent, 4 m. S.E. Bromley; pop., 3,500.

**Farne Islands**, group of 25 islets, off coast Northumberland, Eng.; retreat of St. Aidan; scene of heroism of Grace Darling.

**Farnese**, Ital. ducal family. **Alessandro**, Pope Paul III (1534-49), finished bldg. of St. Peter's. His g.-s. **Alessandro** (1547-92), Duke of Parma, Span. Gov.-Gen. of Netherlands, 1578. **Elizabeth** (1692-1766), consort of Philip V of Spain, 1714; directed Span. policy during Philip's imbecility. **F. Palace**, Rome, blt. (1530-80) in part by Michelangelo, for Pope Paul III (Aless. Farnese). **F. Hercules**, antique statue formerly in possess. of F. family; **F. Bull**, Gr. marble group of 2nd cent. B.C.; both now at Naples.

**Farnesina**, palace in Rome containing frescoes by Raphael.

**Farnol, Jeffery** (1878- ), Eng. novelist; *The Broad Highway* (1910), etc.; *War Impressions*, 1918.

**Faro**, seapt. tn., Portugal, cap. prov. Algarve; pop., 13,000; exports wine, fruit, cork; fisheries.

**Faro**, gambling card-game, played on an oblong table with a suit of spades (lay-out) enamelled in the centre; these are backed to pair with cards dealt by the banker from a specially made box.

**Faroe Islands**: see FAEROE ISLANDS.

**Farquhar**, George (1677-1707), Brit. Restoration dramatist: *The Beaux' Stratagem*, 1707.

**Farrant**, Richard (c. 1530-1580), Eng. composer of ch. music; organist St. George's Chapel, Windsor; anthem, *Call to Remembrance*.

**Farrar**, Frederic Wm. (1831-1903), Brit. divine; headmaster of Marlborough Coll., 1871-76; archdeacon of Westminster, 1883; dean of Canterbury, 1895; author school-tales (*Eric, or Little by Little*, 1858, etc), and of a *Life of Christ* (1874), etc.

**Farrier**, one who shoes horses; a horse-doctor. Art of horse-shoeing introd. in Eng. in 11th cent. **F.-sergeant**, (milit.) N.C.O. respons. for the horses in mounted units.

**Farringdon**, name of two wards of City of London (*F. Within, F. Without*). **F. Street** runs N. from Ludgate Circus; site of Fleet Prison (13th cent.-1844) and of the large corporation meat and other markets (Smithfield); continues into **F. Road**, in wh. are open-air stalls for books, etc.

**Fars**, Persian prov., Pers. Gulf; 60,000 sq.m.; pop., c. 700,000; mountainous; salt lakes; sheep- and cattle-rearing; corn, fruits, tobacco; cap., *Shiraz*; chief port, *Bushire*.

**Farsakh**, Pers. linear meas., 6,000 zar (*q.v.*), =3.87 miles 6.23 km.); sometimes reckoned as 4.17 miles (6.71 km.).

**Farther India**: see INDO-CHINA.

**Farthing**, smallest Brit. bronze coin, one quarter of a penny; legal tender only to value of one penny.

**F.A.S.**, (commer.) abbr. Free alongside the ship; under such contracts all charges incurred after goods are delivered alongside are payable by buyer.

**Fasces**, (Rom. antiq.) bundle of rods surrounding an axe, carried by the lictors before the chf. magistrates as sym. of authority. **Fasci del lavoratori**, Sicilian peasant league of 1893-94.

**Fascism**, theory and practice of Fascist govt. advocated by Ital. polit. party.

**Fascisti**, organized by Mussolini (*q.v.*), 1919, to combat Communism and Bolshevism; leading party since the March on Rome, 1922; centralised govt. on autocratic

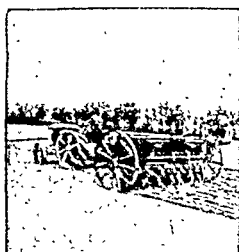
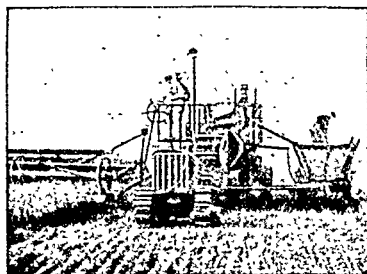




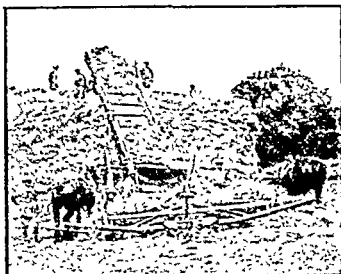
Tractor with Plough



Rake Putting Hay into Rows

Drilling and Sowing  
MachineMotor Mowing  
MachineReaper and  
Self-binder

Reaper and Thresher



Hay-sweep and Escalator

*Down* *Fs.* usu. underneath, forming thick, protective layer.

**Feathering**, (rowing) turning the blade of an oar or scull at the finish of a stroke so that it travels back horizontally.

**Febronianism**, view of relations of Ch. and State, founded on a work of "Febronius" (John Nicolas von Houtheim, 1701-90, Suffragan Bp. of Trèves), and regarded by R.C.'s as an exaggerated *Gallicanism* (*q.v.*).

**February**, 2nd month, of 28 days, 29 in leap year; in anc. Rome, season of purific. ceremonies (*februa*). **F. Revolution**, 24 Feb., 1848, bringing abt. fall of Louis Philippe and establ. of 2nd Fr. Republic.

**Fécamp**, port, N.W. France, dépt. Seine-Inférieure, on Eng. Channel; pop., 16,000; 12th-cent. abbey church; manuf. Benedictine liqueur; fisheries; shipbuilding.

**Fec., fecit** (Lat.), (he) has done (it); placed after artists' names on works of art.

**Fechner**, Gustav Theodor (1801-87) Ger. psychologist; fndd. experimental psychology; auth: *Zendavesta*, 1851; *Elements of Psychophysics*, 1860.

**Federalism**, political system in wh. several states, each preserving internal independence, are united under one legislative body as far as foreign affairs and other subjects of common interest are concerned.

**Federalist party**, the political section wh. formed national govt. of U.S.A. under constitution of 1787; led by Alexander Hamilton (*q.v.*). See also *CONFEDERACY*.

**Federal Reserve Banks** (U.S.A.), district central banks, operate *F.R. System* (*q.v.*), insttd. by *F.R. Act* (1913), and govd. by *F.R. Board* (*q.v.*). One F.R.B. for each of 12 territories: New York, Chicago, Boston, St. Louis, Philadelphia, Minneapolis, Cleveland, Kansas City, Richmond, Dallas, Atlanta, San Francisco; notes had till 1933 40% gold backing. F.R.B. hold balances of member bks, discount bills, etc., and are govt. banks. **F. R. Board**, Govt. body of U.S.A. consisting of Secy. of Treasury as chairman, and comptroller of currency, both *ex officio*; 6 members apptd. by the President, one of whom is governor, chief executive officer of the board; function of F.R.B. is co-ordination in policy and practice of 12 district F.R. banks (*q.v.*) by issuing of regulations, and "review and determination" of discount rates decided upon by the 12 banks separately. **F. R. System**, central banking system of U.S.A. establd. in 1914, with 12 districts, in each of wh. is a F.R. Bank; these are: a) *Bks. of Issue*, b) *Bankers' Bks.* receiving deposits of member bks., and making loans to them, c) *Bks. of Re-discount*, and d) *Fiscal Agents* of govt.; they are therefore *central banks* performing similar functions to those of B. of Eng.,

Reichsbank, etc.; policy of 12 banks is co-ordinated by *F.R. Board* (*q.v.*). **F. State:** see *FEDERALISM*.

**Federated Malay States**, sovereign sultanates, Malay Penins., under Brit. protection; comprise Perak, Selangor, Negri Sembilan, on W. coast and Pahang on E. coast. Area, 27,600 sq.m.; pop., 1,125,000 (Chinese, 711,000); exports rubber, tin, coconuts, copra, fruit, timber. Federal capital, *Kuala Lumpur* (*q.v.*). Treaties of federation have existed from end of 19th century. See *STRAITS SETTLEMENTS*; *MALAY STATES*.

**Feed**, (of a machine) part concerned in automat. feeding raw matl. into machine, or advancing a cutting tool, grinder, drill, etc., as matl. is removed from work. **F. water**, for feeding boilers, often heated in *f. w. heater* bef. passing into boilers; previous purification nec. if water contains solid matter in solution (lime, magnesia). See *WATER-SOFTENING*.

**Feeder**, (engin.) widely used term for means or mechanism used to supply something (*e.g.*, paper, fuel, electric energy, gas) to machine, distributing mains, etc.

**Feeling**, 1) perception, esp. thr. the sense of touch; 2) mental state or mood (impatience, restlessness, etc.); a premonition, intuition; 3) psychol. or spiritual emotion, (love, joy, animosity, etc.).

**Feint**, (boxing, fencing, etc.) feigned blow to draw opponent's guard.

**Feisal al Husain** (1885-1933), Kg. of Iraq, 1921; an Arab. Prince, s. of Sharif Husain, descend. of the Prophet.

**Feldspar, felspar**, important mineral group of siliceous Feisal al Husain rock constituents; distinguished accdg. to crystalline formation as *Orthoclastic* (breaking at rt. angles), wh. includes common potash-F., constituent of granite, gneiss, etc.; and *Plagioclastic* (tending to break along oblique planes), including soda-F. (albite) and lime-F. (anorthite). F. decomposes into kaolin, or into clayey soil containing potash.

**Félibrige**, society for the revival of Provençal as a lit. lang., fndd. by Roumanille and other poets, 1854; now groups throughout S. France, using variations of dialect and patois, and expressing wide range of relig. and polit. opinion.

**Felix**, name of 4 popes and 1 antipope, of whom most import., historically, are: **F. I**, St. (269-74), tradit. martyred under Aurelian persecutions. **Fel. II** (355-58), antip., chosen by Arian party to succeed Liberius. **F. III** (483-92), excommunicated Patriarch of Constantinople, 485, causing schism betw. E. and W. churches, wh. lasted 34 years.

**Felix**, (N.T.) Rom. governor of Judea



(52-60 A.D.), before whom Paul was arraigned.

**Felixstowe**, tn. and seaside resort, Suffolk, Eng., at mouth Riv. Orwell; ferry to Harwich; pop., 12,000.

**Fellahs, fellahin**, Egyptian peasants.

**Felloe, fellah**, curved rim of wheel, which holds tyre.

**Fellow**, at Oxford, Cambridge, and Trinity College, Dublin, senior graduate member of college, elected by governing body, drawing salary from college revenues, sharing in its government, and often acting as tutor; in other universities, member of governing body, or graduate holding stipend for special study or research; also applied to members of various learned societies.

**Felony**, those more serious offences formerly punishable by death and confiscation of property.

**Felspar**: see FELDSPAR.

**Felsted School**, Eng. public sch. for boys, in Essex; fndd., 1564; re-constituted, 1852.

**Felt**, material of cotton or wool subjected to great pressure.

**Felucca**, small coasting vessel, with oars and lateen sails, used in Mediterranean.

**Feminine**, (Lat.) characteristic of woman; womanly. **Feminism**, movement towards equality of rights between women and men.

**Femur**, (anat.) in mammals and birds, the thigh-bone, the longest bone of the body; in insects, the third joint of the leg.

**Fen**, low-lying, marshy land (esp. in E. Anglia; see FENS).

**Fencing**, art of attack and defence with small-sword (foil and épée, *qq.v.*), and broadsword (sabre and single-stick, *qq.v.*). In foil and épée F. point only is used; in sabre F. and single-stick, both point and edge. Masks and padded jackets are worn for protection.

**Fender**, (naut.) 1) protective structure (wood and steel) built round hulls of certain small ships (e.g., coasters). 2) Rope structure round rowing boats and at fore end of tugs.

**Fénelon**, François de (1651-1715), Fr. author and educationalist; Abp. of Cambrai; novel: *Télémaque*.

**Feng-tien**, prov. (56,000 sq.m.), S. Manchuria; pop., 15,000,000; cap., Mukden.

**Fenian Brotherhood**, Fenians: an Ir. revolut. soc. organized in Amer. by John O'Mahony (1816-77), 1858, and in Dublin by Jos. Stephens (1825-1901), 1865, to bring about the separ. of Ireland from Gt. Brit. Reckless attacks were made on life and property; Habeas Corpus Act was suspended (1866); three Fenians hanged at Manchester

(1867); by the early '80's movement merged in the Ir. Republican Brotherhood and other bodies.

**Fennec**, small S. and Centr. African fox characterized by enormous length of its ears and its social habits, many dwelling together in small companies; sandy-coloured with dark tip to brush.

**Fennel**, (bot.) *Foeniculum vulgare*, wild plant, cultivated in S. of France and elsewhere for medicinal purposes; stimulant and carminative; an ingredient of compound liquorice powder. Grows abt. 3 ft. high and has yellow umbels. Highly aromatic and used in cookery to make a sauce for fish.



Fennel

**Fens, The, Fen District**, low-lying, marshy region in E. Eng., covering parts of Lincoln, Northants, Hunts., Cambridgesh., Norfolk; c. 70 m. long and 35 m. at max. width. Orig. part of bay of wh. Wash is portion now remaining. Reclamation has been intermittently in progress since the Roman occupation, and is still proceeding.

**Fenugreek**, herb of bean family with aromatic leaves and edible seeds.

**Ferdinand**, name of 3 Holy Rom. Emperors: **F. I** (1503-64), Kg. of Bohemia and Hungary, 1526; succ. Charles V as Emp., 1556; made relig. Peace of Augsburg, 1555. **F. II** (1578-1637), Emp., 1619; renewed Thirty Years' War, 1625. His s., **F. III** (1608-57), Emp., 1637, signed Treaty of Westphalia, 1648.

**Ferdinand I** (1793-1875), Emp. of Austria, 1835; abd. (1848) in favour of nephew, Francis-Joseph (q.v.).

**Ferdinand**, name of kgs. of: 1) *Bulgaria*: **F.** (1861-) of Saxe-Coburg and Gotha; Pr. of Bulg. 1887; Kg., 1908; abd., 1918. 2) *Naples*: **F. I.** (1423-94), Kg., 1458; **F. II** (1469-96), Kg., 1495; **F. IV** (1751-1825), Kg., 1759; proclaimed kgd. of the Two Sicilies. 3) *Portugal*: **F. I.**, "the Gentleman," (1345-83), Kg., 1367. 4) *Rumania*: **F. of Hohenzollern-Sigmaringen** (1865-1927), Kg., 1914. 5) *Spain*: **F. I.**, "the Great" (d. 1065), Kg. of Castile, 1028; **F. II** (d. 1188), Kg. of Leon, 1157; **F. III**, "the Saint" (1199-1252), Kg. of Castile, 1217; of Leon, 1231; **F. IV**, "the Summoned" (1285-1312), Kg. of Castile at age of 10; **F. V**, "The Catholic" (1452-1516), united kgdms. of Castile and Aragon by m. with Isabella of C., 1469; expelled Moors from Granada, 1492; employed Christopher Columbus on voyages of exploration; united 4 kgdms. of Spain, 1515; **F. VI** (1713-59), Kg. of Sp., 1746; **F. VII** (1784-1833), Kg. of Sp., 1808; abd., 1808; returned, 1814; maintained by French in absolute power agst. Liberal revolts; opposed by Carlists, supporters of his bro., Don Carlos (q.v.).



Felucca



and corporative lines; curtailed powers of Parl.; substituted autocratic system for trades unions (*Carta del lavoro*); State gov. by provincial diets; Vatican Pact (1929) restored temporal power to Pope. F. opposed to Freemasonry, the Cath. Nat. party (*Popolari*) and Democracy. *See also* ITALY.

**Fascia** (archit.), *see* ENTABLATURE; also used generally, as a term for main front of a building, and for a *facia*, the board or tablet on shop-front with occupier's name, etc.

**Fascines**, faggots usu. of osier for protecting banks of waterways, bldg. earth-works, etc., and as beds for spat in oyster culture.

**Fashoda**, now **Kodok**, tn., Anglo-Egypt. Sudan, on the White Nile. Its occupation by France in 1898, and consequent action by England, was the occasion of a new delimitation of European spheres of influence in the Nile valley.

**F.A.S.L.**, abbr. Fellow, Anthropological Society, London.

**Fasti**, term applied in anc. Rome to days on which courts could lawfully be held and judgments pronounced; hence, a calendar of festivals and events, or a record of events in chronological order, with date upon which each occurred; such a record in poetic or other literary form, e.g., the F. of Ovid (*q.v.*).

**Fasting**, total or partial abstinence from food on fixed days, prescribed as a religious discipline by various Christian Churches, by Judaism, and by Islam. On Fast Days the R.C.Ch. restricts its adherents to one full meal (not earlier than midday) with a small collation in the evening.

**Fatalism**, theory that all events and actions are pre-ordained and inevitable; therefore human will incapable of influencing them.

**Fata Morgana** (It.): *see* MIRAGE; MORGANA.

**Fates** (Gr. *Moerac*, Rom. *Parcae*), three



The Three Fates

anc. Gr. goddesses of destiny; Clotho spun the thread of life, Lachesis twisted it, Atro-

pos cut it off. The Rom. names are Nona, Decuma, and Morta.

**Fathers of the Church**, the eminent writers and teachers of Orthodox and Cath. Christianity from 1st to 12th centuries.

**Fathom**, Brit. meas. of length or depth = 6 ft.; used chfly. of ocean depths.

**Fatigue**, 1) (mech.) deterioration in solids caused by repetition of moderate stress. Freqly. accompanied by increase in size of crystals forming structure. Important in engines, esp. crank shaft, railway lines. 2) (Milit.) Duties performed by soldiers not involving the use of arms.

**Fatima** (c. 606-632), dau. of Mohammed; reputed ancestress of FATIMITES (*q.v.*).

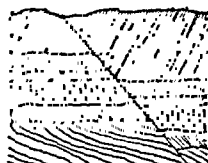
**Fatimites**, Arab. dyn. in Egy., Syria, and N. Africa, 907-1171, trad. desc. of Fatima, (*q.v.*). Cairo was fndd. by them, and they were the opponents of the earlier Crusaders. Succeeded by the Abbasides.

**Fats**, naturally occurring compounds of fatty acids (palmitic, stearic, oleic, etc.) with glycerin; means of storage of food in animal bodies. Decomposed by boiling with alkalis (forming soaps, hence process called *saponification*) and by var. ferments. Purified by rendering (heating of animal tissue and pressing out fat) or by dissolving in benzine, acetone, petrol, and other solvents. Made artific. from oils (fish-oil, etc.) by action of hydrogen under great heat and pressure with nickel catalyst (*q.v.*); process called *Fat-hardening*.

**Faubourg** (Fr.), suburb.

**Faucit**, Helena Saville (1817-98), Eng. actress; London début as Julia in *The Hunchback*, Covent Garden (1836); cr. part of heroine in *Lady of Lyons* (1838); Shakespearean rôles incldd. Juliet, Portia, and Desdemona; marr. Mr. (later Sir) Theodore Martin, 1851; wrote *On Some of Shakespeare's Characters* (1885).

**Fault**, (geol.) displacement of part of strata, resulting in loss of their continuity.



Geological Fault

**Faun**: *see* FAUNUS.

**Fauna** (Lat.), the animal life of any given era or epoch, or of a given area.

**Faunus**, (Rom. myth.) anc. Ital. nature deity, protector of agriculture. Later identified with Gr. Pan and represented with pointed ears and goat's feet. Hence *Fauns*, Rom. woodland deities, corresp. to Gr. Satyrs (*q.v.*).

**Faure**, Félix (1841-99), Fr. statesman; Pres., 1895-99; concluded Franco-Russ. Alliance, 1897.

**Fauré**, Gabriel Urbain (1845-1924), Fr. composer of songs and chamber music.

**Faust**, or **Faustus**, Dr. Johann, 16th

cent. Ger. magician, soothsayer, and astrol-  
 oger, said to have contracted his soul to the  
 Devil; local traditions  
 collected soon after  
 death in *History of Dr.  
 F., the Notorious Magi-  
 cian*, etc., on trans. of  
 which Marlowe fndd.  
*Tragedy of Dr. Faustus*  
 (c. 1601); subject of  
 puppet-plays in Ger. on  
 wh. Lessing and Goethe  
 based tragedies. **Faust**,  
 opera by Gounod (q.v.)  
 (1859), based on  
 Goethe's *Faust*.



Faust and Gretchen,  
 after Cornelius

**Faustina: F. Senior** (d. A.D. 141), wife  
 of Emp. Antoninus Pius; her dau.  
**F. Junior** (d. A.D. 175), wife of  
 Emp. Marcus Aurelius Antoninus.  
 Both notorious profligates.

**Faute de mieux** (Fr.), for want  
 of a better; if the worst comes to the  
 worst.

**Fauteuil** (Fr.), armchair, easy  
 chair; the seat of a member of the  
 Fr. Acad., hence, membership of this;  
 one of the more expensive seats at  
 a theatre.

**Faux pas** (Fr.), false step; mis-  
 take; esp. a social indiscretion.

**Favre**, Gabriel (1809-80), Fr.  
 statesm.; led opp. to 2nd Empire; de-  
 manded deposition of Nap. III after  
 Sedan (q.v.); negotiated peace with  
 Ger., 1871.

**Favus**, contagious skin disease  
 caused by a parasitic fungus, chfily.  
 affecting the scalp.

**Fawcett**, Henry (1833-84), Brit.  
 politician and economist; prof. of  
 polit. econ., Cambridge, 1863; Lib.  
 M.P., Brighton, 1865; supp. of female  
 franchise; P.M.G., 1880; introd. re-  
 forms in postal service, incldg. six-  
 penny telegrams, parcels post, and  
 postal orders. *Manual of Political  
 Economy*, 1863; *Aids to Thrift*, 1880.  
 His wife, **Dame Millicent G. F.**  
 (1847-1929), Eng. author and biog-  
 rapher; prominent in agitation for  
 Woman Suffrage.

**Fawkes**, Guy (1570-1606), Eng. conspir-  
 ator; participated in Gunpowder Plot, 1605,  
 to blow up James I and Parlt.; executed.

**Fayrfax**, Robert (c. 1465-1521), Eng.  
 composer; accompanied Henry VIII to  
 Field of Cloth of Gold (1520).

**Fayum**, or **El Faiyum**, prov. Upper  
 Egypt, including an oasis, W. of the Nile;  
 670 sq.m.; pop., 554,000; *Birket Qarun*, a lake  
 (28 m. by 5; 140 ft. below sea-lvl.) in N.W.;  
 cereals, cotton, rice. Cap., *Fayum* or *Me-  
 dinet-el-Faiyum* (pop., 52,900), nr. site of  
*Arsinoe*; excavations.

**F.B.A.**, abbr. Fellow, Brit. Academy.  
**F.B.O.A.**, abbr. Fellow, Brit. Optical  
 Association.

**F.B.S.**, abbr. Fellow, Botanical Society.  
**F.C.**, abbr., 1) Free Church of Scotland;  
 2) football club.

**F.C.A.**, abbr. Fellow, Chartered Account-  
 ants.

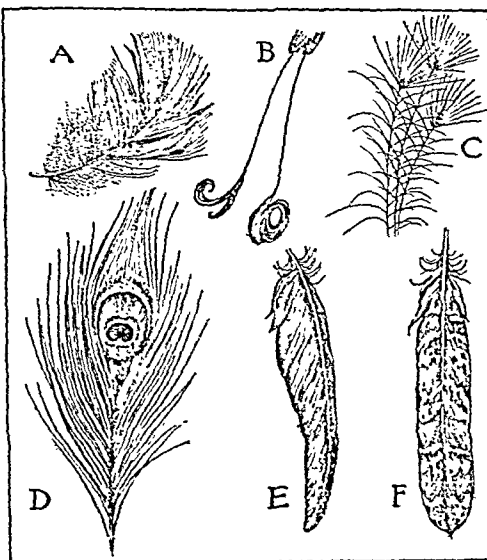
**Fcap.**, abbr. foolscap (size of paper).

**F.C.I.S.**, abbr. Fellow, Chartered In-  
 stitute of Secretaries.

**F.C.O.**, abbr. Fellow, College of Organ-  
 ists.

**F.C.S.**, abbr. Fellow, Chemical Society.

**F.D.**, abbr. *Fidei Defensor* (Lat.), Defender  
 of the Faith.



Types of Feather

- A Breast Feather, Duck.
- B Tail Feathers, King Bird of Paradise.
- C Crown Feathers, Victoria Crowned Pigeon.
- D Peacock Feather.
- E Primary.
- F Central Tail Feather, Bengal Eagle Owl.

**F.D.C.**, abbr. *fleur de coin*, a coin in mint  
 state.

**Fe**, (chem.) symbol of iron (Lat., *ferrum*).

**Fasts**, (relig.) days set apart for com-  
 memoration of certain persons and events,  
 wh. are regarded as occasions for rejoicing  
 or triumph. Cf. **FAST**.

**Feather**, one of the external growths  
 covering body of a bird and collectively form-  
 ing its plumage; consists of hollow, horny  
 stem (quill) bearing lateral barbs, each of  
 which is fringed with smaller barbs fitting  
 closely into one another. *Contour Fs.* are  
 those forming outer covering of body.

*Down Fs.* usu. underneath, forming thick, protective layer.

**Feathering**, (rowing) turning the blade of an oar or scull at the finish of a stroke so that it travels back horizontally.

**Febronianism**, view of relations of Ch. and State, founded on a work of "Febronius" (John Nicolas von Houtheim, 1701-90, Suffragan Bp. of Trèves), and regarded by R.C.'s as an exaggerated *Gallicanism* (q.v.).

**February**, 2nd month, of 28 days, 29 in leap year; in anc. Rome, season of purific. ceremonies (*februa*). **F. Revolution**, 24 Feb., 1848, bringing abt. fall of Louis Philippe and establ. of 2nd Fr. Republic.

**Fécamp**, port, N.W. France, dépt. Seine-Inférieure, on Eng. Channel; pop., 16,000; 12th-cent. abbey church; manuf. Benedictine liqueur; fisheries; shipbuilding.

**Fec., fecit** (Lat.), (he) has done (it); placed after artists' names on works of art.

**Fechner**, Gustav Theodor (1801-87) Ger. psychologist; fndd. experimental psychology; auth: *Zendvesta*, 1851; *Elements of Psychophysics*, 1860.

**Federalism**, political system in wh. several states, each preserving internal independence, are united under one legislative body as far as foreign affairs and other subjects of common interest are concerned.

**Federalist party**, the political section wh. formed national govt. of U.S.A. under constitution of 1787; led by Alexander Hamilton (q.v.). See also CONFEDERACY.

**Federal Reserve Banks** (U.S.A.), district central banks, operate *F.R. System* (q.v.), insttd. by *F.R. Act* (1913), and govd. by *F.R. Board* (q.v.). One F.R.B. for each of 12 territories: New York, Chicago, Boston, St. Louis, Philadelphia, Minneapolis, Cleveland, Kansas City, Richmond, Dallas, Atlanta, San Francisco; notes had till 1933 40% gold backing. F.R.B. hold balances of member bks, discount bills, etc., and are govt. banks. **F. R. Board**, Govt. body of U.S.A. consisting of Secy. of Treasury as chairman, and comptroller of currency, both *ex officio*; 6 members apptd. by the President, one of whom is governor, chief executive officer of the board; function of F.R.B. is co-ordination in policy and practice of 12 district F.R. banks (q.v.) by issuing of regulations, and "review and determination" of discount rates decided upon by the 12 banks separately. **F. R. System**, central banking system of U.S.A. estabd. in 1914, with 12 districts, in each of wh. is a F.R. Bank; these are: a) *Bks. of Issue*, b) *Bankers' Bks.* receiving deposits of member bks., and making loans to them, c) *Bks. of Re-discount*, and d) *Fiscal Agents* of govt.; they are therefore *central banks* performing similar functions to those of B. of Eng.,

Reichsbank, etc.; policy of 12 banks is co-ordinated by *F.R. Board* (q.v.). **F. State:** see FEDERALISM.

**Federated Malay States**, sovereign sultanates, Malay Penins., under Brit. protection; comprise Perak, Selangor, Negri Sembilan, on W. coast and Pahang on E. coast. Area, 27,600 sq.m.; pop., 1,125,000 (Chinese, 711,000); exports rubber, tin, coconuts, copra, fruit, timber. Federal capital, *Kuala Lumpur* (q.v.). Treaties of federation have existed from end of 19th century. See STRAITS SETTLEMENTS; MALAY STATES.

**Feed**, (of a machine) part concerned in automat. feeding raw matl. into machine, or advancing a cutting tool, grinder, drill, etc., as matl. is removed from work. **F. water**, for feeding boilers, often heated in *f. w. heater* bef. passing into boilers; previous purification nec. if water contains solid matter in solution (lime, magnesia). See WATER-SOFTENING.

**Feeder**, (engin.) widely used term for means or mechanism used to supply something (e.g., paper, fuel, electric energy, gas) to machine, distributing mains, etc.

**Feeling**, 1) perception, esp. thr. the sense of touch; 2) mental state or mood (impatience, restlessness, etc.); a premonition, intuition; 3) psychol. or spiritual emotion, (love, joy, animosity, etc.).

**Feint**, (boxing, fencing, etc.) feigned blow to draw opponent's guard.

**Faisal al Husain** (1885-1933), Kg. of Iraq, 1921; an Arab. Prince, s. of Sharif Husain, descend. of the Prophet.

**Feldspar, felspar**, important mineral group of siliceous rock constituents; distinguished accdg. to crystalline formation as *Orthoclasic* (breaking at rt. angles), wh. includes common potash-F., constituent of granite, gneiss, etc.; and *Plagioclasic* (tending to break along oblique planes), including soda-F. (albite) and lime-F. (anorthite). F. decomposes into kaolin, or into clayey soil containing potash.

**Félibrige**, society for the revival of Provençal as a lit. lang., fndd. by Roumanille and other poets, 1854; now groups throughout S. France, using variations of dialect and patois, and expressing wide range of relig. and polit. opinion.

**Felix**, name of 4 popes and 1 antipope, of whom most import., historically, are: **F. I**, St. (269-74), tradit. martyred under Aurelian persecutions. **Fel. II** (355-58), antip., chosen by Arian party to succeed Liberius. **F. III** (483-92), excommunicated Patriarch of Constantinople, 485, causing schism betw. E. and W. churches, wh. lasted 34 years.

**Felix**, (N.T.) Rom. governor of Judea



(52-60 A.D.), before whom Paul was arraigned.

**Felixstowe**, tn. and seaside resort, Suffolk, Eng., at mouth Riv. Orwell; ferry to Harwich; pop., 12,000.

**Fellahs, fellahin**, Egyptian peasants.

**Felloe, felly**, curved rim of wheel, which holds tyre.

**Fellow**, at Oxford, Cambridge, and Trinity College, Dublin, senior graduate member of college, elected by governing body, drawing salary from college revenues, sharing in its government, and often acting as tutor; in other universities, member of governing body, or graduate holding stipend for special study or research; also applied to members of various learned societies.

**Felony**, those more serious offences formerly punishable by death and confiscation of property.

**Felspar**: see FELDSPAR.

**Felsted School**, Eng. public sch. for boys, in Essex; fndd., 1564; re-constituted, 1852.

**Felt**, material of cotton or wool subjected to great pressure.

**Feluca**, small coasting vessel, with oars and lateen sails, used in Mediterranean.



Feluca

**Feminine**, (Lat.) characteristic of woman; womanly. **Feminism**, movement towards equality of rights betw. women and men.

**Femur**, (anat.) in mammals and birds, the thigh-bone, the longest bone of the body; in insects, the third joint of the leg.

**Fen**, low-lying, marshy land (esp. in E. Anglia; see FENS).

**Fencing**, art of attack and defence with small-sword (foil and épée, *qq.v.*), and broadsword (sabre and single-stick, *qq.v.*). In foil and épée F. point only is used; in sabre F. and single-stick, both point and edge. Masks and padded jackets are worn for protection.

**Fender**, (naut.) 1) protective structure (wood and steel) built round hulls of certain small ships (e.g., coasters). 2) Rope structure round rowing boats and at fore end of tugs.

**Fénelon**, François de (1651-1715), Fr. author and educationalist; Abp. of Cambrai; novel: *Télémaque*.

**Feng-tien**, prov. (56,000 sq.m.), S. Manchuria; pop., 15,000,000; cap., Mukden.

**Fenian Brotherhood**, Fenians: an Ir. revol. soc. organized in Amer. by John O'Mahony (1816-77), 1858, and in Dublin by Jos. Stephens (1825-1901), 1865, to bring about the separ. of Ireland from Gt. Brit. Reckless attacks were made on life and property; Habeas Corpus Act was suspended (1866); three Fenians hanged at Manchester

(1867); by the early '80's movement merged in the Ir. Republican Brotherhood and other bodies.

**Fennec**, small S. and Centr. African fox characterized by enormous length of its ears and its social habits, many dwelling together in small companies; sandy-coloured with dark tip to brush.



Fennel

**Fennel**, (bot.) *Foeniculum vulgare*, wild plant, cultivated in S. of France and elsewhere for medicinal purposes; stimulant and carminative; an ingredient of compound liquorice powder. Grows abt. 3 ft. high and has yellow umbels. Highly aromatic and used in cookery to make a sauce for fish.

**Fens, The, Fen District**, low-lying, marshy region in E. Eng., covering parts of Lincoln, Northants, Hunts., Cambridgesh., Norfolk; c. 70 m. long and 35 m. at max. width. Orig. part of bay of wh. Wash is portion now remaining. Reclamation has been intermittently in progress since the Roman occupation, and is still proceeding.

**Fenugreek**, herb of bean family with aromatic leaves and edible seeds.

**Ferdinand**, name of 3 Holy Rom. Emperors: **F. I** (1503-64), Kg. of Bohemia and Hungary, 1526; succ. Charles V as Emp., 1556; made relig. Peace of Augsburg, 1555. **F. II** (1578-1637), Emp., 1619; renewed Thirty Years' War, 1625. His s., **F. III** (1608-57), Emp., 1637, signed Treaty of Westphalia, 1648.

**Ferdinand I** (1793-1875), Emp. of Austria, 1835; abd. (1848) in favour of nephew, Francis-Joseph (*q.v.*).

**Ferdinand**, name of kgs. of: 1) *Bulgaria*: **F.** (1861- ) of Saxe-Coburg and Gotha; Pr. of Bulg. 1887; Kg., 1908; abd., 1918. 2) *Naples*: **F. I.** (1423-94), Kg., 1458; **F. II** (1469-96), Kg., 1495; **F. IV** (1751-1825), Kg., 1759; proclaimed kgd. of the Two Sicilies. 3) *Portugal*: **F. I.**, "the Gentleman," (1345-83), Kg., 1367. 4) *Rumania*: **F. of Hohenzollern-Sigmaringen** (1865-1927), Kg., 1914. 5) *Spain*: **F. I.**, "the Great" (d. 1065), Kg. of Castile, 1028; **F. II** (d. 1188), Kg. of Leon, 1157; **F. III**, "the Saint" (1199-1252), Kg. of Castile, 1217; of Leon, 1231; **F. IV**, "the Summoned" (1285-1312), Kg. of Castile at age of 10; **F. V**, "The Catholic" (1452-1516), united kgdms. of Castile and Aragon by m. with Isabella of C., 1469; expelled Moors from Granada, 1492; employed Christopher Columbus on voyages of exploration; united 4 kgdms. of Spain, 1515; **F. VI** (1713-59), Kg. of Sp., 1746; **F. VII** (1784-1833), Kg. of Sp., 1808; abd., 1808; returned, 1814; maintained by French in absolute power agst. Liberal revolts; opposed by Carlists, supporters of his bro., Don Carlos (*q.v.*).

**Ferdinand**, Duke of Brunswick (1721-92), Pruss. F.M.; deftd. Fr. at Minden (q.v.).

**Fère-en-Tardenois**, tn., dépt. Aisne, France; pop., c. 2,000. Strategically important in World War. Gives name to Tardenoisian Culture (q.v.).

**Ferghana**, 1) dist. in Uzbekistan S.S.R., Asia; c. 58,000 sq.m.; pop., 690,000; cotton and silk manufac.; cap. *Kokand* (pop., 69,000). 2) Tn. (formerly *Skobelcv*) S.E. of F. Valley; at foot of Altai Mtns.; elec. power station; pop., 14,275.

3) Range of mtns., Uzbekistan, rising to 12,000 feet.

**Feringhee**, term derived from Persian form of *Frank* applied in India to a foreigner, esp. a European; also, a Eurasian, esp. offspring of Portuguese and Hindu.

**Fermanagh**, inland co., Ulster, S.W. of N. Ireland; area, 653 sq.m.; pop., 58,000; div. by *Loch Erne* (Upper and Lower); surface hilly; dairy farming, stock raising, linen manuf.; co. tn., *Enniskillen*.

**Fermata**, (mus.) sign over  $\wedge$  or under  $\cup$  a note, denoting a pause (q.v.).

**Fermentation**, splitting of organic compounds by action of ferments (q.v.), most imp. the alcoholic F. of sugar into alcohol and carbonic acid by the action of yeast, and the lactic F. of milk, etc., caused by bacteria.

**Ferments**, *enzymes*, gr. of non-organized substances wh. prod. chem. changes by fermentation, hydrolysis or oxidation. *Dias-tase* (not saliva and pancreas), hydrolysis starch; *cellulose* (in grass-eating animals) converts cellulose into sugar; *invertase* (intestinal juice) converts cane sugar into glucose; *lipase* (pancreatic juice) converts fat into fatty acids and glycerin; *pepsin* (stomach) converts proteins into peptone; *ptyalin* (saliva) converts cooked starch into sugar; *rennin* causes clotting of milk.

**Fernando Po**, Span. isl., Bight of Biafra, W. Africa; area (incl. dependencies of *Great* and *Little Elobey*, *Annobon*, *Corisco*) 795 sq.m.; pop., 20,900; surface mountainous (Pico de Santa Isabel, 10,800 ft.); dense forests; exports coca, coffee, sugar, tobacco; cap. *Santa Isabel* (or Port Clarence) (pop., 1,500).

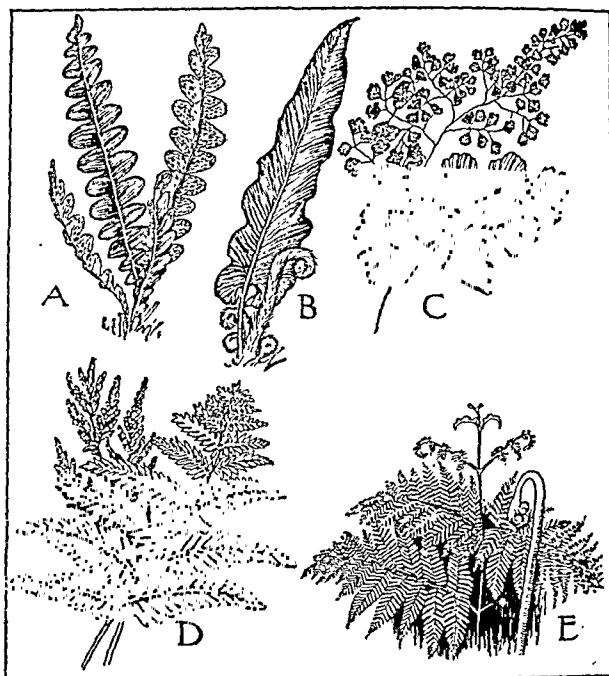
**Ferney-Voltaire**, tn., Jura, France, on Swiss frontier, 4 m. N.W. Geneva; pop.,

2,000; resid. of Voltaire from 1758 to his death in 1778.

**Ferns**, flowerless plants having roots, stems, and leaves; reproducing by means of spores.

**Ferrara**, tn. in Emilia, It.; pop., 115,800; 12th-cent. cathed.; school of painting in 15th and 16th cents.; birthplace of Ariosto and Tasso.

**Ferraris**, Galileo (1847-97), Ital. physicist and electrician. Pioneer in use of 3-phase



Types of Fern

A Scaly Spleenwort.

B Hart's Tongue.

C Maidenhair.

D Royal Fern.

E Bracken.

current (q.v.); invented alternating-current meter now univ. used.

**Ferrel**, William (1817-91), Amer. meteorologist; prof. of meteorol., Signal Office, Washington, U.S.A., 1882. **F's Law**, states that a body, e.g., air, moving over earth's surface in any direction exc. E. or W. is deflected to the right in N. hemisphere and to left in S. hemisphere by rotation of earth. See **BUYS BALLOT'S LAW**.

**Ferret**, partially tamed variety of polecat (*Putorius foetidus*), trained for hunting rats and rabbits.

**Ferrier**, Susan Edmonstone (1782-1854), Scot. novelist; friend of Sir Walter Scott; *Marriage*, 1818; *The Inheritance*, 1824; *Destiny*, 1831.

**Ferrite**: see **STEEL**.

**Ferro**, **Hierro**, westernmost of Canary

Is.; area, 106 sq.m.; pop., 8,000. Taken as first meridian of longitude by 17th-cent. Fr. geographers.

**Ferro-concrete:** see CONCRETE.

**Ferrol**, city, prov. Corunna, Spain; fortified harbour, dockyard, wireless station; pop., 30,000.

**Ferrous, ferric:** see IRON.

**Ferrum** (Lat.), iron (q.v.).

**Ferry**, place where boats ply regularly for the transport of passengers, goods, and vehicles across a river or narrow arm of the sea. **F. boat**, for crossing rivers or estuaries travelling free or on a chain stretched diagonally from bank to bank across current; also large power-driven craft, esp. **f. bridge** or **train f.** (q.v.), constructed to carry rly.-carriages; e.g., service from Harwich to Zeebrugge.

**Fertilization**, (biol.) impregnation, act or process by wh. the reproductive cell is impregnated by the male cell, both in plants and animals. In the higher plants, grains of pollen, on reaching the stigma, develop pollen tubes wh., growing downwards in the conducting tissues, ultimately reach and impregnate the ovum cells. In mammals, a spermatozoon enters the oviduct after copulation, moving onwards until it finds a ripe egg and, uniting with its nucleus, produces the embryo (q.v.).

**Fertilizers**, manures, substances mixed with soil to incr. productiveness. Manures, gen. applied to natural F., e.g., dung, guano (q.v.), ashes, lime, etc. F. usu. denote chem. or artificial manures, e.g., nitrogen, phosphorus, potassium; now in world-wide use and important factor in productn. of food-supply for incr. population.

**Fervid:** see THERMIDOR.

**Fescue, festuca**, large genus of grasses. Sheep's F., *F. ovina*, may grow to 2 ft., densely tufted. Many other species.

**Festina lente** (Lat.), make haste slowly; more haste, less speed.

**Ffestiniog:** see FFESTINIÖG.

**Festubert**, vill. Pas-de-Calais, France, 3 m. N.W. La Bassée. Battle of F., May 9-24, 1915, unsuccessful Brit. offensive against Germans.

**Fête** (Fr.), feast, celebration, party; **f. champêtre**, picnic, open-air party.

**Fétis**, François Jos. (1784-1871), Belg. musician and composer. Auth., *Universal Biography of Musicians*, 1834; *Treatise on Counterpoint and Fugue*, 1824.

**Fetish**, inanimate obj. venerated among some prim. peoples (mainly W. African) for its supposed magical potency, derived from spirits; magical charm. **Fetishism**, abnormal attachment to objects representing the

phallus or in any way associated with sexually desired persons.

**Fetlock**, pastern joint of horse; tuft of hair behind pastern.

**Fettes College**, Scot. public school for boys, Edinburgh, fndd. 1870.

**Feuchtwanger**, Lion (1884- ), Ger. novelist and dramatist; novels *Jew Süss*; *The Ugly Duchess*, 1927; forced to leave Germany as Jew, and deprived of Ger. nationality by Nazi Govt., 1933.

**Feudalism**, mediaeval system of government, land tenure, and military service. Tenants-in-chief held lands, or office, of the kg. in return for civil and milit. service, and *Aids* (money paymts. on spec. occasions); lesser tenants held of the greater on similar terms; rise in 13th cent. of professional lawyers; centralized govt., and facilities for regular taxation and purchase of milit. service led to decline of system. See VASSAL; VILLEIN.

**Feu de joie** (Fr.), discharge of firearms in rapid succession as a salute; also, a bonfire.

**Feuerbach, Anselm von** (1775-1833), Ger. jurist, special. in crim. law; began reform of Bavarian penal legislation. His s. **Ludwig** (1804-72), philos.; *The Essence of Christianity*, transl. by George Eliot (q.v.), 1854; had memorable controversy with Engels (q.v.).

**Feuillet**, Octave (1812-90), Fr. writer; novels and plays: *The Romance of a Poor Young Man*, 1858.

**Feuilleton** (Fr.: small leaf), orig. supplement to a newspaper consisting of literary criticism, fashion news, "gossip," etc.; now, in Eng., a serial story, or instalment of one, printed in a newspaper.

**Fever**, rise of body temperature above the normal, accomp'd. by quickening of pulse respirations and increased tissue-waste. Treatment: rest in bed, plenty of fluids by mouth, saline aperients, doses of aspirin (acetyl-salicylic acid). See TEMPERATURE.

**F.-few**, *matricaria parthenium*, grows on waste ground, abt. 18 ins. high; white flowers; used in folk med. as a tonic, aperient, and anthelmintic. Sometimes known as wild chamomile.

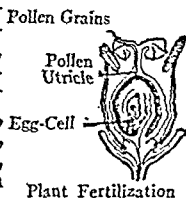
**Fey**, doomed to die; esp. in partic. psychic state, often exaggeratedly gay, wh. precedes sudden death.

**Fez**, city, Fr. Morocco; one of the four capitals of Morocco; manuf. leather, wool, silk, Fez caps; mosques; univ.; pop., 107,800 (9,700 Europeans).

**Ff.**, abbr., 1) (mus.) *fortissimo* (It.), very loud; 2) folios; 3) following (pages, etc.)

**F.F.A.**, abbr. Fellow, Faculty of Actuaries.

**Ffestiniog, Ffestiniog**, urb. dist., Merionethsh., N. Wales; pop., 9,000;



includes vill. of F. and quarry-town of *Blaenau F.*; slate-quarries.

**FFF.**, (mus.) abbr., *fortississimo* (It.), as loud as possible.

**F.F.V.**, abbr. First Families of Virginia.

**F.G.A.**, abbr. free of general average.

**F.G.S.**, abbr. Fellow, Geological Society.

**F holes**, sound holes of violin, so called from their resemblance to the letter *f*.

**F.I.**, abbr. Falkland Islands.

**F.I.A.**, abbr. Fellow, Institute of Auctioneers, or Actuaries.

**Fiacre**, hackney carriage, so called from the Hôtel St. F., an inn in Paris (about 1660), where carriages could be hired. **St. F.**, a Celtic Saint of the 7th century.

**F.I.A.T.**, abbr. *Fabbrica Italiana Automobile Torino* (It.) large Italian motor-works; a car made in those works.

**Fiat** (Lat.), let it be; command, decree, authoritative order. **F. lux**, let there be light (Gen. i., 3). **F. justitia, ruat coelum** (Lat.), let justice be done though the heavens fall.

**Fibre**, thread or filament combining with others to form animal or vegetable tissue. *Animal fibres* include filaments of silk-worm, sheep's wool, horse-hair. *Vegetable fibres* include flax, hemp, jute, sisal. **F.** is also obtained from asbestos, glass, wood, and certain metals.

**Fibrin**, (physiol.) substance forming solid network in wh. remaining constituents of blood are held when blood clots.

**Fibula**, 1) (archaeol.) kind of brooch used in antiquity to secure draperies; see *CHLAMYSES*. 2) (Anat.) Outer and smaller of the two bones of the leg, betw. knee and ankle.



Bronze Fibula

**F.I.C.**, abbr. Fellow, Institute of Chemistry.

**Fichte**, Johann Gottlieb (1762-1814), Ger. philos.; *Foundation of the Whole Theory of Science*, 1794.

**Fichtelgebirge**, mtn. range, Upper Franconia; pine woods; *Schneberg*, 3,448 ft.; *Ochsenkopf*, 3,356 feet.

**Fichu** (Fr.), small triangular scarf for draping on the shoulders.

**Ficino**, Marsilio (1433-99), Ital. philosopher; *Plato's Doctrine of the Immortality of the Soul*, 1482.

**Fiction**, acceptance of the imaginary; prose narrative in wh. incidents, characters, and scenes are wholly or partly imagined; a novel.

**Fiddlesticks**, empty talk, nonsense.

**Fidel defensor** (Lat.), Defender of the Faith; title granted by Pope Leo X to Henry

VIII, 1521, and since borne by kgs. of England.

**Fidelio**, opera by Beethoven (*q.v.*), (1805).

**Fiduciary**, (finan.) used in bankg. to imply "without security." **F. issue**, amount of bank notes issuable beyond those with gold backing. In Gt. Brit., under Act of 1928, fixed at £260,000,000; under temp. legislation, now £275,000,000; see *ISSUING BANKS*.

**Fidus Achates** (Lat.), loyal A., the constant friend of Aeneas (*q.v.*); applied to any faithful friend.

**Fief**, estate held under feudalism by a vassal (*q.v.*) on condition of service to his lord, or directly to the kg.; holder known as *feoffee*; see *FEUDALISM*; *VASSAL*.

**Field**, Eugene (1850-95), Amer. auth. of poems of childhood; with his bro., **Roswell**, wrote *Echoes from the Sabine Farm*, 1892 (verse translations from Horace). **F., John** (1782-1837), composer and pianist; settled in Russ. 1804; known as "Russian Field"; inventor of the Nocturne, afterwards adopted by Chopin, who made first public appearance as pianist in concerto by Field.

**Field hospital**, (milit.) second hospital stage (behind the casualty clearing station).

**F. kitchen**, *company cooker*, vehicle for cooking on the march. **F. marshal**, highest milit. rank. **F. railway**, temp. rly., chiefly for military use. **F. of the Cloth of Gold**, The, site betw. Guisnes and Ardes, nr. Calais, where from 4-25 June, 1520. Henry VIII of Eng. and François I of France met; name taken from gorgeous equipment of the retinues and magnificent banners and tents of the two monarchs.



Field-Marshal's Badges

**Fieldfare**, migratory thrush feeding on insects and worms, and in winter on berries; arrives in winter in Gt. Brit. from Scandinavia.

**Fielding**, Henry (1707-54), Eng. playwright and novelist; novels: *Joseph Andrews*, 1742; *Tom Jones*, 1749.

**Fiesole**, tn., Tuscany, Italy (alt. 970 ft.), 3 m. N.E. Florence; pop., 2,800; 11th-13th cent. Romanesque cathed.; Dominican monastery (Fra Angelico a friar, 1408); straw-plaiting.

**Fife**, marit. co., E. Scot., forming penins. betw. Firths of Forth and Tay, "Kingdom of Fife"; area, 492 sq.m.; pop., 276,300; surface undulating; agric. (flax); important coalfield; manuf. linen, linoleum; iron-founding, shipb., bricks and tiles, distilling, fishing. Includes St. Andrews, Dunfermline, Kirkcaldy (largest tn.), Falkland, and *Cuppar* (co. tn.); ports, Methil, Burntisland.

**Fife**, small flute-like instr., one octave higher than flute (in military bands).



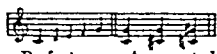
J. G. Fichte

**Fifth**, 5th. step in mus. scale and the corresponding interval.

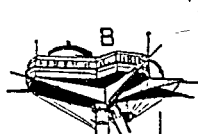
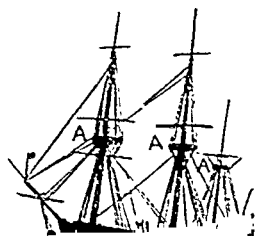
**Fig**, *Ficus carica*, tree, native of S.W. Asia and Medit. region, bearing sweet, pulpy fruit; may be eaten fresh, dried and pressed, or preserved in syrup. *Ficus indica*, the Indian F., see BANYAN.

**Figaro**, character in Beaumarchais' plays, *Le Barbier de Séville*, *Le Mariage de Figaro*, and *La Mère coupable*; type of versatility, intrigue, and adroitness; hero of operas by Mozart, Paisiello, and Rossini.

**Fighting fish**, E. Indian fresh-water fish; the male is remarkable for its pugnacity and brilliant colouring; greatly prized by natives, who keep them in aquaria and match them in fights. **F.-top**, (naut.) platform on mast of warship, on wh. small guns are placed; in



Fig



A Fighting Top, Tudor Galleon.

B Control Top, Modern Battleship.

mod. battleships these are replaced by apparatus for observation and controlling of gunfire.

**Figured bass**, (mus.) bass provided with figures to indicate the harmonies.

**Figure-head**, (naut.) carved representation of human or other figure projecting from bow of a ship, below bowsprit; often symbol. of ship's name. Very gen. up to late 19th century.

**F.I.J.**, abbr. Fellow, Institute of Journalists.

**Fiji Islands**, archipelago, S. Pacific, Brit. crown colony; over 200 islands and rocks, mostly volcanic; 80 inhabited; the chief are *Figure-head* *Viti Levu*, *Vanua Levu*; total area, 7,100 sq.m.; pop., 182,600 (92,200 Fijians, 75,100 Indians,



5,100 Europeans). Mtns. in larger isls. reach 4,500 ft.; abundant timber, good climate, luxuriant vegetation; cane sugar, bananas, copra, rice, maize, rubber; bêche-de-mer. Cap., *Suva*, on Viti Levu.

**Filaria**, parasitic worms causing *Filariasis*, a disease widespread in the tropics, often leading to elephantiasis (*q.v.*).

**Filbert**: see HAZEL.

**Filchner**, Wilhelm (1877- ), Ger. soldier and explorer; travelled Pamir region, 1900; com. China-Tibet Exped., 1904-05; Antarctic Exped., 1911-12; Centr. Asian Exped., 1926-28.

**Fildes**, Sir Luke (1844-1927), Eng. painter; R.A., 1887; *The Doctor* (1891) in Tate Gallery; royal portraits, etc.

**File**, 1) (tech.) tool of hard steel with sharp furrows (teeth) in surface; many diff. shapes and pitch of teeth; used for removing surface of material. 2) Contrivance for keeping business letters and documents in order.

**Filey**, seaside resort, E. Riding, Yorks, 9 m. S.E. Scarborough; pop., 4,500.

**Filibuster**, 17th-cent. pirate in West Indies.

**Filigree work**, gold- or silver-wire decorations worked in delicate and elab. designs with lace-like effect; in use from earliest times, especially in jewellery.

**Filioque clause**, words in Nicene Creed (*q.v.*) avowing the Procession of the Holy Ghost from the Son as well as from the Father; a later addition to the creed, and subject of much contention.



Filigree

**Filipescu**, Nicholas (1862-1916), Rum. statesm.; when in opposition advocated adhesion of Rum. to Allied cause, in World War.

**Filipinos**, natives of Philippine Islands (*q.v.*), of mixed (mainly Malay) stock.

**Fille de joie** (Fr.), prostitute.

**Filling**, (tech.) sizing or other dressing of textiles, paper, etc.; used to give weight and improve appearance.

**Fillmore**, Millard (1800-74), 13th Pres. of U.S.A.; elec. vice-Pres., 1848; succeeded Zach. Taylor on latter's death, 1850; went out of office, 1853.

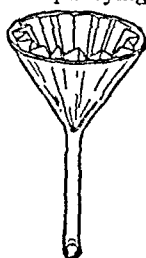
**Filly**, young mare; cf. COLT.

**Film**, (cinema) celluloid roll from which pictures are projected upon the screen, known as *stock*; negative for taking pictures, positive for prints. *Non-flam. stock* gen. cellulose acetate; non-explosive, but inflammable. Ord. F. is *nitro-cellulose*; burns almost explosively without access of air.

**Filistrato**, narrative poem (1344) by Boccaccio (*q.v.*); forms basis of Chaucer's *Troilus and Criseyde*, some of wh. is a lit. translation.



**Filter**, may be a porous bed of sand, gravel, charcoal, for straining and purifying water, etc.; absorbent paper or cloth placed in a funnel, thr. wh. liquid to be clarified is passed, or porcelain or asbestos for removing bacteria from liquids. The liquid passed thr. *F.* is called the *filtrate*.



Folding Filter

**F.-press**, apparatus for large-scale filtering, particularly when solid is to be washed and recovered. Consists of a number of rectangular frames for holding filter-cloths, with suitable perforations for inflow and outflow of liquid. Frames are clamped together to required number by screws betw. two parallel bars.

**Fin**, 1) (zool.), fan-shaped organ of fish. Kinds: pectoral, dorsal, ventral, anal, caudal: these enable fish to swim and balance themselves. 2) (Mechan.) Of a casting, ridges of metal, gen. caused by metal flowing into joints of mould, and hence removed in finishing, but also moulded intentionally, usually to facilitate transference of heat, e.g., for cooling engine-cylinders.

**Final dividend:** see INTERIM DIVIDEND.

**Finale**, (mus.) termination of an act in opera or operette (generally "ensemble"); also last movement of instrmtl. composition.

**Finance Act**, introduced ann. in Brit. Parlt. towards end of April, providing for year's taxation; see BUDGET. **F. bill:** see ACCOMMODATION BILL.

**Financial trust, finance company**, differs from an *Investment Trust* (q.v.) by non-observance of rule that gains accruing from favourable turnover of investment shall not be distribtd. Usu. specialize in investments in special indus. such as rubber, tea, mining, etc.; see HOLDING COMPANIES. Recent tendency for modifictn. of F.C.'s in direction of investmt. trusts. **F. year:** see FISCAL YEAR.

**Finches**, group of song-birds of family *Fringillidae*; distribtd. over temperate zones of the world. Incltd. chaffinch, greenfinch, goldfinch, siskin, etc. (qq.v.).

**Finchley**, urb. dist., Middlx., residential; part Greater London; pop., 59,000.

**Finder, view-finder**, (photog.) device attached to camera, enabling user to tell exactly when camera is correctly directed. Simplest form is wire frame attached to camera; now usu. a lens throwing image on mirror.

**Fin-de-siècle** (Fr.), end of the century; term esp. applied to close of 19th cent., distinguished for its decadent art and literature.

**Fine** (mus.), the end.

**Fine arts**, those which, as opposed to applied arts (q.v.), are pursued for their own

sakes and not for practical utility, i.e., painting, sculpture, imaginative lit. and drama, dancing; or those which, besides serving a practical end, have an essential overplus of purely aesthetic value, i.e., architecture, garden-design, jewellery, pottery, etc. **F. bank bills:** see BANK BILLS. **F. champagne** (Fr.), brandy of high quality, not to be confused with champagne.

**Fines herbes**, var. mixed pot-herbs, finely minced.

**Fingal**, legendary Scots-Irish bard, supposed to have fl. c. A.D. 300, poems attributed to whom are included in the works of Ossian. **F.'s Cave**, sea-washed cave, lined with pillars of basalt, on S.W. coast of *Staffa*, an uninhabited island of Inner Hebrides; 227 ft. long, 42 ft. wide, 66 ft. high.

**Finger**, (anat.) one of the five separate members forming extremity of the hand, esp. one of the four longer digits, the fifth (and shortest) being the thumb. **F.-prints**, impressions taken from pads or cushions of finger-tips; system of identification of crimi-



Finger-prints

nals in use in Gt. Brit. since Penal Servitude Act (1891), based on fact that no two persons have identical markings or ridges on the fingers. System has been so elaborately classified and indexed that any registered F.-prints can be identified.

**Finial**, decorative pinnacle surmounting Gothic gable.

**Finis** (Lat.), end. **F. coronat opus**, the end crowns the work.

**Finistère**, most westerly dépt. of France, 2,712 sq.m., pop., 744,295; mainly barren; sheep and horses; fisheries, shipbuilding; cap., *Quimper*.

**Finisterre, Cape**, north-west Spain, promontory (lighthouse).

**Finland**, *Suomi*, repub. (indept. 1917), N.E. Europe, bounded by Norway and Arctic Ocean (N.), U.S.S.R. (E.), Gulf of Finland (S.), and Sweden and Gulf of Bothnia (W.); includes part of Lapland (in N.); area (incl. Aland Isls. q.v.), 150,000 sq.m.; pop., 3,630,000 (Finns, and 341,000 Swedes; 98% Protestant); forest (57%) and lakes ("Land of a Thousand Lakes"—actually over 60,000, covering 17,320 sq.m., or 11.5% of total area); L. Ladoga betw. F. and Russia, L. Saima (with Imatra Falls) wholly



Finland

in Finland. Forestry, agric., cattle-breeding; timber, paper-making, textiles. Cap., *Helsingfors* (Helsinki). National epic poem is the *Kalevala* (q.v.). Orig. inhab. by the Lapps; settled by Finns, 7th-8th cents.; annexed by Sweden and converted to Christianity, 12th century. Wars betw. Sweden and Russia in 18th cent. ended in absorption by Russia, 1809 under guarantees (not fully observed) of semi-independence under the Czar as Grand-Duke of F.; indept. repub., 1917. **F., Gulf of**, E. arm of Baltic Sea, betw. Finland, Estonia, and Soviet Union; 250 m. long and 30-75 m. wide; ice-bound in winter. See Map, SCANDINAVIA.

**Finlay**, Robert Bannatyne Finlay, 1st visct. (1842-1929), Brit. lawyer and politician; solicitor-general, 1895; attorney-general, 1900; Lord Chancellor and created bn., 1916; visct., 1919; member of Permanent Court of International Justice, 1921.

**Finmark**, northern prov. of Norway; area, c. 18,500 sq.m.; pop., 44,200, mostly Lapps; tundra; whaling; Polar night from Nov. 21st to Jan. 20th. Cap., *Vadsö* (pop., 2,000).

**Finnish: Finno-Ugrian language:** see LANGUAGE SURVEY, *Ural-Altaic*.

**Finsbury**, met. bor., Centr. London, N. of Riv. Thames; pop., 69,900.

**Finsen**, Niels (1860-1904), Dan. physician, invtd. Finsen ultra-violet lamp; pioneer in treatment of tuberculosis by U.-V. light. See HELIOSCOPE.

**Finsteraarhorn**, highest peak, Bernese Oberland, Switzerland; 14,000 feet.

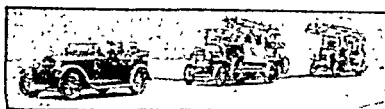
**Fiord:** see FJORD.

**Fir**, genus of coniferous trees (*Abies*) the true fir, of wh. there are abt. 25 species, is distinguished from the Pine (q.v.) by having single needle-shaped leaves instead of sheathed clusters. **Silver F.** (*Abies pectinata*) grows abundantly in mountain regions of Europe; yields turpentine.

**Firdousi** (c. 930-1020), Pers. poet; *Shahnama*; a history in verse of Persia to 7th cent. A.D., including the episode of Sohrab and Rustam.

**Fire**, principle present in combustion producing heat and light; making of F. possibly man's first discovery. Earliest methods incld.: twirling a stick inserted in a groove betw. palms of hands, or rotating stick by means of thong twined round it and pulled backwards and forwards (drill). More advanced civiliztn. made use of flint and steel, spark struck from wh. ignited a piece of tinder (q.v.); use of burning-glass (q.v.) was

known to Chinese from an early date. Before introductn. of matches (q.v.) (early 19th cent.), it was customary to carry tinder boxes or pouches, i.e., receptacles provided with flint, steel, and tinder, often elaborately decorated. A match-igniting contrivance, pa-



Fire Brigade: Car, Engine, and Escape

tented c. 1870, consisted of a bronze lamp contng. lumps of stearine, wh. cld. be ignited by rotation of disc, worked by the two handles. Aborigines of S.E. Asia and Malaya use a contrivance consisting of a piston containing piece of tinder wh., when driven into a tube, compresses air so violently that tinder is ignited. **F. alarm**, autom. device of many types; announces excessive rise of temp. by elec. signal. Gen. worked by 2-metal strip which bends with heat and closes elec. circuit. **F.-ball**, popular name for ball-lightning, and for meteors (q.v.). **F.-bricks**, (bldg.) heat-proof blocks made from refractory clay, fired at white heat; used for walling-up boilers, smelting-furnaces, etc. **F.-bridge**, (metall.) in a furnace, the barrier which separates the fire from the heated chamber or flue. **F. brigade**, organized body, establd. and equipped in most towns, for the purpose of extinguishing conflagrations; in London, introduced by the Royal Exchange Insurance Office, 1722; by Metropolitan Brigade Act (1865), fire-fighting machinery was taken over by metropol. board of works, the insurance cos. undertaking to contribute to upkeep. **F.-clay**, mixture of unburnt clay and clay wh. has been burnt and ground, subjected to intense heat; used in making fire-proof pottery. **F.-damp**, in coal mines, combustible gases (mainly methane, q.v.) given off by the coal in mines, forming an explosive mixture with air. Coal-dust also explodes when mixed with air. **F.-damp indicator**, safety appar. for lessening dangers of fire-damp, by signalling presence of explosive gases in coal-mines. **F. extinguisher**, hand apparatus containing liquids wh. are forced out by gas pressure; soda and acid from carbon dioxide; carbon tetrachloride (volatile liquid, vapour of wh. extngs. flame), also used, esp. for oils, petrol, etc. **F.-fly**, designation of several tropical and sub-tropical beetles, remarkable for possessing luminous areas on one part or another of the body. **F.-hydrant**, cock and coupling connected to water main, to which hose can be attached for purpose of extinguishing fire. **F. insurance**, means by wh. owners of property safeguard themselves agst. loss caused by fire by periodical pay-



Finsteraarhorn



Fir

ment in proportion to amt. insured. In Eng. F. ins. cos. came into existence after the Great Fire (1666), but none were establ. in Eur. until late 18th century. A person insuring agst. fire must have direct interest in property insured, *i.e.*, must be liable to incur loss by its destruction. See **INSURANCE**.

**F.-proofing**, process of rendering materials non-inflammable; for wood, fabrics, etc. (*e.g.*, canvas scenery and costumes in theatres), effected by painting and impregnating with chemicals, such as silicate of soda, borax, sal-ammoniac, ammonium phosphate, sodium tungstate. For full effect, chemicals must be forced into material by pressure or vacuum. **F.-works**, paper or cartridge cases of var. shapes cntg. mixtures of gunpowder-like character (charcoal, nitre, and sulphur) with salts giving bright flame colours (strontium, barium, thallium, sodium, etc.); incl. *rock-ets* (*q.v.*), *Catherine wheels*, *crackers*, *Roman candles*, etc. **F.-worship**, worship of fire as a deity, or as the symbol of a deity, common to both primitive and civilized races.

**Fireless cooker**, *cooking box*, thick-walled, lidded box, padded with materials of poor heat conduction (asbestos, hay, wood, wool) into wh. vessels containing food are placed to be cooked or kept hot. See **LAGGING**.

**Fires of St. John**, lit on Midsummer night in various parts of Europe in order to drive away evil spirits.

**Firing**, treatment in furnace of infusible bodies; *e.g.*, bricks, pottery, porcelain, to harden or glaze them.

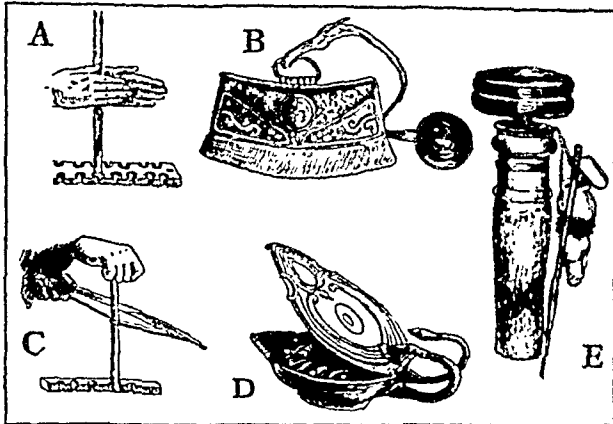
**Firkin**, 1) small cask. 2) Brit. and U.S. liquid meas., used esp. of beer; 9 imperial gallons (10½ U.S. gallons), ¾ kilderkin or ¼ barrel. 3) Brit. wt.; 56 lb. butter or 64 lb. soft soap.

**Firman** (Pers.), decree, licence; authority to travel etc., given by Oriental sovereign.

**Firn**, or *névé*, old, granulated snow of high mountains; the basis of glacier ice.

**First aid**, 1) **HÆMORRHAGE**: *a*) due to injury: arrest flow of blood as far as possible by tightly bandaging with clean linen, muslin, etc.; do not wash the wound. If blood is spouting (from artery) apply tourniquet (*q.v.*) or pressure with fingers on artery against the bone on side nearest heart. *b*) *Internal bleeding* (into stomach, intestines,

lungs, etc.): absolute rest, call in doctor immediately. *c*) *Nose-bleeding*: make patient lie down, apply cold applications to back of neck. 2) **ASPHYXIA** (due to smoke gas, strangling, etc.): artificial respiration (*q.v.*). 3) **DROWNING**: stand patient on head for a



A Hand-drilling with Fire-drill on Hearth.  
B "Chuckmuck", or Tinder Pouch (flint-and-steel), from Mongolia (4½ in.).  
C Drill, Hearth, and Drill-bow, as used by the Esquimo.  
D Mechanical Match Igniting Contrivance: Eng., c. 1870.  
E Fire-Piston (4½ in.), with crocodile tooth tinder-holder: from Sarawak.

#### FIRE-MAKING IMPLEMENTS

short time; wipe out mouth; artificial respiration. 4) **HEAT EXHAUSTION**: loosen and open clothing; apply cold water to head; rest. 5) **DOG-BITE** (suspected rabies): 'prevent blood from flowing back to heart by tight bandage above injured part; call in doctor immediately. 6) **CONVULSIONS**: do not use force or hold patient down; lay subject where spasms cannot cause injury. 7) **FRACTURE, DISLOCATION, SPRAIN**: rest, call in doctor. 8) **FAINING**: loosen clothes, lay patient down with head low, give fresh air, cold water, smelling salts; if necessary call in doctor. 9) **SUN-STROKE**: lay in shadow, absolute quiet. 10) **ELECTRIC SHOCK**: remove electric wires by means of wooden sticks before touching the injured. 11) **BURNS**: apply grease or flour, not water, to burn and cover with clean lint or linen. 12) **POISONING**, see **POISONS**.

**First Follo**, The, usual designation of the edition of Shakespeare's plays published by Heminge and Condell in 1623; it contained all the plays usually ascribed to Shakespeare, except *Pericles*, and was the first edition of 20 of them, if the view be accepted that the Quartos of 2 and 3 Henry VI are not Shakespeare's work. The other 16 in the volume had previously appeared individually in various Quartos. Though abounding in typographical errors, it is, to a large extent, the edition upon which all subsequent critical editions have been based. See **SHAKESPEARE**.

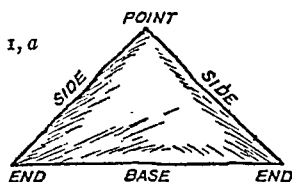
**First of exchange**: see **BILL IN A SET**.

**Firth** (Scot.), equiv. to fjord (*q.v.*). In

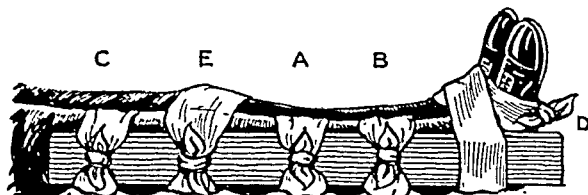


## SCOTLAND





2.



3.



4.



5.



6.



7.



8.



9.



1. Triangular bandage—a.) unfolded, b.) once folded, c.) broad, and d.) narrow.
2. Securing splint for leg fracture: A, above fracture; B, below fracture; C, above knee; D, round both ankles; E, round both knees.
- 3 and 4. Securing splint for fractured fore-arm and wrist.
- 5 and 6. Artificial respiration by Schafer's method.
- 7, 8, and 9. The large arm-sling; showing method of use.

FIRST AID

Scot., deep indentation of the coast line, e.g., Firth of Forth, near Edinburgh.

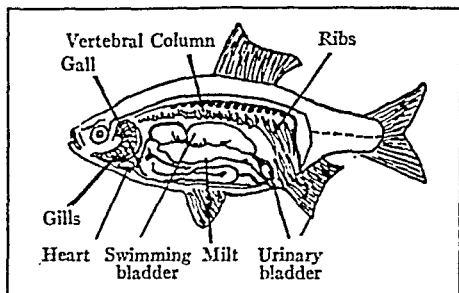
**Fiscal:** see FISCUS. **F. policy:** see TRADE POLICY; CUSTOMS DUTIES. **F. year,** (finan.) business yr. of a Govt. or commerc. undertaking, at end of wh. accts. are balanced; often diff. from calendar yr., e.g., F.Y. of Brit. Govt. is from Apr. 1st to March 31st.

**Fischer, Emil** (1852-1919), Ger. chem., disc. soporific drug veronal; Nobel Prize (Chem.), 1902. **F., Franz** (1877- ), Ger. chem.; director of Kaiser Wilhelm Institute for Coal Research at Mülheim; disc. method of liquefying coal. **F., Hans**, (1881- ), Ger. chem.; synthesized blood pigment; Nobel Prize (Chem.), 1930. **F., Kuno** (1824-1907), Ger. philos.; *History of the Newer Philosophy*, 1852-93.

**Fischer von Erlach, Joh. Bernhard** (1656-1723), Austr. architect; designed palace and gardens of Schönbrunn; ch. of San Carlo Borromeo in Vienna.

**Fiscus** (Lat.), in anc. Rome, imperial treasury. Hence *Fisc*, State treasury, and *Fiscal*, pertaining to State treasury or revenue.

**Fish**, vertebrate animals leading an entirely aquatic life—fresh-water and marine



Fish, (partly in section)

—and breathing by means of gills. In geological history they are the first forms of vertebrate life of which fossil remains have been discovered. Now usually grouped under four sub-classes: 1) *Dipnoi*—lung-fishes; 2) *Holocephali*—the chimaeras; 3) *Teleostomi*—bony fishes and ganoids; 4) *Elasmobranchii*—sharks and rays.

**Fisher, Andrew** (1862-1928), Austral. statesman; entered Commonwealth Parlt., 1901; Minister of Trade, 1904; leader of Labour party, 1907; Premier, 1908, 1910-13, 1914-15; High Commr. of Austral. in London, 1915-21. **F., Herbert Albert Laurens** (1865- ), Brit. politician and historian; Lib. M.P., 1916-26; pres. Board of Educatn., 1916-22; Brit. delegate to League of Nations Assem., 1920-22; Warden of New College, Oxford, since 1925; *Napoleon Bonaparte*, 1913; *An International Experiment*, 1921; *The Common Weal*, 1924; lives of Lord Bryce, 1926, and Sir Paul Vinogradoff, 1927. **F.,**

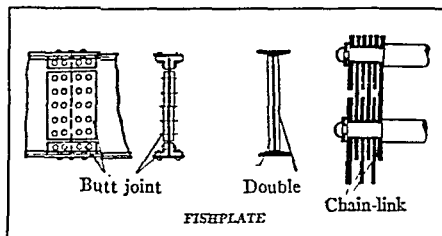
**John** (c. 1469-1535), Eng. prelate and scholar; Bp. of Rochester, 1504; opposed Henry VIII's divorce; imprisoned, 1534; cardinal, 1535; denied Kg.'s supremacy of Ch., and executed; beatified, 1886. Some of his works pubd. by Early Eng. Text Society. **F., John Arbuthnot Fisher**, 1st bn. (1841-1920), Brit. Adml.; Ld. Commiss. and Compt. of Navy 1892-97; 1st Sea Ld. 1903-09, 1914-15; re-organized navy, esp. on gunnery side, and introduced turbine-driven "Dreadnoughts," 1904.

**Fishery**, pursuit of edible fish; **deep-sea f.**, coast f. (herring, sprats, sardine, cod, shellfish, flat fish, eels, lobster, oyster), and **fresh-water f.** Most **deep-sea f.** carried on by companies owning steam trawlers and other spec. equipped vessels going to Iceland and N. Africa. Fishing effected with ground-nets, drag-nets, and trawls, in shoal water also with bow-nets (eels); **fresh-water f.** (rivers, lakes, ponds), as a sport with hooked line, otherwise with drag-net. Cf. ANGLING.

**Fishguard**, tn., Pembrokesh., S. Wales, on **F. Harbour**, port for S. Ire.; pop., 3,000.

**Fishing:** see ANGLING.

**Fishplate**, flat piece of iron for securing adjoining iron parts, in rlys. connect. rails



together, with slotted bolt-holes allowing for expansion and contraction.

**Fistula**, (med.) a narrow canal wh. connects an organ of the body with the exterior by an abnormal route; often caused by failure of a wound to heal completely.

**Fit**, 1) (med.) sudden, sharp attack of illness, esp. when accomp. by convulsions and unconsciousness, e.g., apoplexy, epilepsy. 2) (Mus.) Orig. denoted song or poem; esp., in anc. ballads and metrical romances, canto recited on single occasion.

**Fitzalan, family of:** see ARUNDEL, EARLS OF.

**Fitzgerald, Lord Edward** (1763-98), Irish soldier and M.P.; organiser of United Irish revolt in 1798; d. of wounds in prison. **F., Edward** (1809-83), Eng. poet; trans. *Rubāiyāt of Omar Khayyām*.

**Fitzherbert**, Mrs. Maria Anne Smythe (1756-1837), morganatically married to Pr. of Wales (George IV) (1785).

**Fitzmaurice-Kelly**, James (1857-1923), Brit. scholar, esp. in Sp. studies; *Life of*

*Miguel de Cervantes Saavedra*, 1892; *History of Spanish Literature*, 1898.

**Fitzroy**, Edw. Algernon (1869- ), Brit. Cons. politician; M.P. 1900-1906 and since 1910; Speaker of House of Commons, 1928.

**Fitzroy**, 1) riv., W. Australia, draining into King Sound; navigable 100 m. 2) Riv., Queensland, Australia, flowing from Great Dividing Range into Pacific; navigable 35 m. (up to Rockhampton).

**Fitzwilliam Museum**, Cambridge, containing collection of paintings, music, books, etc., bequeathed to Cambridge Univ. by Richard, 7th Visct. Fitzwilliam (1745-1816); present bldg. erected, 1837. Collection since greatly enlarged by bequests from C. B. Marlay (1912) and others.

**Fiume**, Ital. port on Gulf of Fiume (Adriatic); pop., 50,000; tobacco factories; exports petroleum. Austrian territory, 1471; awarded to Yugoslavia, 1919; occupied by d'Annunzio; Italian since 1924; Porto Baross and southern suburb in Yugoslavia.

**Fives**, game for 2 or 4 players in a walled court. A small leather ball is struck against the wall with the padded hand or a bat. Two forms are played in Eng., the "Eton" and the "Rugby" games.

**Five Year Plan**, (*Piatiletka*) started in Soviet Russ. in 1927 as a 10 years plan, but afterw. reduced to five (1927-1932). The first 5-year Plan was completed in 1932, with the opening of the great Dnieprostroi dam; it was devoted to heavy industry chiefly. The *second five-year plan* is devoted chiefly to light industry and consumers' goods.

**Fixative**, solution of shellac or resin in alcohol to render drawings permanent; gummy substances added to perfumes to prevent rapid dissipation of smell.

**Fixed assets**, (finan.) permanent assets of a commerc. undertaking by means of wh. the business is carried on, e.g., land, buildings, plant, machinery, etc. **F. capital**, property of a co. (e.g., buildings, plant, patents); distingd. from *working capital* (q.v.). **F. stars**, stars wh., unlike the planets (q.v.), do not change their apparent positions in relation to each other; i.e., all true stars.

**Fixing**, 1) treating a drawing with *fixative* (q.v.), to prevent fading; 2) treating of photog. plates, films and paper after development (q.v.). **F. salt**, sodium thiosulphate, commonly called "hypo," which dissolves the light-sensitive portions of a photog. plate, film, or paper after exposure and development. Hyposulphite discovered by Sir John Herschel, 1819, as a solvent for un-reduced silver.

**Fixture**, anything annexed to immovable property in such a way that it becomes part of it.

**Fizeau**, Armand (1819-96), Fr. physicist; disc. methods of measuring *velocity of light*.

**Fjord**, narrow arm of sea betw. high cliffs, usu. shallow at mouth and deep inland; esp. on W. coast of Norway.

**Fl.**, abbr., *floruit* (Lat.), he or she flourished.

**Fl.**, abbr. Florida.

**Flag**, 1) cloth (bunting) or silk embellished with armorial bearings, symbolic devices or distinctive colours; emblem of sovereignty or of corporate body, regiment, etc.; in feudal times used also by private individuals. Derived from war-standard of ancient times, flags proper were known to Rom., e.g.  *vexillum*  or cavalry flag and standard of Constantine. Earliest Eng. flags those carried by Crusaders. Principal forms into which flags evolved: gonfalon, pennoncel, pennon, banner, standard (see separate headings; also ENSIGN). **F. officer**, naval officer entitled to a flag at mast-head, admiral. **F.-ship**, vessel from wh. admiral flies his flag. 2) (Bot.) Name applied to several plants with long sword-shaped leaves, esp. iris (q.v.). **Sweet F.**, reed-like water-plant of arum family. **F. signals**, code laid down in international book of signals for use at sea; translated into languages of all maritime powers; flags also used on land for sending messages and other codes.

**Flagellants**, a medieval sect, at first encouraged by the church but later regarded as heretical, who sought expiation of sin by publicly scourging themselves.

**Flagellata**, Protozoa possessing one or more lashers or *flagellae* by means of which they move through the surrounding fluid.

**Flageolet**, (mus.) wind instr., with tone like high-pitched flute; organ pipe of high pitch.

**Flamborough Head**, prom. (400 ft.), E. coast Yorks, with several caves; sea-bird sanctuary.

**Flamboyant**, (archit.) Gothic style of ornamentation in flame-like designs.

**Flame-arc-light**, electric arc betw. carbons impregnated with metallic salts, esp. calcium fluoride, magnesium fluoride, etc.

**Flame-thrower**, engine of war; portable tank operated by compressed nitrogen, wh. projects a stream of burning oil to a distance of more than 80 feet.

**Flamingo**, bird of large size with very long neck and legs, small, webbed feet, and remarkable bent bill. Plumage white and pink in the adult; brown and white in the young. Closely allied to ducks and geese; aquatic, frequenting lagoons and marismas, where it feeds and breeds, making curious raised mud-nest of circular shape to contain single large egg.



Flamingo



Six species known in temperate and tropical portions of Old and New World.

**Flaminius**, Gaius (d. 217 B.C.), Rom. statesman; blt. *Via Flaminia* Rome to Ariminum, when Consul, 220 B.C.; deft. and killed at battle of Trasimene Lake; see *TRASIMENUS*.

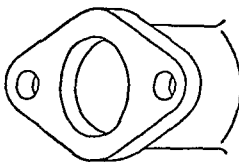
**Flammarion**, Camille (1842-1925), Fr. astron.; author of many popular works: *Celestial Marvels*, 1865; *The Planet Mars*, 1892.

**Flamsteed**, John (1646-1719), Eng. astron.; 1st. astronomer royal, 1675; *Historia Coelestis Britannica*, 3 vols.; pubd. 1723.

**Flanders**, region embracing Dut. prov. of Zeeland, Fr. dépts. Nord and Pas-de-Calais, and Belgian provs. of E. and W. Flanders; flat coast with sand-dunes and fertile marshlands, undulating country in S. Under Franks in 9th cent., annexed to Burgundy 1384, to France 1794; divided, 1830; many battlefields of World War.

**Flanders, East and West:** see *EAST FLANDERS*; *WEST FLANDERS*.

**Flange**, enlargement in diameter of edge of a cylinder or similar shaped body, e.g., pipe, to enable a joint to be made; or wheel, so as to prevent its running off a rail.



Flange

**Flanks**, the sides of a body of troops.

**Flank attack**, attack made on a flank, involving the enemy in danger of being surrounded.

**Flannel**, soft, loosely woven woollen fabric, with or without nap. **Flannelette**, cotton fabric imitatg. flannel.

**Flapper**, (colloq.) a girl from 13 to 17 years. Derived from the "flapping" pigtail in wh. she usu. wears her hair.

**Flare**, gas, oil or chemical light to enable work to be done in the open at night; to show aircraft where to land; **ground f.**, used by infantry to commun. with their own aircraft; **parachute f.**, chem. flares fired from ordnance or pistols, fitted with parachutes to fall more slowly, to show up enemy ships, troops, or positions.

**Flash boiler** (engin.), for raising steam which is operated dry; water is pumped in and completely evaporated at once. Used on steam motor vehicles and for other small units. **F.-lamp**, apparatus for sending messages, in Morse code or other signals, by means of light flashes. **F.-light**, (photog.)

vivid light produced by igniting a mixture of magnesium, aluminium, chlorate of potash; used for instantaneous photography. **F.-point**, (phys.) lowest temp. at wh. oil vapours form a combustible mixture with air; petroleum (paraffin oil) is not allowed to be stored

and sold in ord. way if its flash-point is below 73° F. (22°C.).

**Flat**, 1) (theatre) tall, narrow frame of wood, covered with painted canvas, used to build up interior scenes. 2) (mus.) see *ACCIDENTAL*.

**F.-fish**, family of fishes w. unsymmetrical arrangement of head and body, having both eyes on one side; widely distrib. and largely sought as food, e.g., sole, plaice, turbot.

**F.-foot, sunken arch**, (med.) flattening of bony arches on foot, caused by weakness of ligaments wh. hold the bones together. **F. race**, horse or foot-race without jumps (*opp.*, steeple-chase or hurdle-race). The "flat-racing season" (horses) in Eng. is from c. last wk. in Mar. to first in November.



Flat-foot

**Flatulence**, presence of gas in the stomach or intestines.

**Faubert**, Gustave (1821-80), Fr. novelist; *Madame Bovary*, *Salammbo*, *The Temptation of St. Anthony*, etc.

**Flavian Caesars**, the Rom. emperors **Vespasian** (A.D. 69-79) and his two sons, **Titus** (c. 40-81) and **Domitian** (81-96).

**Flax**, *Linum usitatissimum*, cultivated in most temperate and tropical regions; and especially India, Argentina, and the Baltic. Slender annual plant with blue flowers; the long, silky fibres, when treated, are manufactured into linen; and the seeds, containing an edible oil, are of great economic importance; in medicine the seeds are used to prepare a demulcent drink. **F.-flower, Fruit**



Flax

**spinning**, conversion of fibre of flax plant into yarn; plants are *pulled* and *ripped*, i.e., treated with an iron-toothed flax-comb to sep. the seed capsules from the branches; *retted*, to remove resinous matter, *washed*, *broken*, and *scutched* (drawn into threads with a comb); long threads are spun, short ones made into oakum (*q.v.*).

**Flaxman**, John, (1755-1826), English artist and sculptor; R. A., 1800; *St. Michael* at Petworth; *Apollo* and *Marpessa* in Royal Academy.

**Flea**, wingless, blood-sucking insect, nearly related to *Diptera*; parasite of man, mammals, and birds; transmits plague from rat to man. **F.-beetles**, small, jumping beetles; some species injurious to vegetable crops.



Flea

**Fleabane**, name for several plants of aster family; strong-smelling and popularly supposed to drive away fleas.

**Flecker**, James Elroy (1884-1915), Eng. poet; *The Golden Journey to Samarkand*, 1913; play, *Hassan*, prod. 1923.

**Fledermaus, Die**, (*The Bat*) opera by J. Strauss (q.v.) (1874).

**Fleet**, riv., London, trib. of Thames; rises in Hampstead Roads; flows to Blackfriars Bridge, mainly underground. **F. Prison**, London prison built in 12th cent. on banks of F. Riv. where Farringdon St. (q.v.) now runs. Existed in varying form until 1844; first used for Star Chamber prisoners, later for debtors and bankrupts. **F. Street**, thoroughfare in E.-Central district of London, running E. and W. betw. Ludgate Circus and Temple Bar (q.v.), famous as centre of newspaper world. Name derived from F. River.

**Fleetwood**, urb. dist. and seapt., Lancs, on Morecambe Bay, at mouth Riv. Wyre; pop., 23,000; sailings to Isle of Man.

**Flem.**, abbr. Flemish.

**Flemings**, natives of Flanders (q.v.), of Flemish speech; many settled in Pembroke under Henry I and II; F. immigrants important in growth of Eng. wool industry. See FLEMISH MOVEMENT.

**Flemish**: see LANGUAGE SURVEY, L. German. **F. literature**, since mid. 19th cent.; pre-eminent in lyric poetry (Guido Geselle) and novel (C. Buysse, Stijn Streuvels, Timmermans). **F. movement**, since 1830, for defence of Flem. nationality, and its equalisation with Fr.-speaking part of Belgium (Walloons); at first lit., subseq. polit. In 1873 Flemish made an official language. Was encouraged by Germans during the occupation; received some setback after the German defeat but has since recovered.

**Flensburg**, seapt., Prussian prov. of Schleswig, at head of Flensburg Fjord (Baltic), since 1923 a free port; pop., 67,000. Shipb.; coal; manuf. sugar, soap. School of navigation (at Murwik).

**Fleshly School of Poetry**, name given by R. Buchanan to Swinburne, Rossetti, and Wm. Morris, together with O'Shaughnessy, Payne, Bourke, Marston, etc., as alleged exponents of a school of poetic debauchery.

**Fletcher**, John (1579-1625), Eng. dramatist; collaborated with Beaumont (q.v.); and with other dramatists, e.g., Massinger, Jonson, Shakespeare; sole author of some plays, e.g., *A Wife for a Month*.

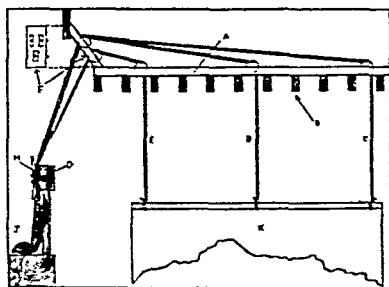
**Fleur-de-Lis**, (heraldry) conventional representn. of lily or iris; armorial bearing of kgs. of France from 1147 until revolution of 1830; formerly quartered on royal arms of Eng., but removed from shield by George IV.

**Flex** (-ible) lead, insulated elec. wire with woven cotton or silk covering, used for connecting table-lamps and other portable appar. Dangerous if left "alive," as covering may fray and cause short circuit. **Twin-f.**, 2 conductors twisted together.

**Flexor**: see MUSCLES.

**Flies**, (theatre) space above stage invisible

to audience, containing the grid or gridiron, i.e., steel or wood framework carrying ropes



Theatre Flies

A	Grid	F	Lead Block
B	Joists	G	Fly Rail
C	Long Line	H	Cleat
D	Centre Line	I	Flies
E	Short Line	K	Border or Backcloth

and pullies from which scenery, etc., are suspended.

**Flight**, 1) *Natural*, process of moving in and thr. the air by means of wings, as performed by birds, bats, insects. Flying animals usu. possess strong, light bodies, adapted for cleaving the air; their weight is nec. for propulsion and stability; support is obtained by rapid motion of the wings, by wh. spaces round them become virtually solid bases. J. Bell Pettigrew, physiologist, was first to observe (1862) that wings of all flying animals are constructed on princ. of the screw and perform spiral movements when they vibrate. Wings of insects vibrate with extreme rapidity; in case of house-fly at rate of abt. 330 beats per sec. So-called flying-fish, flying-squirrel, etc., do not actually fly, but use their membranous expansions to dart into the air for a short distance. 2) *Mechanical*; see AEROPLANE; AVIATION, etc.

**Flinders**, Matthew (1774-1814), Eng. navigator; entered navy, 1789; explored Australian and Tasmanian coasts, 1795-99, and Gt. Barrier Reef, Gulf of Carpentaria, etc., 1801-03; apparently 1st to allow for deviation of compass from magnetic north in iron ships; *Voyage to Australia*, 1814.

**Flinders**, riv., Queensland, Australia, partly navigable; from Great Dividing Range to Gulf of Carpentaria. **F. Bay**, in S.W. of W. Australia. **F. Range**, mtn. chain of primitive rock formation in S. Australia, up to 3,100 ft. high. **F. Island**, in Bass Strait, N.E. of Tasmania.

**Fling**, nat. dance of Scot. and Den.; complicated measure of studied and class. order, with free use of arms, cries, stampings.

**Flint**, 1) seapt., Flintsh., Wales; castle; pop., 7,600. 2) City, Michigan, U.S.A.; motorcars, lumber; pop., 156,500.

**Flint**, dark grey or brown form of quartz, occurring in irregular nodules or lumps in

chalk, etc.; material from which weapons and tools were made during Stone Age; harder than steel; has property of producing a spark when struck by steel, hence used for striking a light and formerly for discharging fire-arms; powdered F. formerly an ingredient of glass, and still used in manufacture of fine pottery. **F. glass**, heavy glass of high refractive index containing lead, potash, and silica; used for optical achromatic lenses; see GLASS. **Flintlock**, system of ignition for firearms, 17th-19th cents. Flint on cock, striking steel of pan-cover, throws a spark into powder in pan.

**Flintshire**, marit. co., N. Wales (with *Maelor*, inland detached portion); area, 256 sq.m.; pop., 112,900; coast, from estuary Riv. Dee to mouth Riv. Clwyd, low-lying; inland Clwydian Hills (1,820 ft.) and *Halkin Mtn.* (943 ft.; quarries and lead mines). Agriculture; cattle-raising. Largest tn., Flint; cap., *Mold*; St. Asaph, see of Abp. of Wales.

**Float**, 1) (phys.) hollow body floating on surface of a liquid, indicating its level; *float-valve*, automat. closed by F. when level of liquid (e.g. petrol) rises to a certain point, thus automatically keeping level constant; used in motor-car carburettors, domestic water-cisterns, etc. 2) (Tech.) In weaving, accidental passing of vertical weft threads over part of warp without interweaving. **F.-fishing**, method of angling in which a cork or quill attached to the line gives indication of a "bite."

**Floater**, (banking) 1st-class bills (*q.v.*) and highest type of gilt-edged securities accepted by banks and financ. houses as deposit agst. loans of *call money* (*q.v.*).

**Floating balances**: see SHORT-LOAN FUND.

**F. debt**, (finan.) term applied to portion of the internal *national debt* (*q.v.*), consisting of short-term loans. *Brit. F. D.* (3 Sept., 1932): Treasury Bills £651,245,000 and Ways and Means Advances from Govt. Depts. and the Bank of England £46,050,000, making total on that date, £697,295,000.

**Flocculation**, process by which colloidal or very fine suspended material in a liquid collects together in loose aggregates of many particles, called flocks. Action depends upon electrical state of particles and is affected by small amounts of dissolved substances, esp. acids and alkalis. Thus correct amount of alkali causes clay to remain in suspension; addition of acid causes it to *flock out*. Very important in ceramic industry.

**Flock**, refuse from *shoddy* (*q.v.*) making, used as filling for cheap mattresses and in prep. of certain kinds of felt, wall-paper, etc.

**Flodden**, hill, Northumb., Eng., 12 m. E. Kelso; battle of **Flodden Field**, 1513, Eng. victory over Scots under James IV, who was slain; obelisk.

**Flong** (printing): see STEREOTYPE PLATES.

**Flood gates**, movable shutters of iron or wood in locks (*q.v.*) or weirs for regulating flow of water.

**Floor**, (mining) of a seam; layer *under* a coal or other deposit; ant.: *roof* of a seam (*q.v.*).

**Flora**, in antiquity Rom. goddess of Spring; hence, collec. name for plant life.

**Floréal**, April 20th-May 19th in Fr. Repub. Calendar (*q.v.*).

**Florence, Firenze**, cap. of prov. same name, centr. Italy, on Riv. Arno; pop., 318,000; univ., churches, mediaeval buildings, picture galleries (incl. Uffizi), art treasures; manuf. porcelain, glass, works of art; tourist centre. Roman *Florentia*; republic, 1293; in 15th cent. flourished under the Medici; duchy, 1532; cap., Kgd. of Italy, 1864-71. **Florence, Council of** (1438-42), famous for its attempt to heal the schism betw. the Roman and Eastern churches. **Florence flask**, globular vessel of thin glass, with a long neck, used in distillation.

**Flores**, 1) island, westernmost of Azores; 58 sq.m.; pop., 7,000. Associated with sea-fight betw. the "Revenge" and Spanish Fleet of 53 (1591). 2) One of Lesser Sunda Isls., Dut. E. Indies; 5,570 sq.m.; pop., 433,000; fishing, shipb.; palms, maize. 3) Dept. of Uruguay; area 1,744 sq.m.; pop. 30,600.

**Florida** ("Land of Flowers," "Everglades") state, S.E. penins. of U.S.A.; 58,666 sq.m.; pop., 1,000,000 (40% Negroes); mostly flat country with swamps and tropical vegetation, largest swamp, the Everglades, now in course of drainage; only 4.5% cultivated land. Cotton, sugar cane, rice, tobacco, phosphates. Cap., *Tallahassee*; Miami, popular bathing resort; Daytona Beach, car speedway.

**Florin**, 1) medieval Florentine gold coin, so called from its device of a lily. 2) Gold coin of Edw. III of Eng., equiv. value to noble (*q.v.*). 3) Current Brit. silver coin, issued since 1849, value 2s. 4) Name applied to Dut. guilder (*q.v.*) and to former Austrian guilder. **Godless or Graceless fs.**, Eng. florins issued 1849-1852, which omitted D.G. (*Dei Gratia*) from the legend.

**Florio**, John (c. 1553-1625), Eng. lexicographer of Tuscan origin; friend of Ben Jonson; *First Fruits* (dialogues in English and Italian), 1578; *A Worlde of Wordes* (Ital.-Eng. dict.), 1598; translated Montaigne's *Essais*, 1603.

**Floruit**, (Lat.) he flourished; term used to indicate period of activity of distingd. men,



Flora, after Leonardo

the dates of whose births and deaths are not accurately known.

**Floss-silk**, soft outside of silk-worm cocoon (q.v.).

**Flotation process**, (metall.) meth. of dressing (purifying) ores by making use of tendency of valuable minerals to adhere to air bubbles in water, and so float to the surface, the gangue (useless rock) remaining behind; finely ground ore is mixed with water to a pulp, this is agitated with air (Sulman and Picard) or subjected to a vacuum (Elmore), fine air bubbles carrying valuable min. (lead, zinc, coal, etc.) to surface.

**Flotilla**, small fleet, a fleet of small ships.

**Flotow**, Friedrich von (1812-83), Ger. opera composer; *Martha*, *Stradella*.

**Flotsam**, (law) goods lost at sea but continuing to float on surface. Goods which sink are **jetsam**, or if tied to a floating object in order to be found again, **ligan**. All such goods belong to true owner, if he can be found; otherwise to the finder's State.

**Flounder**, (ichthyol.) general name for small, edible flat-fishes ind. in seas of temperate regions.



Flounder

**Flour**, finely ground and bolted (sifted) meal of any cereal, but usu. of wheat. Formerly ground betw. mill-stones worked by windmills or water power; now mainly in roller mills worked by machinery. **Bolting**, or separating husks of cereal from F., is effected by sieving through silk or wire cloth.

**Flower**, (bot.) the most important part of a plant, containing the reproductive elements; consists of an external protective envelope (*perianth*) composed of *calyx* and *corolla*, surrounding the stamens which bear the pollen



Flower

(male) grains and pistil, bearing ovules (female). Not all plants bear both stamens and pistils in the same flower. The *sepals* or outer leaves of the F. are often greenish; inner leaves or *petals* are usu. white or brightly coloured. **F. of sulphur**: see SULPHUR.

**Floyd Bennett Field**, aerodrome, Brooklyn, New York, U.S.A.

**F.L.S.**, abbr. Fellow, Linnaean Society.

**Flue**, (bldg.) smoke duct betw. fire and chimney. **F. gases**, (phys.) gases wh. are products of combustion of fuel, gen. in furnaces; normally consist of carbon dioxide, nitrogen, and water vapour (steam), but may contain carbon monoxide (excess of air) and oxygen (defic. of air).

**Fluke**, 1) (naut.) barbed extremity of arm of anchor by wh. it is attached to the ground. 2) (Vet.) Disease of sheep caused by parasitic

worm (*F. worm*) infesting the liver; known as the *rot*. 3) (Ichthyol.) Alternative name for flounder (q.v.).

**Fluor albus**: see LEUCORRHOEA. **F-spar**, calcium fluoride or fluorite, a transparent crystalline mineral of various colours, oftenest purple or blue, popularly called Derbyshire spar or Blue John.

**Fluorescence**: see LUMINESCENCE. **Fluoroscope**, or fluorescent screen, coated with substances wh. become luminous under impact of invisible rays (Röntgen, cathode, and similar rays); a coating of barium platino-cyanide is used for X-ray screens.

**Fluorescein**, coal-tar dye  $C_{20}H_{12}O_5$ ; in solution exhibits strong yellow-green fluorescence, used in med. to distinguish lesions of the cornea; with bromine yields eosin, a fine red dye.

**Fluorine**, chem. element, sym. F; at. wt. 19; sp. gr., 1.26; one of the halogens (q.v.); pale yellowish gas, most chem. active element known; occurs in minerals fluorspar (calcium fluoride) and cryolite, (sodium aluminium fluoride); decomposes water, forming hydrofluoric acid, wh., when dissolved in water, is used for etching glass.

**Flushing**, *Vlissingen*, fortified seapt. on Walcheren Island, Zealand, Holland; pop., 21,000; shipbuilding, steelworks, docks; seaside resort.

**Flute**, wood-wind instr. of high pitch with sweet note.

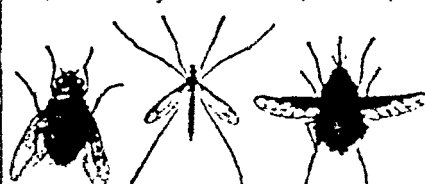
**Fluting**, (archit.) vertical grooving of a pillar or column.

**Flux**, (tech.) in metallurgy, agent causing metal to flow; dissolves non-metallic matter, e.g., oxides, silicates, etc., and so enables metal to unite into one mass and flow freely; used in soldering (see SOLDER).

**Fly**, name given to various species of 2-winged insects; see DIPTERA. **F-fishing**, angling after *Malet* for salmon, trout, etc., with real or artificial flies, which may either sink ("wet" f.) or



Flute-player.



Bluebottle Fly

Crane Fly (Daddy Long-legs)

Bee Fly

float on the surface ("dry" f.). **F-wheel**, (tech.) heavy wheel (disk) wh., when rotating, possesses large store of energy, thus equalizing a varying driving force (intern. combus. engine), or a varying load (rolling mills).

**Fly-catchers**, family of small, broad-billed, insect-catching birds entirely confined to the Old World. Common fly-catcher is a summer migrant to England, arriving from Africa in May.

**Flying-boat**, aeroplane, the body of which is boat-shaped, permitting plane to alight on, and take off from, water. **F. buttress**, (archit.) open-arched buttress (*q.v.*). **F. fish**, tropical ocean fish that can skim over the surface of the water by means of their large pectoral fins; associate in shoals.

**F. fox**, genus of large fruit-eating bats, natives of India, Malaysia, Africa, Pacific Is.; some spec. inhab. caves or abandoned buildings. **F. frog**, found in Malay Archip.; the tips of both pairs of feet are expanded into large discs and fully webbed. Said to take flying leaps from branch to branch. Arboreal in habit except in breeding season.

**F. lemur**, or *Cobego*, fruit- and insect-eating mammal belonging to Insectivora. Remarkable for expansion of skin of sides of body connecting fore and hind limbs, and the hind limbs with the tail, so as to form an extensible membrane, which serves as a kind of parachute, helping to support the animal during its long flying leaps from tree to tree. Nocturnal; abt. size of domestic cat. Ranges from Tenasserim through Malayan Penins. and Is. to Philippines and Siam. **F. lizard**, arboreal lizard; the hinder ribs are expanded to support a parachute-like expansion of the skin of the flanks. Lives high up in forest trees and takes flying leaps from one to another, with the aid of the expanded membrane. **F. squirrels**, group of arboreal rodents related to the true squirrel, having parachute-like membrane extending from flanks to toes wh. enables them to take flying leaps from tree to tree. Various species fnd. in N.E. Eur., Asia, and N. America. **F. start**, start of race in wh. competitors pass starting-point at full speed. **F. Dutchman**, seaman in Dutch legend, condemned to roam the seas eternally; opera by Wagner, 1843.

**F.M.**, abbr., 1) field-marshal; 2) foreign mission.

**F.M.S.**, abbr. Federated Malay States.

**F.O.**, abbr., 1) Foreign Office; 2) field officer.

**f.o.b.**, free on board; indicates that seller is liable for cost of delivering goods on board ship.

**Foch**, Ferdinand (1851-1929), Fr. soldier; Marshal of Fr.; Brit. F.M.; comm. at battles of Marne; c-in-c. Allied Armies in France, 1918; chief of staff of Gen. War Council, 1919; pres. Inter-Allied Mil. Commission.

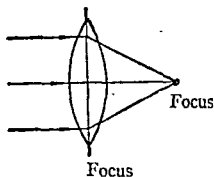
**Foci**, (astron.) 2 points on major axis of an

ellipse, equidistant from centre, forming pivots of the curve; distance from either focus to either extremity of minor axis is equal to semi-major axis. See **FOCUS**.

**Focshani, Focsany**, tn., Rumania, on Riv. Milcov; pop., 26,000; grain and wine trade; manuf. oil, soap.

**Fo'c'sle, fore-castle**, accommodation in bows of ship, chfly. for housing crew or stores; orig. castle-shaped, with pierced walls for arrows.

**Focus**, (optics) point at wh. light-rays after refraction or reflection actually intersect, or from wh., if made to diverge by lens or mirror, they appear to originate. **Focal length** (distance), distance betw. F. and centre of lens. **Focus-ing-screen**, (photog.)



sheet of finely ground glass at the back of a camera, whereon the lens projects an image (reversed) of the object to be photographed; distance between lens and ground-glass is manipulated until the image is "sharp"; then photog. plate (which will occupy the position of the focusing screen) will be "in focus."

**Fodder**, 1) (agric.) food, other than growing grass, given to cattle, horses, and sheep; usu. dried grass (hay); oats combined with beans, vetches, etc. (silage); waste grain, oil-seed residues, etc.; vegetable and animal indus. products (fish-meal, dried meat, buttermilk, etc.), often made into cakes. 2) (Wt.) Eng. weight, used of lead; 19½ cwt. (London and Hull), 21½ cwt. (Newcastle-upon-Tyne); 22½ cwt. (Derby).

**Foetus, embryo**, the fertilized ovum of an animal; in human beings it takes 40 wks. to develop; it is suspended in amniotic fluid (see **AMNION**) and is united thr. umbilical cord and placenta (*q.v.*) with the circulation of the mother's body.

**Fog**, 1) (meteorol.) thick mist (*q.v.*) or cloud lying on or very close to the ground, usu. due either to atmospheric dust becoming coated with water-vapour formed by condensation through low temp. of air, or to the contact of air-currents of different temperatures. **Fog-horn**, device for audibly indicating presence and approx. position of ships at sea, etc., during a fog. **F.-signal**, apparatus for giving warning of danger in a fog, on rlys., roads, at sea, etc., usu. by sound, but for aircraft often by Vêry lights or wireless. 2) (Photog.) Darkening ("chemical F.") of plate due to light other than that forming image, or to errors of manufacture or development.

**Foggia**, 1) dept., Apulia, Italy, in Apulian plain; 2,700 sq.m.; pop., 504,500. 2) Cap. of dept.; pop., 57,700; centre wool trade; 12th-cent. cathedral.



Foch

**Föhn**, hot, dry wind wh. blows down Alpine valleys.

**Foil**, 1) leaf-shaped space betw. two cusps in Gothic tracery; 2) sheet of metal, e.g., tin, aluminium, lead, silver, beaten very thin, used for electrical condensers, as wrapping for (e.g.) chocolates, or as background in setting of precious stones; 3) trail of hunted animal; 4) light sword used in fencing, with button on point to prevent injury in thrusting; in *F.-fencing* only hits on the upper part of the body count.

**Foix**, cap. dépt. Ariège, and of old Comté de Foix, France; pop., 6,460.

**Fokker**, Anthony H. G. (1890- ), Dut. aviator; constructor of F. bi- and tri-planes, with wh. he supplied the Ger. Army during the World War. Afterwards transferred activities to Holland and the U.S.A. founding Fokker Aircraft Corp., Virginia and New Jersey.

**Fol.**, abbr. folio, or page.

**Fold**, (geol.) upward or downward curves in stratified rocks, due to side pressure; not resulting in discontinuity of the strata. Cf. FAULT.

**Folk art**, gen. description of artistic productions, usually anonymous and reproducing traditional forms, of unlettered people, especially peasants, e.g., folk-song, morris dance, pottery, weaving. **F.-lore**, study of pop. beliefs, arts, and customs. **F. medicine**, treatment of diseases accdg. to tradit. empirical methods; herb medicine. **F. psychology**, science of the comparative and characteristic mental development of primitive peoples, conclusions being based on a study of language, religion, and customs. **F. songs**, tradit. songs, wh. have been absorbed by a people, their authors being unknown or forgotten.

**Folkestone**, munic. bor. and seaside resort, Kent, Eng.; cross-Channel port (Boulogne); pop., 35,900.

**Fomalhaut**, 1st. magn. star, in constell. Piscis Australis; see Pl., ASTRONOMY, S.C.H., A.

**Fons et origo (mali)** (Lat.), the source and origin (of the harm).

**Font**, (eccles.) 1) receptacle for baptismal water, usually of carved stone, fixed in ch. or baptistry; 2) (rare) holy water stoup (*q.v.*).

**Fontainebleau**, tn., Seine-et-Marne, France, 35 m. S. Paris; surrounded by forest; chateau (Pius VII a prisoner, 1812-14; abd. of Napoleon, 1814); pop., 15,560.

**Fontanelle**, (anat.) membranous space betw. bones of skull of infant, closes at 18 months. **Great f.**, is on top of skull; **lesser f.**, at back of head.

**Fontenoy**, vill., Hainaut, Belgium; site of battle, 1745; French defeated British, Dut., and Austrian troops under Duke of Cumberland.

**Fontevrault**, tn., Maine-et-Loire, France, 10 m. S.E. Saumur; pop., 1,100; in abbey church (12th cent.) are tombs of Henry II of Eng., Richard I, etc.

**Fonthill Abbey**, Gothic mansion (now demolished), S. Wilts, built c. 1800 by James Wyatt for Wm. Beckford at a cost of over £270,000.

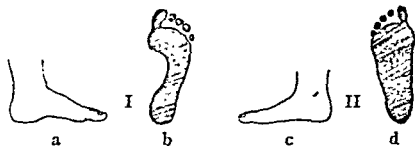
**Foochow**, cap. of S. Chin. prov. of Fukieng; pop., 312,800; paper and textile indust.; treaty port.

**Food**, matter capable of being eaten and assimilated by animals or plants; specific. solid nourishment as contrasted with liquid. In Eng. law, F. implies all articles used by man for food or drink, with exceptn. of drugs (medicines for internal and external use) and water. **F. and Drugs Acts**, legislation relating to the purity of foods and drugs, the distinction betw. natural food and food substitutes, and the general conditions of the production, storage, and distribution of these.

**Adulteration of Food and Drink Act**, 1860, provided for optional analysis of food by district authorities, and similar act of 1872 prescribed penalties for sale of injurious food. **Sale of Food and Drugs Act**, 1875, introd. compulsory analysis and defined punishable offences in more detail; amended 1879 and, specifically, by **Margarine Act**, 1887; again amended 1899, all of wh. were consolidated in **Food and Drugs (Adulteration) Act**, 1928. **Sale of Food (Weights and Measures) Act**, 1926, provided agst. sale by tradesmen, of short weight or measure of food. See also ADULTERATION.

**Foolscap**, size of writing or printing paper, usually long folio, varying from 12 × 15 in. to 17 × 13½ in.; formerly bearing water-mark of fool's cap and bells.

**Foot**, 1) (anat.) terminal part of leg of man and other animals. In man, part below



Foot Formations

I. Normal foot, a) from the side; b) footprint (inner edge only rests in part on ground). II. Flat foot, c) from the side (sunken arch); d) footprint (whole of the foot rests on ground)

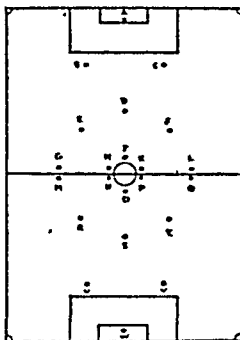
ankle-joint; consists of 3 parts: *tarsus*, containing 7 bones (astragalus, os calcis, scaphoid, cuboid, 3 cuneiform bones); *metatarsus*, containing 5 bones; *phalanges*, or toes. **Malformations of F.**: *flat-F.* (*q.v.*); *hollow F.*, excessive arching of F.; *club F.*, see TALIPES; *splay F.*, usu. associat. with flat F., caused by weakening of ligament. 2) (Meas.) Brit. and U.S. linear meas., 12 in.; **sq. f.**, 144 sq. in.; **cu. f.**, 1,728 cu. inches. **Gr. or Rom. f.**,

0.97 ft., *stage* (*q.v.*). **F.-and-mouth disease**, acute infectious disease characterised by the formation of vesicles in mouth and on feet. Cattle, sheep, goats, pigs are most commonly affected, but the disease may spread to horses, poultry, and man.

**F.-rule**, ruler divided off into inches and parts of inches; usu. in sections wh. fold up.

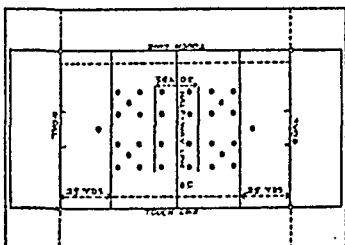
### Football, 1)

Association, game played by 2 teams of 11 (5 forwards, 3 half-backs, 2 full-backs, and goal-keeper), with a spherical leather ball which must be kicked or headed through the opponents' goal to score. The ball may not be touched by hand or arm except by the goal keeper. 2) Rugby Union, game played by 2 teams of 15, (usu. 8 forwards, 2 half-backs, 4  $\frac{3}{4}$ -backs, 1 full-back), with an oval leather ball, which may be handled and passed from hand to hand, but not forward. Scoring by points ("try" = 3 pts.; "goal" = 5; "dropped goal" = 4; "penalty goal" = 3). As played by the professional Rugby League in the N. of Eng., there are 13 players on each side, and the system of scoring is slightly different. 3) American; a variety of Rugby F. (*q.v.*), played in U.S.A. between teams of 11 (7 forwards, one  $\frac{1}{2}$ -back, 2  $\frac{1}{2}$ -backs, and a full-back), on a ground divided into 5-yd. squares.



Association Football

A.W.	Goalkeeper
B.V.	Right Back
C.U.	Left Back
D.S.	Centre Half Back
E.T.	Right Half Back
F.R.	Left Half Back
G.O.	Outside Right
H.P.	Inside Right
J.O.	Centre-Forward
K.N.	Inside Left
L.M.	Outside Left



Rugby Union Football  
U. Umpire

**Foote, Arthur William** (1853- ), Amer. composer. **F., Samuel** (1720-77), Eng. playwright and actor; mimic and caricaturist (the "Eng. Aristophanes"); manager Haymarket Theatre, 1747; wrote *The Englishman Returned from Paris* (1756); *The Devil upon Two Sticks* (1768), and many other plays.

**Footlights**, row of lights in front of stage, hence meaning: stage itself.

**Foosle**, (golf) a badly played stroke.

**f.o.r.**, free on rail; practically same as free on truck. **f.o.t.**, free on truck, *i.e.*, liability of seller extends to delivery of goods on rly. truck, the purchaser bearing cost of freight and delivery.

**Forage**, (milit.) food for horses. **to F.**, to go in search of food in general.

**Forain**, Jean Louis (1852-1931), Fr. painter, illustrator, and caricaturist; *Comédie parisienne*, 250 sketches in book form.

**Foraminifera**, (zool.) order of minute, mostly marine animals, having calcareous shell with orifices through wh. filaments are protruded; see RHIZOPODA.

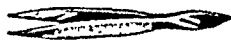
**Forbes**, Joan Rosita (1893- ), Brit. traveller and writer; visited remote parts of Arabia and Africa; *The Secret of the Sahara-Kufara*; *The Jewel in the Lotus*. **F., Stanhope Alex.** (1857- ), Brit. artist; R.A. 1910; *The Health of the Bride*; *The Fish Sale*; *By Order of the Court*.

**Forbes-Robertson**, Sir Johnston (1853- ), Eng. actor; theatr. manager since 1896; famous in Shakespearian parts; retired, 1916.

**Force**, (phys.) cause of change of motion in bodies, defined by point of application, direction, and magnitude. F. is measured by acceleration prod., multiplied by mass accelerated; scient. unit, 1 dyne (*q.v.*), prod. an accel. of 1 cm. p. sec. in 1 gram; tech. unit, 1 kilog. wt. **F. majeure** (Fr.), overpowering strength; the right of might.

**Forced loan**, raising (or issue) of a State loan by compulsion. **F. sale**, official auction of a defaulter's property by virtue of a creditor's valid title to satisfaction of his monetary claim from the proceeds.

**Forcement**, name given to var. kinds of stuffing for fish, birds, veal, and pork; usu. consists of suet, bread-crumbs, egg, chopped onions, sage, and other flavours.



Forceps

**Forceps**, 1) tool for handling very delicate objects; 2 flat, springy, pointed blades fastened together at one end. 2) Surgical instrument for the extraction by force of any resistant object especially a tooth, or, in midwifery, a child whose birth cannot be secured by natural means.



**Forcing**, (hortic.) method of cultivation of plants, fruit-trees, etc., wh. causes them to mature prematurely. See INTENSIVE CULTIVATION.

**Ford**, Edw. Onslow (1852-1901), *Ob.* Brit. sculptor; R.A., 1895; *Irving as Fort Hamlet*, 1883; Shelley memorial, Univ. Coll., Oxford, 1892; bronze statuettes: *Folly*; *Peace*; *Echo*. **F., Henry** (1863- ), Amer.

manufac.; establd. mass produc. of motorcars in Detroit, by methods of extreme standardisation, rationalisation, high speed and high wages; joint auth. of *My Life and Work*, 1922, and *To-day and To-morrow*, 1926, telling the history of his industries. **F., John** (1586-c.1640), Eng. dramatist; *'Tis Pity She's a Whore*, 1626; *The Witch of Edmonton*, 1621, in collaboration with Dekker and Rowley.



Henry Ford

**Ford**, shallow section of river with firm bed which may be crossed by wading.

**Forehand**, the part of a horse which is in front of the rider.

**Foreign balances:** see SHORT-LOAN FUND.

**F. exchange**, drafts (bills, cheques) on foreign countries in foreign currency. **F. E. business** carried on by banks who buy and sell *F.* drafts on their own acct. or for clients. **F. E. rates** quoted daily on Stk. Exch. and depend on supply and demand for bills on merchants in each country. **F. Legion**, Fr., organised shortly after the conq. of Algiers in 1830, enlisting recruits who were not Fr. subjects. Sp. had a Foreign Legion, up till the Revolution in Morocco, and Holland in the Dutch East Indies. **F. Office**, gov. dept. for foreign affairs. In Gt. Brit., under Sec. of State. In U.S.A. called "the State Department".

**Foreland**, headland (690 ft.), N. coast Devon, Eng., 2 m. E. Lynton. **North F.**, cape, N.E. Kent, Eng., 2½ m. S.E. Margate; lighthouse. **South F.**, cape, E. Kent, Eng., on Str. of Dover, 3 m. N.E. Dover; lighthouse.

**Foremast**, foremost mast of ship; see RIGGING.

**Forensic medicine**, or medical jurisprudence; science of medicine in its relation to law.

**Foreskin**, the loose, retractile skin of the male genital organ, covering the glans penis, removed by circumcision.

**Forest**, orig. royal hunting preserve, protected by stringent *F. laws*; now, tract of land covered with timber trees; also, unenclosed waste land (often treeless) preserved for game, e.g., deer forest. **Forestry**, management, care, and cultivation of woodland for the production of timber; replanting felled areas; weeding out inferior growths; protection of trees from damage or fire.

**Forest Cantons**, the four original cantons of Switzerland (*q.v.*).

**Forfar**, royal burgh, co. tn. Angus or Forfarsh., Scot.; pop., 9,700; manuf. linen and jute. **Forfarshire:** see ANGUS.

**Forge**, to work metal by heating with hammer, bending, etc., when rendered plastic by heat. See DROP-HAMMER.

**Forgery**, making or altering of a written instrument, or false or unauthorized signing of any document with intent to defraud. In Eng. law, punishable by penal servitude for life, or, in lesser cases, for 14 years.

**Forget-me-not**, *Myosotis palustris*, marsh-growing plant with blue flowers. There are sev. varieties of *Myosotis*, some of which are cultivated.

**Forli**, 1) dept., Emilia, centr. Italy; 1,120 sq.m.; pop. 421,800. 2) Cap. of dept.; pop., 60,240; cathed.; 12th-cent. campanile (250 ft.); mediaeval palaces; picture gallery.

**Form**, *forme*, page or number of pages of type locked in a chase (*q.v.*) ready for making stereotype (*q.v.*) or for placing directly on to printing machine.

**Formaldehyde**, (chem.) sym. HCHO; an aldehyde (*q.v.*) prepd. by oxidation of methyl alcohol. A pungent gas soluble in water, used as fungicide and disinfectant for infected rooms and as preservative (illegal for foods in Eng.). Prob. formed during assimilation of carbon dioxide by plants.

**Formalin**, commercial (40%) solution of formaldehyde (*q.v.*).

**Format**, shape and size of anything, esp. a book.

**Formic acid**, HCOOH, occurs naturally in sting of nettles and in red ants; may be prepd. synthet.; used in industry and occas. in med. in treatment of muscular rheumatism.

**Formosa** (Chin., Taiwan), Jap. isl., W. Pacific; area, 13,850 sq.m.; pop. 4,400,500, mostly Chinese and Malays (10% Japanese). Mtn. range from N. to S. (Niitaka Yama, or Mt. Morrison 13,600 ft.); plains tropical. Minerals: gold, coal, naphtha. Agric.: ground nuts, hemp, camphor, rice, tea, sugar. Cap., Taihoku.

**Formosus**, Pope (891-96), missionary among Bulgarians c. 866.

**Forsete**, John of, keeper of Cartulary of Reading Abbey. The rota "Sumer is i-cumen in" (c. 1220-40) is in his handwriting, but its authorship is not established.

**Forster**, John (1812-76), Eng. historian and biographer; called to bar, 1843; editor of *Examiner*, 1847; commissioner of lunacy, 1861-72; bequeathed **F. Collection** (18,000 books, MSS., incl. many Dickens's novels, oil paintings, drawings, engravings, etc.) to nation; *Historical and Biographical Essays*, 1838; lives of *Sir John Eliot*, 1864; *Lancelot*, 1869; and *Dickens*, 1871-4. **F., Wm. Edw.** (1818-86), Eng. politician; Lib. M.P., 1861-86; Under-Sec. of State for Colonies, 1865-66; vice-pres. of committee of Council on Educ., 1868-74; Chf. Sec. for Ireland, 1880-82.

**Forsyte Saga**, sequence of 5 novels by Galsworthy (*q.v.*), *The Man of Property*, 1906; *The Indian Summer of a Forsyte*, 1918; *In Chancery*, 1920; *Awakening*, 1920; *To Let*, 1921.



**Forsythia**, ornamental shrub from E. Asia, with yellow flowers; named after William Forsyth (1737-1804).

**Fort**, (milit.) strongly fortified defensive work with a field of fire commanding important railways, roads, or passes.

**Forte**, (mus.) abbreviated, *F*, loud, strong; *ff*. = fortissimo, very loud; *sp*. = forte piano, loudly and at once softly again.

**Fortescue**, Sir John Wm. (1859- ), Brit. historian; librarian, Windsor Castle, 1905-26; *History of the British Army* (13 vols., 1899-1929); editor of *Correspondence of King George III*.

**Forth**, riv. in Scot., 66 m. long, flows past Stirling into **Firth of Forth**, an inlet of North Sea, 50 m. long, navig. to Queensferry, where it is spanned by the **Forth Bridge**



Forth Bridge

(1883) (length, with approaches, 2,765 yds., or c.  $1\frac{1}{4}$  m.). *Forth and Clyde Canal*, from Grangemouth (Stirlingsh.) to Bowling (Dumbartonsh.), connects Firths of Forth and Clyde, and joins *Union Canal* (to Edinburgh). See Map, GLASGOW.

**Fortissimo**, (mus.) very loud, abbreviated *ff*.

**Fortress**, strongly fortified city or zone. In early times, a castle or walled town at a strategic point, with moats, palisades and later, towers and keep. In the 19th cent., with increasing range of firearms, **ring fortresses**: system of forts and field works distrib. round an area, affording mutual support. Concreted and armoured positions, heavy artillery.

**Fort Sumter**, fort, U.S.A., at entrance to Charleston Harb.; its capture by Confederates on April 14, 1861, marked beginning of Amer. Civil War. **F. Wayne**, tn., Indiana, U.S.A., on St. Joseph and St. Mary rvs.; pop., 114,950; electrical plant and instruments, railroad workshops; textiles; agriculture; hardwood. On site of Miami (Indian) villages. **F. William**, 1) Police burgh, Inverness-sh., Scot., on Loch Linnhe (Caledonian Canal); tourist centre (ascent of Ben Nevis); pop., 2,500. 2) Tn., Ontario, Canada, on L. Superior; pop., 21,000; grain, paper, docks, rly. works. **F. Worth**, tn., Texas, U.S.A., on Trinity Riv.; pop., 163,450; petroleum; meat-packing, flour-milling; cotton; rly. workshops.

**Fortuna** (Lat.), goddess of Chance (Gr., Tyche), represented with cornucopia and standing on a ball.

**Fortunatus**, hero of 16th cent. Ger. folklore, possessed wishing hat and inexhaustible purse.

**Forum** (open space), in anc. Rome, public place for transaction of business. **F. Romanum** was polit. and commer. centre of city; famous bldgs.: *Temple of Castor and Pollux*; *Arches of Titus and Severus*; *Basilica of Constantine*.

**Forward business**, for delivery at a later period; see **OPTION BUSINESS**; **FUTURES**. **F. exchange**, business in foreign exch. market for delivery of foreign currency at a stated date in the future, at a rate of exch. fixed in the present; enables exporters and importers to protect themselves, at small cost, agst. losses wh. may result from fluctuations in rate of exch.; hence, *F. rates*, quoted in foreign exch. markets (*q.v.*).

**Foscolo**, Ugo (1778-1827), It. patriotic writer; *Letters of Jacopo Ortis*, 1798.

**Fosse Way**, Roman road connecting Lincoln with Bath and Exeter.

**Fossils**, remains, usu. prehistoric, of animal or vegetable organism, or cast or trace of such (e.g., footprint), found petrified and naturally embedded in stratified rock. Characterization of strata by *F.*, see **GEOLOGICAL FORMATIONS**. **Science of F.**: see **PALAEONTOLOGY**.

**Foster**, Myles Birket (1825-99), Eng. draughtsman and aquarellist; R.A., 1862; illust. Longfellow's *Evangeline*.

**Foster-children**, children cared for by strangers, not their own parents. **F-mother**, wet-nurse, young mother who suckles children of others.

**Fotheringhay**, vill., Northants, on Riv. Nene, 4 m. N. Oundle; scanty traces of *F. Castle*, where Richard III was born (1452) and Mary Qn. of Scots was tried and executed (1587); monuments in Perp. Church to early Plantagenets erected by Qn. Elizabeth.

**Foucault**, Léon (1819-68), Fr. physicist, demonstrated rotation of earth by means of "F.'s pendulum"; measured velocity of light. **F.'s currents**, eddies induced in metal mass moving in strong magnetic field. See **EDDY-CURRENT**.

**Fouché**, Joseph, Duke of Otranto (1763-1820), Fr. politician and organiser of political police; Min. of Police, 1799, 1804, 1815; head of provisional govt. after Waterloo.

**Fougasse**, (milit.) land mine, exploded by contact or from a distance.

**Foulard**, thin, soft textile of silk, or silk and cotton mixture.

**Founder** (vet.), acute or chronic inflammation of the foot of the horse, characterized by pain and tenderness of the affected part.

**Founders' shares**, capital of limited liability companies, subscribed by founders with special rights in respect of dividend payment.

**Foundling**, child abandoned by parents,

adopted by foster-parents, or cared for by some charitable institution. **F. Hospital**, institution in Bloomsbury, London; fndd. 1739, by Thomas Coram (q.v.) as a refuge for deserted infants. Vacated 1926 when some 800 children were removed to Redhill, Surrey, pending erection of new home at Berkhamsted, Herts; greater portion of London site purchased by public subscription for children's playground, 1932.

**Foundry**, building where metals are melted and cast. **F. sand**, special sand or loam used for making moulds.

**Fountain-pen**, one having hollow shaft for holding ink, wh. flows evenly to pen; nib of iridium (q.v.) or sim. metal.

**Fountains Abbey**, ruined Cistercian abbey (1132), Yorks, Eng., 3 m. S.W. Ripon.

**Fouqué**, Friedrich de la Motte, Bn. (1777-1843), Ger. writer: *Undine*; *Sintram and his Companions*.

**Fourier, François** (1772-1835), Fr. socialist writer, chief of early 19th-cent. Utopian writers: organised communities to be known as *phalanges*. **F., Jean Baptiste Joseph**, Bn. (1768-1830), Fr. mathemat.; *Theory of Heat*; *Fourier Series* (trigonometry), method of representing any discontinuous function by a series of trigonometrical continuous functions. Of great importance in physics, enabling problems to be solved whenever solution of simple case of periodic conditions can be found. *F. Series* is harmonic analysis (q.v.) carried out mathematically.

**Fourteen Points**, Pres. Wilson's Peace Programme (1918): 1) publication of treaties; 2) freedom of the seas; 3) open door for trade betw. all nations; 4) general disarmament; 5) just division of colonies; 6) recognition of Russ.; 7) restora. of Belg.; 8) restora. of ruined territories of Fr. and surrender of Alsace-Lorraine; 9) enlargement of It.; 10) independ. of peoples of Austr.-Hung.; 11) order in the Balkans; 12) order in the Turk. emp.; 13) restora. of Poland; 14) est. of the League of Nations.

**Fourth**, (mus.) 4th step in the musical scale; corresponding interval. **F. dimension**, mathemat. conception of a dimension whose relation to the dimensions of length,



breadth, and thickness is analogous to the relations of those dimensions to each other. **F. disease**, contagious disease of children, characterized by fever and eruptions of the skin, easily confused with measles, Ger. measles, or scarlet fever. **F. estate**: see ESTATE.

**Fouta Jalon**, plateau, Fr. Guinea; alt., 4,000 ft.; sources of Niger, Senegal, Gambia.

**Foveaux Strait**, channel (15 m. across) betw. S. of S. Island, New Zealand, and Stewart Island.

**Fowey**, seapt. and mkt. tn., Cornwall; pilchard fisheries; exports china clay; pop., 2,300.

**Fowler, Sir John** (1817-98), Brit. engin.; joint engin. of Forth Bridge with Sir Benj. Baker (q.v.).

**Fowls**: see POULTRY.

**Fox**, small carnivorous mammal of slight build, elongated body, short legs, long ears, sharp-pointed muzzle and long, bushy tail. Common F. (*Vulpes vulpes*) has coat of fine red colour. So-called *silver* or *black F.* of California and the Western United States much valued for its fur, as is also the *Arctic Fox*. **F.-hunting**, pursuit of the fox, usu. on horseback, with pack of fox-hounds (q.v.); season in Eng. from Nov. to Mar.; "cub-hunting" in Sept. and Oct. **F.-terrier**, small, active breed of dog, smooth or rough-haired, white with black or yellow markings; originally used in fox-hunting. **F.-trot**, mod. ballroom dance in 4 time, with great variety of steps.



Fox

**Fox, George** (1624-1691), Eng. preacher; fndd. Quakers, (q.v.). **F., Charles James** (1749-1806), Eng. Lib. statesm.; For. Sec., 1782, 1806, supported cause of Amer. colonies in Amer. Revolution, and opposed war agst. revolutionary France.

**Foxe, John** (1516-87), Eng. Protestant divine; author of *Actes and Monuments*, 1563, pop. known as *Foxe's Book of Martyrs*. **Foxglove**, *Digitalis purpurea*, grows in woods, up to 6 ft. high; tall spike of purple, bell-shaped flowers. See DIGITALIS. The name **blue f.** is sometimes wrongly given to *Campanula trachelium* (bell-flower) and **white f.** to *Campanula latifolia* (giant bell-flower), with pale blue flowers.

**Foxhound**, swift, strongly-built hound, with smooth coat, usually white, black, and tan; has keen scent; used for fox-hunting. **Foxtail grass**, name given to Foxglove



*Alopecurus*; meadow grass with characteristic inflorescence. Sevr. varieties, notably *A. pratensis*, *A. geniculatus*, marsh foxtail g., and *A. myosuroides*, slender foxtail grass.

**Foyer**, (bldg.) promenade or ante-room, sometimes with refreshment bar; esp. in a theatre.

**Foyle, Lough**, inlet (15 m. by 7) of Atlantic, N. Ire., betw. cos. Londonderry

and Donegal, at mouth Riv. Foyle (17 m.; formed by confluence Rivs. Mourne and Finn).

**FP.**, (mus.) abbr. *forte-piano* (It.), loud and then soft. **Fp.**, abbr. foot-pound.

**F.P.**, abbr. fire plug.

**F.P.A.**, abbr. free of particular average.

**F.P.S.**, abbr., 1) Fellow, Philological, or Philosophical, Society of Great Britain; 2) foot-pound-second.

**Fra.**, abbr. Frater.

**Fraction**, (arith.) quantity less or more than an integer; **vulgar f.**, one with numerator above and denominator below a line, the former being divided by the latter; **proper v. f.**, in which num. less than denominator; **improper v. f.**, in which num. greater than denominator.

**Fractionation**, (chem.) separation of a mixture of similar substances into a series of fractions containing varying amts. of each.

**Fractional distillation**, distill. of a mixture with separation of condensate into a series of fractions. **Fractionating column**, apparatus for purification of substances by distill. **Fractional crystallization**, crystal. of mixture in fractions.

**Fracture**, 1) (surg.) breakage of a bone; 2) (tech.) breakage of any solid material; nature of surface of breaking; e.g., crystalline, *conchoidal* (shell-like), etc.

**Fra Diavolo**, opera by Auber (*q.v.*) (1830).

**Fragonard**, Jean Honoré (1732-1806), Fr. artist and etcher; Prix de Rome, 1752, with *Jeroboam Sacrificing to the Idols*; *The Swing* in Wallace collection; engraving, *L'Armoire*.

**F.R.A.M.**, abbr. Fellow, Royal Academy of Music.

**Fram**, ship Nansen sailed in on 1st Polar exped. (1893); afterwards taken by Amundsen and Sverdrup on their S. Polar expedition (1910-12).

**Framboesia**, the *yaws*, trop. skin disease to wh. Negroes are subject, characterized by small tumours; frequently confused with syphilis.

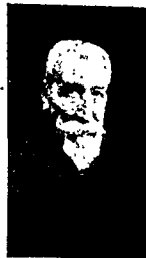
**Frames**, (naut.) vertical members of ship's hull; in mod. ships usu. steel; extending from tank side to weather-deck and having brackets to support intermediate decks and for their attachment to tank side.

**Frampton**, Sir Geo. Jas. (1860-1928), Brit. sculptor; R.A., 1902; master of the Art Workers' Guild; *Peter Pan* in Kensington Gdns.; *Edith Cavell* memorial, London.

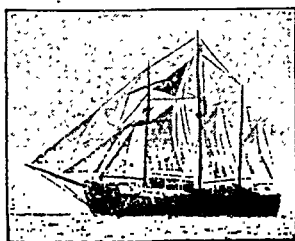
**Franc**, Fr. silver coin, the monetary unit of France of 100 centimes; value approx., 124.21 frs. to pound sterling, 25.52 frs. to \$; corresponding coin or unit of Belgium or Switzerland, and under various names of the Latin monetary union; see LIRA, PESETA, etc.

**France**, Anatole (1844-1924), pseudon. of Jacques Anatole Thibault, Fr. novelist and socialist philos.; Nobel Prize (Lit.) 1921; *L'étui de nacre*, 1892; *Thaïs*, 1890; *M. Bergeret in Paris*, 1901; *Penguin Island*, 1908; *The Revolt of the Angels*, 1914.

**France**, repub., W. Europe, sep. from Eng. by Str. of Dover and Eng. Channel, from Spain by the Pyrenees, from Italy by W. Alps; from Switz. by Savoy Alps and Jura Mtns., and from S.W. Germany by Riv. Rhine. The N.E. frontier (Germany, Luxembourg, Belgium) has no striking physical feature. Area (incl. Corsica), 212,700 sq. m.; pop., 41,000,000. Two distinct seaboard, on W. and S. In the W. the penins. of Brittany separates Eng. Channel from Bay of Biscay; and in N.W., the lesser penins. of Manche (off which lie the Channel Isls.) separates the estuary of the Seine (Havre, Deauville) from the Bay of St. Michel (St. Malo). Other indentations are formed by estuaries of the Somme (N.W.), Loire (W.), and Gironde (S.W.). In the S. the projecting dépt. of Var (Toulon) divides Gulf of Lions (mouths of the Rhone; Marseilles) from the Riviera. In W. Alps (*Mont Blanc*, 15,780 ft.) F. possesses highest mts. in Europe (except the Caucasus) while several peaks in the Pyrenees exceed 10,000 ft. Central Plateau (*Mont Dore*, 6,190 ft.) occupies S. centr. position, being sep. from Pyrenees by vall. of the Aude; includes Auvergne and Cévennes Mtns.; continued N.E. by the Morvan and Côte-d'Or (Burgundy); surrounded by valls. of Rhône and Saône (E.), of Garonne (W.), and of Seine (N.); together with the hills of Brittany, it is the modern representative of the Armorican Mtns. (*q.v.*). On the E., the Vosges (frontier, 1871-1914) rises parallel to the Rhine. In the S.W. is flat, marshy dist. of the Landes; in N., beyond the chalk downs of Picardy, is the plain of Flanders. F. predominantly an agric. country, and almost self-supporting; cereals, fruits, vegetables, wines, tobacco, stock-raising, dairy-farming. Mineral wealth greatly increased since recovery of Alsace-Lorraine; iron ore, potash, coal, oil, lead, zinc, manganese. Industrial region in the N. (Lille, Roubaix, etc.); manuf., textiles, cotton, lace, woollens; silks



Anatole France



"Fram"

and velvets (Lyons); engineering; automobiles; furniture. Tourist industry important. Exports: dairy produce, early fruits and vegetables, cut flowers, wines (Bordeaux, Burgundy, Champagne), brandies, olive oil, women's clothing, perfumes, leather goods, automobiles.

Climate mild in N.; Mediterranean in S.; Continental in E. Inland water transport (6,200 m.: rivs., canals, and canalised rivs.) highly developed; excellent rlys. (26,200 m.), roads, and air routes. Chf. cities: *Paris* (cap.), Marseilles, Lyons, Bordeaux, Nice, Lille; chf. ports on S. coast, Marseilles and Toulon (naval sta.); on N. and W. coasts Bordeaux, Havre, Cherbourg, Calais, Boulogne, Dunkirk.

Politically divided into 90 *départements*, subdivided into *arrondissements* and *communes*. Constitution, Republic 1870; *President* (7 yrs.); *Chamber of Deputies* (4 yrs.), elected by man-hood suffrage; *Senate* (9 yrs.; electoral councils).

#### OVERSEAS POSSESSIONS: 1)

Algeria, divided into three *dépts.*, sending deputies and senators to France. 2) Colonies: Tunis, Morocco, Fr. W. Africa, Fr. Guinea, Fr. Equatorial Africa, Madagascar, Comoro, Réunion, Fr. Somaliland, Fr. India, Fr. Indo-China, Guadeloupe, Fr. Guiana, New Caledonia, and isls. in Oceania. 3) Mandated territories of Syria and Cameroons.

**HISTORY:** Part of anc. Gaul; invaded by Franks, 5th cent.; part of empire of Charlemagne (d. 814): Treaty of Verdun (843) divided his empire into three (germ of modern F.). Norman invasions in 10th cent.; Lorraine became German; rise of duchy of Burgundy. *Capet Dynasty*, 987-1328; feudal wars, Crusades, extension of kgd. Under the *Valois* (1328-1498) successive wars with Eng. (*Hundred Years' War*); France loses Aquitaine and Calais, 1360. Under Charles VII, (Joan of Arc) wars with Eng., only Calais remained Brit. Under *François I*, wars with It. and against Charles V. Civil wars (Huguenots), ended by Edict of Nantes (1598) in reign of Henri IV, first of the Bourbons. Period of absolute monarchy, instituted by Richelieu (1624) under Louis XIII. By Peace of Westphalia Fr. obtained E. Alsace. Height of absolute monarchy under Louis XIV (*Minister*, Colbert); extension of overseas dominion

(Canada, Louisiana, Senegambia, West Indies). Policy of foreign conquests (wars against Spain, Holland, etc.) led, in 18th cent., to economic exhaustion of country. Fresh persecutions and emigration of Hugue-



nots. Defeats by Eng., loss of most of colonies (1763), national bankruptcy under Louis XVI (Necker, *Min. of Finance*); outbreak of Rev., 1789; National Assembly, adoption of constitutional monarchy, flight of aristocracy, 1792; establmt. of **Republic**, 1793; execution of King, Reign of Terror; 1794 Fall of Jacobins; 1795, establmt. of Directory. Fr. Rev. Army victorious against Austria and Prussia (General Bonaparte); 1799, fall of Directory, Bonaparte First Consul; 1804, hered. Emperor. Successful wars against Austria and Prussia. Continental blockade against Eng., expansion of Fr. over Holland and to Elbe; 1812, Napoleon's unsuccessful campaign against Russia; rebell. of Prussia, Battle of Allies at Leipzig (16-19 Oct., 1813); 1814, Napoleon interned on Elba, his return, the Hundred Days; defeated at Waterloo and banished to St. Helena.

**Restoration of Monarchy:** Louis XVIII gave new Constitution, withdrawn by Charles X; 1830, Rev. of July; the "citizen king," Louis Philippe, dismissed in Rev. of 1848; 24 Feb., 1848, **Second Republic**; Louis Napoleon President, and Emperor, 1852 (Napoleon III); successful Crimean War (1853-56), war against Austria 1859 in N. Italy (Nice and Savoy annexed to Fr.).

Suspicion of Prussian aspirations and desire for Rhine led to Franco-Prussian War, 1870-71. After Occupation of Paris, **Third Republic**, Commune; President, Thiers; 1897, alliance with Russia; 1905, separation of Ch. and State; 1905-11, disagreements with Germany over Morocco; 1912, Morocco a Fr. protectorate. August 3, 1914, declaration of war betw. Fr. and Ger.; 28 June, 1919, Treaty of Versailles, Fr. most powerful Eur. State; 1923, occupies Ruhr. Since 1922 Poincaré again Prime Minister; since 1925, Briand, Foreign Minister (Locarno); 1931, Doumer, President of the Republic; assassinated 1932, and succeeded by Lebrun.

**Francesca da Rimini** (13th cent.), Ital. lady; story of her love for Paolo, her husband's younger brother, told in Dante's *Inferno*.

**Franceschi**, Piero de', called Piero della Francesca (1418-1492), Ital. painter of Umbrian School; the *Baptism of Christ* and the *Nativity* in Nat. Gallery, London.

**Franche-Comté**, or *Upper Burgundy*, former prov. of E. France (cap., *Besançon*), now included in dépts. of Doubs, Jura, and Haute-Saône. Part of orig. kgdm. of Burgundy (*q.v.*): became *Countyship of B.* in 10th cent.; annexed to duchy of B., 1384; conquered by Louis XI, 1477; passed to Spain under Charles VIII, 1493; conquered by Louis XIV, 1668 and 1674. Definitely French since Treaty of Nimwegen, 1678.

**Franchise**, legal term for pub. right vested in individ. or body less than whole State, *e.g.*, to maintain a ferry or a mkt.; also to vote in parl. election.

**Francia**, Francesco Raibolini (1450-1518), Ital. painter, in style intermed. betw. Bellini and Raphael; also noted goldsmith and medallist.

**Francis, St., of Assisi** (1182-1226), Ital. ascetic and mystic; fndd. first Order of Mendicant Friars; *see*

**Franciscans** (Minorites). **F., St., of Paola (Paula)**, (1416-1507), fndd. Order of Minims (*q.v.*).

**Francis, St., of Sales** (1567-1622), Bp. of Geneva; co-fnder., Order of the Visitation (*q.v.*), 1610.

**Francis**, name of: 1) *Emprs. of Holy Rom. Empire: F. I* (1708-65), Duke of Lorraine, G. Duke of Tuscany, m. Maria Theresa 1736; *Emp.*, 1745; **F. II** (1768-1835), last Rom. *Emp.*, 1792; gave up imp. crown, 1804, and ruled as **F. I** of Austria. 2) *Emprs. of Austria: F. I.* *see* **F. II** above.



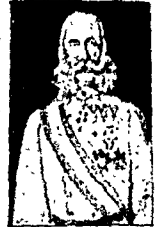
St. Francis of Assisi

**Francis**, Kgs. of: 1) *France: F. I* (1494-1547), Kg., 1515; fought 4 wars with *Em.* Charles V; **F. II** (1544-60), Kg., 1555; m. Mary Qn. of Scots, 1558. 2) *For Sicilies: F. I* (1777-1830), Kg., 1825; **F. II** (1836-94), Kg., 1859, driven from kgdom. by Victor Emmanuel (*q.v.*), 1861.

**Francis**, reigning Dukes of Modena: **F. IV** (1779-1846), succ., 1814; a reactionary despot. His s., **F. V** (1819-75), succ., 1846; retired on union of duchy with Italy, 1860.

**Francis Ferdinand** (1863-1914), Archd. of Austria, assassinated at Sarajevo (*q.v.*) with his wife, Sophie Chotek.

**Francis Joseph I** (1830-1916), *Emp.* of Austria 1848; lost Lombardy and Venice, 1859; annexed Bosnia-Herzegovina, 1908.



Francis Joseph I

**Franciscans**, relig. order founded by St. Francis of Assisi (1209); known as *Grey Friars*, *Minorites*, or *Friars Minor*.

**Frank, César** (1822-90), Fr. composer: orchestra and chamber music.

**F., James** (b. 1882), Ger. physicist; Nobel Prize (Physics), 1925; resigned prof. at Göttingen as protest agst. persecution of Jews and Socialists, 1933.

**Frankonia**, 1) *Upper F.*, dist. of Bavaria in Rhine Palatinate; area, 2,900 sq.m.; pop., 758,000; cap., *Bayreuth*. 2) *Middle F.*, area, 2,936 sq.m.; pop., one mil.; fertile pastures; cultivation of hops; cap., *Ansbach*; largest tn., Nürnberg (Nuremberg). 3) *Lower F.*, area, 3,260 sq.m.; pop., 763,000; cap., *Würzburg*.

**Franco-Prussian War**, 1870-71, occasioned by Fr. hostility to candidature for Sp. throne of Hered. Pr. of Hohenzollern. After defeats of Fr. under MacMahon and Bazaine, Napoleon III capitulated at Sedan, 2 Sept., 1870, and Fr. became a republic; Siege of Paris; 1871, foundation of Ger. *Emp.* and coronation of emp. at Versailles. By Peace of Frankfurt-a.-M. Fr. ceded Alsace-Lorraine and paid 5 milliard francs reparations.

**Franc-tireur** (Fr.), volunteer; armed man not belonging to any regular corps.

**Frankenstein**, romance by Mrs. Shelley (*q.v.*), 1818; story of student who creates a monster wh. acquires life, commits atrocious crimes, and finally casts himself into North Sea; hence **F. Monster**, any force or body which its creator cannot control despite his wish to do so.

**Frankfort**, cap., Kentucky, U.S.A., on Kentucky Riv.; pop., 11,650; thoroughbred horses; hemp, tobacco; shoes; furniture.

**Frankfurt-am-Main**, city, Hesse-Nassau,

Prussia, on Lower Main; pop., 541,000; univ.; medieval bldgs.; including the "Römer," for 500 yrs. Rathaus (Tn. Hall) and "Goethe's House," with lib. and museum. Important trading and banking centre; soap, chemicals, machinery. In 9th cent. cap. of Kgd. of E. Franks; later a seat of the imperial elections and place of coronation of Holy Rom. Emperors: Free State of Ger. Confederation, 1815; seat of united Ger. Parlt., 1848-49; incorp. with Prussia, 1866; occupied by French, 1920. Peace of F. ended Franco-Prussian War, 1871.



Frankfurt-am-Main,  
St. Paul's Church

**Frankfurt-an-der-Oder**, tn., Brandenburg, Prussia; pop., 76,300; iron foundries, machinery, chemicals, leather, soap; univ. transferred to Breslau, 1811.

**Frankincense**, *Olibanum*, gum resin obtd. from trees of the genus *Boswellia*, native to Africa and S. Asia; used in manuf. of incense for eccles. purposes and of fumigating powders. In anc. Rome, F. was valued for its medicinal properties, and it was employed in religious rites of anc. Egyptians and Hebrews.

**Franking**, marking a letter, or packet, to indicate that postage has been paid or is not payable. **F. machine**, for franking letters (under P.O. licence) without using adhesive stamps, such as the *Nco-post*.

**Franklin, Benjamin** (1706-90), Amer. statesm., writer, and philos.; demonstrated that lightning was a discharge of electricity, and electricity was either positive or negative; invtd. lightning conductor; repre. of Amer. colonies in England, 1757-1762, 1764-1766; part author Decl. of Independence; U.S. Ambassador to France, 1776; secured French alliance, 1778; signed peace with Britain, 1783. **F., Sir John** (1786-1847), Brit. rear-adml. and polar explorer, lost in Arctic while seeking N.-W. Passage.



Benj. Franklin

**Franks**, Germanic people settled in 3rd cent. on Lower Rhine; gave name from 9th cent. to region on Rhine, Main, and Neckar; forming duchy of Franconia, 1024-1125, noblest families of Salian Franks gave kgs. to Germany. **F., Kingdom of**, est. in 5th cent. by Clovis I (481-511); reached greatest

develop. under Charlemagne; by Treaty of Verdun (843) div. betw. Ger., Fr., and Burgundy.

**Franz Josef Fjord**, E. coast of Greenland, 125 m. long, 3-5 m. wide, betw. cliffs (of 5,000 ft.); waterfalls. **F. J. Land**, Russian archipel. in Arctic Ocean, N. of Novaya Zemlya; c. 20,000 sq.m. Discovd. by Julius Payer, 1873.

**F.R.A.S.**, abbr. Fellow, Royal Astronomical, or Asiatic, Society.

**Frascati**, tn., It., div. Rome, in Alban Hills; pop., 11,400; vineyards; cathed., Roman villas.

**Fraser**, Claud Lovat (1890-1921), Brit. artist and designer; produced *The Beggar's Opera* (1920).

**Fraser**, riv. of Brit. Columbia; rising in the Rocky Mtns., it flows across the Fraser Plateau (3,280 ft.) and reaches the Pacific Ocean at Vancouver after a course of 745 miles. Extensive salmon fisheries.

**Fraticelli** (lit., "little friars"), name of various relig. groups in Italy (13th-15th cents.), derived from *Franciscan* order (*g.v.*); partic. the "Spirituals," who claimed to be only true observers of Gospel-teaching.

**Fraunhofer**, Joseph von (1787-1826), Ger. physicist and optician. Disc. *Fraunhofer* lines. See OPTICS.

**Frazer**, Sir James G. (1854- ), Brit. ethnologist; *The Golden Bough*, 1890-1915, memorable work on anthropology and comparative religion.

**F.R.B.S.**, abbr. Fellow, Royal Botanic Society.

**F.R.C.O.**, abbr. Fellow, Royal College of Organists.

**F.R.C.P.**, abbr. Fellow, Royal College of Physicians.

**F.R.C.P.E.**, abbr. Fellow, Royal College of Physicians, Edinburgh.

**F.R.C.S.**, abbr. Fellow, Royal College of Surgeons.

**F.R.C.S.E.**, abbr. Fellow, Royal College of Surgeons, Edinburgh.

**F.R.C.V.S.**, abbr. Fellow, Royal College of Veterinary Surgeons.

**F. R. Econ. Soc.**, abbr. Fellow, Royal Economic Society.

**Fredericia**, Danish seapt., E. coast of Jutland, near N. entrance of Little Belt; pop., 18,455; manuf.: tobacco, salt, cotton goods.

**Frederick**, Emperors of: 1) *Holy Rom. Emp.*:

**F. I**, "Barbarossa," (c. 1123-90), Kg. of Ger., 1152; Emp., 1155; drowned during 3rd Crusade; **F. II** (1194-1250), Kg. of Sicily, 1198; Emp., 1220; led Crusade, 1228; Kg. of Jerusalem, 1229; **F. III**



Frederick the Great

(1415-93), Ger. Kg. and Emp. (**F. IV**), 1440. 2) *Germany*: **F. III** (1831-88), Kg. of Pruss. and Emp. of Ger., 1888, m. Victoria, Princess Royal of England, 1858.

**Frederick**, Kgs. of: 1) *Denmark*: **F. II** (1534-88), Kg. of Den. and Norway, 1559; **F. III** (1609-70), Kg. of Den. and Norw., 1648; **F. IV** (1671-1730), Kg. of Den. and Norw., 1699; **F. V** (1723-66), Kg. of Den. and Norw., 1746; **F. VI** (1768-1839), Kg. of Den. and Norw., 1808; lost Norway through refusing to join allies agst. Napoleon, 1814; **F. VII** (1808-63), Kg., 1848, suppressed Schleswig-Holstein revolt, 1848; gave democratic constitution, 1849; **F. VIII** (1843-1912), Kg., 1906. 2) *Germany*: **F. III**, "The Fair" (c. 1286-1330); Duke of Austria, 1308; Kg. of Ger., 1314; **F. I** (1657-1713), 1st Kg. of Pruss., 1701; **F. II**, "The Great" (1712-86), Kg. of Pruss., 1740; extended territory in Silesia by Peace of Breslau, 1742; by partition of Poland, 1772; by war of Bavarian Succession, 1778; raised Pruss. to Continental power by victory in Seven Years' War (*q.v.*); **F. III**, see 2) under Emperors above. 3) *Sicily*: **F. I**, see **F. II**, EMPEROR; **F. II** (1272-1337), Kg., 1269; **F. III**, "The Simple" (1341-77), Kg., 1355.

**Frederick**, Electors of: 1) *Brandenburg*: **F. I** (c. 1372-1440), Elect., 1417; 1st to bring House of Hohenzollern into prominence. 2) *The Rhine* (elector palatine of): **F. V** (1596-1632), Elect., 1610; Kg. of Bohemia, 1619; m. Elizabeth, dau. of James I of England, 1613. 3) *Saxony*: **F. I**, "The Warlike" (1370-1428), Elect. and Duke, 1423; made war on Hussites (*q.v.*); **F. II** (1411-64), "The Mild," Elect. and Duke, 1428; **F. III**, "The Wise" (1463-1525), Elect., 1486; protected Luther.

**Frederick Augustus I** (1750-1827), Kg. of Saxony, 1763; **F. A. II** (1797-1854), Kg. of Saxony, 1836.

**Frederick William I** (1688-1740), Kg. of Prussia, 1713; laid foundation of Pruss. milit. power. **F. Wm. II** (1744-97), Kg. of Pruss., 1786; formed alliance with Austria agst. Fr. republic. **F. Wm. III** (1770-1840), Kg. of Pruss., 1797; lost half his territory by Treaty of Tilsit (*q.v.*); joined in War of Liberation, 1813-15. **F. Wm. IV** (1795-1861), Kg. of Pruss. 1840; compelled to grant a constitution, 1848; refused imper. crown, 1849; paralysed, 1857.

**Frederiksborg**, co., Denmark, in N. of Zealand; 525 sq.m.; pop., 113,075. Cap., *Hillerød* (pop., 6,285); royal palace of Frederiksborg in vicinity.

**Freeboard**, sides of a ship above waterline.

**Free Church of England**, dissenting Episcopal community, orig. (1844) as reaction agst. *Oxford Movement* (*q.v.*); annexed several

churches of the *Countess of Huntingdon's Connexion* (*q.v.*, and see *METHODISTS*). **F. C. of Scotland**, see *CHURCH OF SCOTLAND*.

**Free Churches, The**, designation chiefly of those Eng. Protestant sects which are independent of the Established Ch. of England.

**Free Cities**. In Ger. (Holy Rom.) Emp. there were many self-governing cities with no superior but the Emperor. By Congress of Vienna (1815) all lost their privileges except Frankfurt-am-Main, and the Hanseatic (*q.v.*) cities, Hamburg, Bremen, and Lübeck, wh. became free cities within the new Ger. Emp. Since Treaty of Versailles (1919) Danzig has been a free city.

**Free style**, (swim.) race in which any style of stroke may be used.

**Free trade**, econ. doctrine, polit. allied to *laissez-faire* (*q.v.*), that greatest prosperity follows unrestricted internat. exchange of commodities. See *PROTECTION*; also *TRADE POLICY*.

**Free wheel**, wheel driven through ratchet, so that, if drive is stopped, the wheel continues to turn by its own momentum or that of vehicle to which it belongs.

**Freehold**, absolute and permanent possess. of land, as opposed to *leasehold*, *i.e.*, possess. for a stated number of years, after which it reverts to owner of **F. Freeholders**, (in feudal system) free tithe-payers who gave service to lord of the manor.

**Freeman, Edw. Aug.** (1823-92); Eng. historian; Regius prof. of modern hist., Oxford, 1854; *History of the Norman Conquest*, 1867-76; *William Rufus*, 1882; *Essays*, 1872-79. 2) **F., John** (1880-1929), Brit. poet and critic; *Stone Trees and Other Poems*, 1916; *Solomon and Balkis*, 1926.

**Freeman**, in med. hors. person enjoying full rights. In mod. Eng. hors., a person sharing in corporate property or privileges (sometimes valuable). Honorary freedom may, in hors., be conferred as mark of distinction. See *BOROUGH*.

**Freemason**, member of very large, secret, and reputedly ancient society, with customs, signs, and ritual based upon those of mediev. builders' guilds; freemasonry has broadly relig. foundation, but is often anti-clerical in R.C. countries; international; *Grand Lodge* of Eng. organized 1717; numerous *Lodges*; total world membership estd. (1928) 4,400,000 (Gt. Brit. 412,000); noted for benevolent activities, *e.g.*, Royal Masonic Institutions for Girls (Clapham and Weybridge) and Boys (Bushey, Herts), Benev. Inst. for Aged Freemasons and their widows (Croydon), etc.

**Freesia**, name for 3 species of S. African plants of Iris family; so called after Swed. botan., E. M. Fries (1794-1878); cultivated in greenhouses.

**Freestone**, any easily worked building stone, esp. sandstone or limestone.

**Freethinker**, one who rejects authority in matters of religion; an adherent of rationalistic as opposed to revealed and dogmatic religion.

**Freetown**, cap. Sierra Leone (*q.v.*); best harbour in W. Africa, with fort and coaling station; pop., 44,100.

**Freezing**, solidification of liquid by cooling.

**F. mixture** for producing cold: solid salts (common salt, nitrate of ammonia) mixed with water, ice, or snow. Also mixture of solid carbon dioxide and ether.

**F. of foundations**, in wet loose ground (sand); circle of pipes driven into ground, through which magnesium chloride liquor, cooled to  $-20^{\circ}\text{C}.$ , is circulated until ground becomes solid. **F. machine**, apparatus for artificial production and retention of temperatures below freezing-point, used esp. in refrigerators (*q.v.*).

**Freia, Freya**, goddess of Love in the Norse sagas.

**Freiberg**, tn., Saxony, Germany, on Riv. Mulde, in the E. Erzgebirge; pop., 34,700. Mining schools and Institute of Colliery Research; silver- and lead-mining; indus., woollens, ironware, china, sugar.

**Freiburg im Breisgau**, tn. and archiepsc. see, Baden, Germany, in Breisgau Vall. on W. slopes of Black Forest; pop., 93,800; wine, tobacco, paper; univ. and Gothic cathedral.

**Freight**, 1) load in course of transport; 2) (*f. rates*) charges for transp. of goods; to *reserve F.* is to reserve accommodation for goods on a certain ship.

**Freischütz, Der**, opera by Weber (*q.v.*) (1821).

**Fréjus**, tn., Var, S. France,  $2\frac{1}{2}$  m. N.W. of St. Raphael; pop. 3,600; Rom. *Forum Julii*; ruined aqueduct theatre; restored 12th-cent. cathedral.

**Fremantle**, seapt., W. Australia, port of (12 m. N.E.) Perth (*q.v.*).

**Frémont**, John Chas. (1813-90), Amer. soldier and explorer; surveyed country betw. upper reaches of Mississippi and Missouri rvs., and in the Rockies; assistd. in conquest of California, 1846-47; major-gen. in Federal Army, Amer. civil war; Governor of Arizona, 1878-81.

**Frémont Peak**, mtn. of Wind River Range, Wyoming, U.S.A.; 13,725 feet.

**French**, Sir John: see YPRES, EARL OF.

**French**: see LANGUAGE SURVEY, *Romance Languages*.

**French chalk**, kind of steatite, used for marking cloth, removing grease, polishing dancing-floors, etc.

**French Equatorial Africa**, until 1910 French Congo; territ. betw. Congo and Anglo-Egyptian Sudan; extensive virgin

forest in S.; desert in E. Not developed. Seat of govt.: Brazzaville. Area, 912,000 sq.m.; pop., 4 mill. (Bantu Negroes in south, Sudan Negroes in north).

**French Guinea**, Fr. colony, Africa, on Atlantic coast; area, c. 93,000 sq.m.; pop., 2,100,000; cattle- and sheep-rearing; exports rubber and hides; cap., *Konakri*.

**French India**, five Fr. colonies in India. *Pondicherry* and *Karikal*, on Coromandel Coast; *Yanaon*, in Godavari delta; *Chander-nagore*, on Riv. Hugli; and *Mahé*, on Malabar Coast; area, 196 sq.m.; pop., 286,410. See separate articles.

**French Indo-China**, Fr. colony, E. Indo-China; comprises Tongking, Annam, Laos, Cambodia, and Cochinchina; also leased terr. of Kwangchow-wan, on S. coast of China; area, c. 286,000 sq.m.; pop., 20,697,000 (31,884 Eur.); rlys., 1,500 m. Exports rice, rubber, pepper, maize. Cap. *Hanoi*, in Tongking.

**French Presidents**: Prince Louis Napoleon Bonaparte, afterwards Napoleon III (1848); Thiers (1871-73); MacMahon (1873-79); Jules Grévy (1879-87); Sadi Carnot (1887-94); Casimir-Périer (1894-95); Félix Faure (1895-99); Émile Loubet (1899-1906); Armand Fallières (1906-13); Raymond Poincaré (1913-20); Paul Deschanel (1920); Alexandre Millerand (1920-24); Gaston Doumergue (1924-31); Paul Doumer (1931-32); Albert Lebrun (1932).

**French Revolution**, rising of Fr. people agst. régime of aristocracy; dates from summoning of Third Estate in 1789 to pass financial reforms. This declared itself the National Assembly and issued Declaration of the Rights of Man, and fndd. its new régime on this basis. Louis XVI, who had refused to make concessions to democracy, was taken prisoner, 1792; he and his queen, Marie Antoinette, were guillotined, 1793. Girondins (federal Republicans) were ousted by Jacobins (centralisers) who conducted successful war and carried on Republican govt. by reign of terror, wh. ended in fall and execution of Robespierre (1794). The Directory set up 1795 lasted until 1799, when, by a *coup d'état*, Napoleon Bonaparte placed himself at head of govt. as First Consul, being proclaimed Emperor 1804. See FRANCE: *History*; REPUBLICAN CALENDAR, and other separate headings.

**French Somaliland**, Fr. colony on Gulf of Aden, betw. Eritrea and Brit. Somaliland; area, 8,500 sq.m.; pop., 86,000 (600 Europeans); cap., *Jibuti* (Djibouti); pop., 9,500.

**French Sudan**, Fr. West African colony; area, 364,000 sq.m.; pop., 2,600,000 (1,000 Europeans). Cap., *Bamako*, on Upper Niger.

**French West Africa**, Fr. colony with



self-govg. regions: Senegal, French Sudan, Ivory Coast, Fr. Guinea, Upper Volta, Dahomey, Niger Colony, and Mauretania; area,  $1\frac{1}{2}$  mil. sq.m.; pop., 13,500,000 (40% Mohammedan); exports: fruits, rubber, timber, ground-nuts, oils, cotton; cap., *Dakar* (pop., 40,000).

**Frequency**, (phys.) rate of repetition; number of vibrations; in alternating currents, number of reversals p. sec. **Unit of f.**: 1 Hertz = 1 vibration p. sec. **F. meter**, for alternating current; sev. types, simplest a set of tuned steel vibrating reeds, one of wh. vibrates in resonance to magnetic field produced by current. **F. group or distribution** (statistical), no. of persons or things possessing certain defined characteristics (e.g., males in U.K. in 1933) and grouped according to a variable character (e.g., height) in such a way as to show the nos. possessing the latter in the various degrees.

**F.R.E.S.**, abbr. Fellow, Royal Empire (or Entomological) Society.

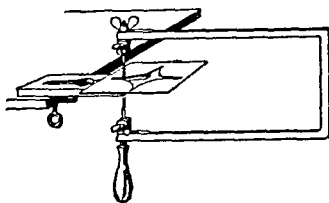
**Fresco**, method of painting, used chiefly for decoration of walls and ceilings, on ground of lime and gypsum, to which the colours must be applied immediately after it has been prepared.

**Freshfield**, Douglas Wm. (1845- ), Brit. explorer and mountaineer; pres. Alpine Club, 1893-95, and Roy. Geog. Soc., 1914-16; Editor Murray's Swiss Guides; author: *The Exploration of the Caucasus*, 1896; *Round Kanchenjunga*, 1913; etc.

**Freshman**, 1st-yr. student at university.

**Fresnel**, Augustin Jean (1788-1827), Fr. physicist; did important work in INTERFERENCE (q.v.).

**Fret**, (archit.) flat or semi-circular moulding applied to a flat surface and consisting of broken or interlacing lines. Found in anc. Grk. architecture. **Fret-work**, carving of wood by perforating in geomet. or other patterns, by means of a saw with a very thin blade (*fretsaw*).



Fretsaw

**Freud**, Sigmund (1856- ), Austr. phys. and psychologist; fndd. psychoanalysis (q.v.); author: *The Interpretation of Dreams*; *Origin and Development of Psychoanalysis*.



Freud

**Freytag**, Gustav (1816- ), German novelist and dramatist; comedy, *The Journalists*, 1853.

**F.R.G.S.**, abbr. Fellow, Royal Geographical Society.

**F. R. Hist. S.**, abbr. Fellow, Royal Historical Society.

**F. R. Hort. S.**, abbr. Fellow, Royal Horticultural Society.

**Friar** (Fr., *frère*), distinguishing title of members of the Mendicant Orders; see MENDICANT FRIARS.

**Friar's balsam**, mixture of balsams (benzoin, storax, tolu) for external application or inhalation; used as a remedy for affections of the throat and nose.

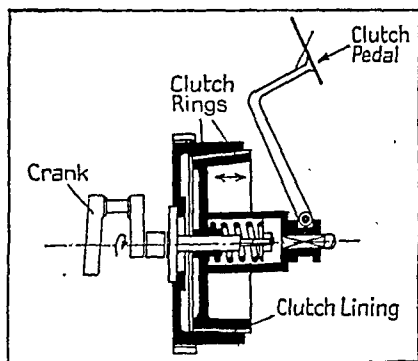
**F. R. I. B. A.**, abbr. Fellow, Royal Institute of Brit. Architects.

**Fricassee**, pieces of chicken, rabbits, or other meat cooked in strong savoury sauce; a white stew.

**Friction**, resistance to relative motion of 2 bodies when in contact; measured by force req. to maintain uniform motion; known as *sliding* or *rolling*. **F.**, accdg. to nature of motion. **Coefficient of f.**, frictional resistance dividd. by vertical pressure of one body to another. **F. wheels**, used to reduce F;



Freytag



Friction Coupling for Motor-car

pivot of a wheel, instead of running in a bearing, rests upon 2 pairs of wheels which run slowly as wheel turns quickly. **F. drive**, for transmitting motion of parts of machinery; makes convenient regulation of velocity possible; used, e.g., in *friction coupling*.

**Friday**, 6th day of week, named after Frigg, Norse goddess of marriage.

**Frideswide**, St. (d. c. 900), Abbess of Oxford, of wh. she is patron st.; day, Oct. 19th.

**Friedland, Battle of** (Napoleonic wars), 14 June, 1807; defeat of Prussians and Russians, under Bennigsen (70,000), by French, under Napoleon (80,000); named after tn. in E. Prussia on Riv. Alle, 26 m. S.E. Königs-berg.

**Friedländer**, Ludwig (1824-1909), Ger. philologist and archaeologist.

**Friedrichshafen**, tn., Württemberg. Germany, on N.E. shore of L. Constance; pop., 11,300; aerodrome and harbour; Zeppelin factory; bathing resort.

**Friendly Islands**: see TONGA ISLANDS.

**Friendly societies**, those recognised by Acts of Parl. wh. provide from voluntary subscrip. of their members for: a) relief or maintenance of members and their relatives, b) insurance benefits on birth of a child or death of a member, c) relief when unemployed or in distress, d) payment of endowments, e) insurance of tools or implements agst. fire.

**Friends, Society of**: see QUAKERS.

**Fiern Barnet**, urb. dist., Middx., Eng., part Greater London; pop., 23,100.

**Friesland**, prov., Holland, N.E. Zuider Zee, in marshy region; 1,286 sq.m.; pop., 402,000 (Frisians); cap., *Leeuwarden*; cattle-breeding.

**Frieze**, 1) in the Greek orders of architecture the space between the cornice and architrave, a flat, horizontal surface often decorated in relief, e.g., the Frieze of the Parthenon now in the British Museum; by transference, in modern mural decoration, the section immediately below the ceiling, usually treated more elaborately than the rest, printed wall papers being supplied with a separate pictorial frieze. 2) Cloth woven with a rough, napped surface.

**Frigate**, in old navies warships built for speed and smaller and less strongly armed than the line-of-battle class. **F. bird**, (ornith.) tropical sea-bird of the sub-order *Fregati*. Allied to the pelicans; remarkable for its hooked raptorial bill and powers of long, sustained flight.

**Frimaire**, Nov. 21st-Dec. 20th in Fr. Repub. Calendar (g.r.).

**Fringe**, ornamental border or edging, oft. of loose threads, at ends of oriental rugs, sashes, etc.

**'Frisco**, abbr. of San Francisco.

**Frisian, Friesian**: see LANGUAGE SURVEY, II. *Germanic*. **F. Islands**, group, North Sea, along coasts of Holland and Germany, div. into E. Frisian, W. Frisian, N. Frisian; separated from mainland by shallows; cattle, sheep, agric.; artificial embankments against erosion. **Frisians**, Ger. tribe on N. Sea coast; conq. by Romans, A.D. 47; converted to Christianity in 7th cent.; in 13th cent. West Friesland came under rule of Cts. of Holland. In E. Friesland terr. of Seven Frisian Coastlands passed to Prussia in 1744, district was annexed to Holland in 1807; to France in 1810; to Hanover in 1815; and to Prussia in 1866.

**Frit**, (phys.) adhesion of powder constits., esp. enamel, by heating.

**Frith**, William Powell (1819-1900), Brit. painter; *Derby Day* (1858, Nat. Gall.); *The Railway Station*, 1862; etc.; R.A., 1853.

**Fritillary**, 1) (bot.) member of lily tribe; *Fritillaria meleagris* grows abt. 1 ft. high and has a tulip-like flower, red or sometimes white; cultivated in gardens; 2) (entomol.) a genus of butterflies, usu. having brown wings spotted with black and pearly markings.

**Fritters**, fruit, etc., dipped in batter and fried in hot fat.

**F. R. Met. S.**, abbr. Fellow, Royal Meteorological Society.

**F.R.M.S.**, abbr. Fellow, Royal Microscopical Society.

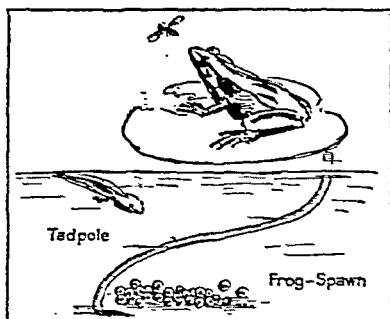
**Frobisher**, Sir Martin (c. 1535-94), Eng. navigator; com. expedition in search of N.W. Passage, 1576, discovering and naming *Frobisher Bay*; fought agst. Sp. Armada, 1588.

**Froebel**, Friedrich (1782-1852), Ger. educationist. Estabd. first kindergarten, 1827. **F. Society**, fndd. 1874 to further Froebel's ideals of education; see KINDERGARTEN.

**Frog**, 1) (zool.), amphibian of the Order *Ecaudata*, easily recognized by its



Fritillary:  
Crown  
Imperial



Frog

plump body, absence of tail, and well-developed limbs, the hind pair generally being considerably the longer. Spawning generally takes place in shallow ponds or lakes, the tadpole, on first emerging from the egg, having external gills; this larval stage usu. passed entirely in water, but there are one or two peculiar forms in which young are produced in moist leaves. Immense number of species distributed over the world, chiefly aquatic in habit. See also FLYING-FROG; TREE FROG. 2) (Rly.) Section where two rails intersect. **F.-bit** (bot.), *Hydrocharis morsus-ranae*, floating pond plant, with rounded leaves and white flowers.

**Frogmore**, mansion in Home Park, Windsor, Berks, Eng.; in grounds is royal mausoleum (1870), with tombs of the Pr. Consort and Qn. Victoria.

**Frog mouths**, (ornith.) birds of family *Podargidae*, inhabitants of Australia and Papuan Is.; resemble night-jars, but with wide, flat beaks and mottled plumage. Nocturnal in habit.

**Frogs**, *The*, comedy by Aristophanes, ridiculing Euripides.

**Froissart**, Jean (1337-1410), Fr. chronicler; his history of 1325-1400 among first publish. books.

**Fronde**, Fr. aristocratic party opp. to absolutist régime of Mazarin (1648-54) which used "pinprick" tactics. Hence **Frondeur**, a polit. malcontent who uses trivial but incessant means of opposition.

**Front**, (milit.) fighting line; battle positions and sometimes area extending several miles to the rear.

**Front Range**, Colorado, U.S.A.; on W. edge of Gt. Plains; Pike's Peak (*q.v.*).

**Frontal sinuses**, (anat.) cavities above root of nose in frontal bone of skull, connected with nose. After colds or influenza, inflammation of the frontal sinuses may occur.

**Frost**, crystallization of moisture on plants, windows, etc., occurring when temperature falls to 32° F. or below; the deposit of minute crystals of ice on ground, trees, etc., is known as **hoar f.**; intense cold, without crystallization, is known as **black frost**. **F.-bite**, inflammation due to exposure to cold, wh. causes impairment of circulation of blood; attacks individual limbs or whole body; the most exposed parts are affected first—nose, lobe of ear, fingers, and toes; frozen parts first become pale, then blue-red. Treatment by gentle rubbing of frozen limbs with snow or flannel dipped in cold water, and careful, slow re-warming of body. See **CHILBLAINS**.

**Froude**, Jas. Anthony (1818-94), Eng. historian, essayist, and biographer: *Life of Thomas Carlyle*, 1882.

**Frozen meat**: see **REFRIGERATOR**.

**F.R.S.**, abbr. Fellow, Royal Society.

**F.R.S.C.**, abbr. Fellow, Royal Society of Canada.

**F.R.S.E.**, abbr. Fellow, Royal Society of Edinburgh.

**F.R.S.L.**, abbr. Fellow, Royal Society of Literature.

**F.R.S.S.**, abbr. Fellow, Royal Statistical Society.

**F.R.S.S.A.**, abbr. Fellow, Royal Scottish Society of Arts.

**F.R.S.S.S.**, abbr. Fellow, Royal Statistical Society of Scotland.

**Fructidor**, Aug. 18th-Sept. 16th in Fr. Repub. Calendar (*q.v.*).

**Fructose**,  $\text{CH}_2\text{OH}(\text{CHOH})_2\text{CO}\cdot\text{CH}_2\text{OH}$ ; sugar found in honey and juice of sweet fruits; also found by hydrolysis of cane sugar; see **LAEVULOSE**.

**Fruit**, (bot.) result of fertilization of ovary; true F. consists of ovary only; false F., one in wh. other parts of flower have a share. F. may be simple, formed from a single flower, *e.g.*, pea pod; aggregate, formed from a single flower with sep. carpels, *e.g.*, blackberry; composite, formed from an inflorescence, *e.g.*, fig, pineapple, and hop. Simple Fs. further subdivided into nuts, capsules, pods, etc. Fs. such as apples, oranges, lemons, bananas, form imp. part of diet, as they contain *inter alia*, vitamin C, min. salts, and organic acids. **F. bat**, fox bat: see **KALONG**. **F.-flies**, family of flies, including the common vinegar-fly; larvae feed on rotting fruit and other fermenting juices.

**Frunze**, Mikhail Vassilievich (1885-1925), Soviet Russ. gen.; com. troops agst. Gen. Wrangel in Crimea; People's Commissar for Milit. and Naval Affairs, 1925.

**Frunze, Pishpek**, chf. tn. of Kirghiz A.S.S.R., Asia, on Riv. Chu; pop., 31,805. Starting point (1928) of the Turkestan-Siberian railway.

**Fry**, Mrs. Eliz. Gurney (1780-1845), Eng. Quaker, philanthropist, and prison reformer.

**F.S.A.**, abbr. Fellow, Society of Antiquaries, or of Arts.

**F.S.I.**, abbr. Fellow, Sanitary Institute, or of Surveyors' Institute.

**F.T.C.D.**, abbr. Fellow, Trinity College, Dublin.

**Fuad I** (1868- ), Sultan of Egy., 1917; Kg. of Egy., 1922.

**Fuchs**, Leonhardt (1501-66), Ger. botanist and physicist; gave name to genus *fuchsia*.

**Fuchsia**, plant of Centr. and S. Amer. and New Zealand; extensively cultivated for its ornamental red and white flowers; named after Ger. botanist L. Fuchs.

**Fuchsine** (magenta), coal-tar dye, used in microscopy, and as a dye, but is not fast. Commercially known as *rosaniline*.

**Fuel**, material used for producing heat by combustion. **Solid f.**, wood, peat, coal, coke; **liquid f.**, mineral oil; **gaseous f.**, coal-gas, coke-oven gas, water gas, Dowson gas, blast-furnace gas (see under separate headings). **F. calorimetry**, determination of heat evolved by burning of given quantity of any fuel.

**Fugato**, (mus.) composition, or portion of one, written in the manner of a fugue.



King Fuad



Fuchsia

**Fugger**, Ger. fam. of bankers of Augsburg; ancestor, **Joh. F.** (14th cent.); his successors, raised to highest dignities, acquired great wealth in the 16th cent. **Fuggeri**, Augsburg, oldest Ger. settlement for poor people, blt. by **Jakob F. II** (1459-1525).

**Fughetta**, (mus.) short fugue (*q.v.*).

**Fugue**, (mus.) composition arranged for two or more voices or parts. A theme is taken up by all the voices in turn, either integrally or transposed to key of Dominant (called the Answer). **Real f.**, when transposition exact; **tonal f.**, when adapted to main key. Entrances of diff. parts recur in constantly varied combinations, following closely upon each other in the *stretto*, freq. with sustained "pedal" note or organ point in coda.

**Fuit Illi-um**, (Lat.) Troy has been, *i.e.*, is no longer.

**Fujiyama**, **Fuji-San**, volcano, Japan (12,400 ft.), prob. extinct (last eruption, 1708); Buddhist pilgrimages.

**Fu-kien**, coastal prov., S. China; area, 46,300 sq.m.; pop., 14,329,600; mountainous; rice, cotton, silk, tea, timber; cap., *Foochow*.

**Fukuoka**, administrative tn. and port on Kyushu Isl., Japan, on Korea Strait; pop., 217,800; silk industry.

**Fula**, **Fulani**, light mixed Hamitic race (*c.* 7,000,000) in Sudan and W. Africa; mainly Mohammedan and pastoralists. In early 19th cent. fndd. a shadowy empire in Nigeria wh. exercised some control until proclamatn. of Brit. protectorate, 1904.

**Fulcrum**, (mech.) object wh. supports a lever; point about wh. a lever turns.

**Fulda**, co. tn. in administ. of Cassel, Germany, on the R. Fulda; pop., 30,100; cathed. with grave of St. Boniface; univ. till 1803. Benedictine abbey, fndd. in 12th cent., famous for learning.

**Fulda**, riv. (100 m.), Germany; joins Riv. Werra at Münden to form the Weser.

**Fulham**, met. bor., S.W. London, Eng., on N. bank Riv. Thames; pop., 150,900; Fulham Palace (Bp. of London).

**Fuller**, Thos. (1608-61), Eng. divine and author: *Worthies of England*, 1662; etc.



Jacob Fugger



Fujiyama

**Fuller's earth**, clay-like substance of very variable composition, with great adsorptive power; takes up oil and grease from fabrics (dry), and adsorbs dyes and colouring matter, etc., from liquids.

**Fulling**, kneading moist woollen fabrics to produce felting; also working fuller's earth into cloth.

**Fulminating mercury**, fulminate of mercury (chem.),  $(\text{CNO})_2\text{Hg}$ ; poisonous compound wh. explodes with friction; used in detonators (*q.v.*). **F. silver** C:NOAg, also very explosive.

**Fulton**, Robert (1765-1815), Amer. engin.; blt. 1st successful steamboat on Seine at Paris, 1803, and 1st steam warship, 1814-15.

**Fumarole**, vent in ground from which volcanic vapours escape, sometimes at very high temperatures.

**Fumigate**, to destroy disease germs and vermin in bldgs., ships, etc., by filling them with antiseptic or poisonous smoke, vapour, or gas, by use of sulphur, formaldehyde, carbon monoxide, prussic acid vapour, chlorine, sodium hypochlorite spray, various proprietary antiseptics consisting of ozonised terpenes, and many other substances.

**Fumitory**, "earth smoke," *Fumaria officinalis*, herb with pink flowers on short spikes, used in folk med. for stomach complaints.

**Funchal**, cap. Madeira, on S. coast; seapt.; winter resort; pop., 20,900.

**Function**, activity, performance; in math.: dependent relation of one quantity to one or more others; these others can themselves be functions and be represented by co-ordinates (*q.v.*). The relation  $y$  is a function of  $x$ ,  $x$  being the independent variable and  $y$  the dependent; is usually written:  $y = f(x)$ .

**Functional control**, (indus.) feature of *scientific management* (*q.v.*), by wh. each worker is controlled by a group of functional foremen, each specializing in one branch of management control.

**Fundamentalism**, (relig.) movement in many Christian Prot. churches, esp. in Amer., opposed to modernist (*q.v.*) interpretations of theol.; esp. emphasizes inerrancy of Bible and attacks theory of evolution.

**Funded Debt**, debt raised for permanent purposes by State and repayable at distant period, or not repayable within any fixed period; in Fr. known as *Rentes*.

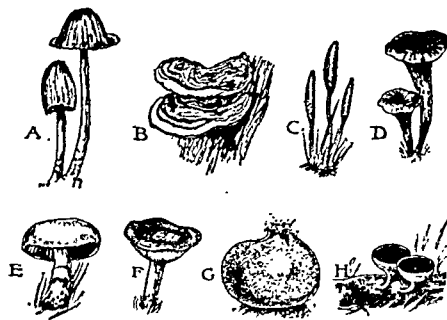
**Fundus**, (anat.) the base of an organ. 1) **F. oculi**, back of the interior of the eye, can be examined by ophthalmoscope (*q.v.*); 2) **F. of stomach**, the middle portion of the stomach.

**Fundy**, **Bay of**, inlet of N. Atlantic, Canada, betw. New Brunswick and Nova Scotia; 145 m. long, 35-50 m. broad; divides at head into *Chignecto Bay* and *Minas Basin*; Passamaquoddy Bay on N. shore (frontier of

Maine, U.S.A.); chf. port, St. John, N.B. Navign. impeded by violent tides (rise and fall 25-60 ft.).

**Fünen**, Danish isl. betw. Great and Little Belts; area, 1,340 sq.m.; pop., 339,655; cap., Odense.

**Fungi**, group of simple plants characterized by absence of green colouring matter



A) Inkcap, B) Elm Polyporus, C)Crimson Club-head, D) Horn of Plenty, E)Mushroom, F) Buff-girdled Redcap, G) Dark Puff Ball, H) Scarlet Earthbox

(chlorophyll) and reproducing by spores. Incld. mushrooms, toadstools, and microscopic organisms, such as mildew, etc.

**Funicular railway**, rly. in wh. the carriages are drawn by cable; in use chfly. on mountains.

**Funkia**, cultivated variety of Japanese lily (*Niobe*), named after the Ger. botanist, H. C. Funck.



Funkia; Japanese Lily

**Funny-bone**, popular name for the elbow; upper end of ulna (*q.v.*). The ulnar nerve lies close to the end of ulna, and is sensitive to blows.

**Fur-bearing animals**, the trade term for those mammals the skins of which, for the beauty and softness of their fur, are used for making into coats, etc. To meet the call of fashion in furs, many beautiful and interesting animals have been nearly exterminated during recent years; *e.g.*, sable, beaver, true fur-seal, sea-otter.

**Furbelow**, pleated border or flounce; hence, gen. term for trimmings of woman's dress.

**Furies**, (Rom. myth.) avenging goddesses; identified with Eumenides (*q.v.*).

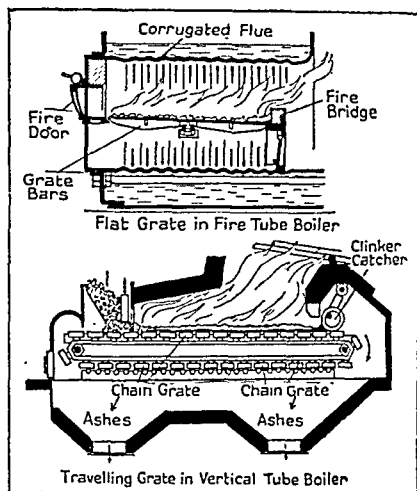
**Furioso**, (mus.) in a wild, stormy manner.

**Furka**, pass (7,992 ft.), Switzerland betw. Andermatt (canton of Uri) and Gletsch (canton of Valais).

**Furlong**, Brit. and U.S. linear meas., 220 yds. or  $\frac{1}{8}$  mile. Cf. STADE.

**Furlough**, long leave of absence granted to soldiers and sailors.

**Furnace**, apparatus for smelting, fusing, evaporating, etc., chiefly used in metallurgy. Many kinds for various purposes as the **shaft f.** (or **KILN**); **blast f.** (*q.v.*) in form of chimney; **hearth f.** *reverberatory*, *calcining*, etc., in wh. flame from fuel is in separate chamber and plays over material; **melting f.** of similar type but with open pan in wh. substance can



Furnace

melt; **crucible f.** takes crucibles or pots wh. are removed with tongs; **muffle f.** has a chamber heated from outside; **retort f.** takes retorts of all kinds, gen. for dry distillation. **Electric f.** (of increasing importance), very high temps., giving clean heat in high vacuum if necessary; 3 types: *Resistance*, *Arc*, *Induction*, latter now operated at high-frequency, doing away with iron cores. **Open-hearth f.**, flat open furnace with gas regenerative fuel for producing Siemens-Martin iron (crucible steel). Pig iron or scrap is melted and purified by the slow oxidation of the secondary ingredients (Si, Mn, C, P, S), lime being added and air blown through metal. For production of special steels additions of C, Ni, Cr, etc. See SIEMENS-MARTIN FURNACE. **F. throat**, top-most opening of a blast-furnace (*q.v.*).

**Furness**, detached dist., Lancs, Eng., penins. betw. Morecambe Bay and Irish Sea; contains part of Eng. Lake District, Barrow-in-Furness, and *Furness Abbey*, fndd. 1127; red sandstone ruins.

**Furniss**, Harry (1854-1925), Brit. illustrator and caricaturist; on staff of *Punch*, 1884-94; illustrated Lucy's *Diary of Toby*, *M.P.*, Lewis Carroll's *Sylvie and Bruno*, etc.; wrote *Confessions of a Caricaturist*, 1901.

**Furniture**, *ill.*, (*see* p. 402) movable articles of household use. Quality and quantity vary with civilisation and climate. Mod. development of F. dates from Renaissance, when distinctive styles were evolved. In *Eng.* main periods are: Tudor or Elizabethan, 16th cent. (oak); Stuart or Jacobean, 17th cent. (oak and walnut); Cromwellian; Restoration; William and Mary; Queen Anne (walnut); late 18th cent., the period of Chippendale, Hepplewhite, and Sheraton (*qq.v.*), in which F. reached its highest point of beauty. In *France*, outstanding styles were: Louis XIII, XIV, XV, and XVI, associated with such designers as Boulle (17th cent.) and Riesener (18th cent.). Furniture design showed marked deterioration throughout Eur. in 19th cent.; W. Morris (*q.v.*) revived interest in *Eng.* In 20th cent. modern F. tendency is to simplification of line and variety of materials such as chromium, exotic woods, glass, with mass production as an outstanding feature.

**Furnivall**, Fredk. James (1825-1910), Brit. philol. and editor; fndd. Early *Eng.* Text Soc., 1864; one of orig. promoters of *New English Dictionary* (Oxford).

**Fürth**, Bavarian tn. in Middle Franconia, N.W. Nuremberg; pop., 79,100; glass, cotton, breweries.

**Furtwängler**, Adolf (1853-1907), Ger. archaeol.; his s. **Wilhelm** (1886- ), musician, conductor; director of Berlin Philharmonic Orchestra, 1922.

**Furze**, gorse, or whin, wild, evergreen shrub with spiny branches and small, sweet-smelling yellow flowers; fnd. on heathlands in Brit. Isles and N. Europe; used as winter fodder for cattle and horses.

**Fusan**, port, Korea, on Strait of Korea; pop., 113,100; exports: rice, silk, hides.

**Fuse**, 1) (elec.) wire forming part of an elec. circuit, wh. fuses when current exceeds a given strength, and so breaks circuit; protec. agst. overload and short-circuit.

**Cartridge f.**, in wh. wire is enclosed in cartridge, usu. with coloured spot indicator.

**Bridge f.**, wire open on porcelain bridge betw. two contacts. *Cut-out* automatic switch; breaks an elec. circuit when something is not in order (overload, no-load, door of lift open, etc.). 2) Device for exploding projectiles: a)

on impact (*percussion F.*); b) after a certain time, according to setting (*time F.*); c) *delayed action F.*, combin. of these; d) length of *combust. cord* for exploding charges from a distance; e) *slow-match*, formerly used for muzzle-loading firearms.

**Fusee-wheel**, drum upon which a chain is wound; in *Eng.* lever clocks and watches, spring drives through chain, which winds-off one drum on to another; drums are of varying diameter, so that escapement receives constant force in spite of varying power of spring.

**Fuselage**, body of an aeroplane containing accommodation for pilot's seat and, in large machines, crew, passengers, and load.

**Fusel oil**, amyl-alcohol, forms part of the crude alcohol obtained by distilling grain and potatoes.

**Fusiliers**, in the 17th-18th cents., infantry armed with light muskets (*fusils*). Title of 7 regts. of the Brit. army, e.g., Royal Fus. Privates of Fus. Regts.

**Fustanella**, white linen skirt worn by Gr. and Alban. men as pt. of nat. costume.

**Fustian**, coarse twilled cloth with nap resemblg. velveteen (*q.v.*), corduroy.

**Fustic wood**, derived from *Chlorophora tinctoria*, a West Indian and tropical American tree. Used for wool-dyeing, giving browns and olives. Also called *yellow wood* and *old fustic*.

**Futhork**, name for Runic alph. (*q.v.*), from first 6 letters, *f, u, þ, a, r, k*.

**Futures**, (finan.) in produce exchanges (*q.v.*), term for contracts for sales or purchases of goods for *future* delivery, price being fixed in the present. *Gambling in f.*, dealings in securities, goods, or for exch. in wh. actual delivery does not take place, but loser undertakes to pay diff. betw. contracted price and exch. or market price on day of delivery.

**Futurism**, Ital. art movement inaugurated by Marinetti in 1909, aiming at a complete break with academic and realistic art, the expression of modern life (the machine age) conceived as essentially violent and revolutionary, and the rendering of movement or simultaneous states by the disintegration of forms.

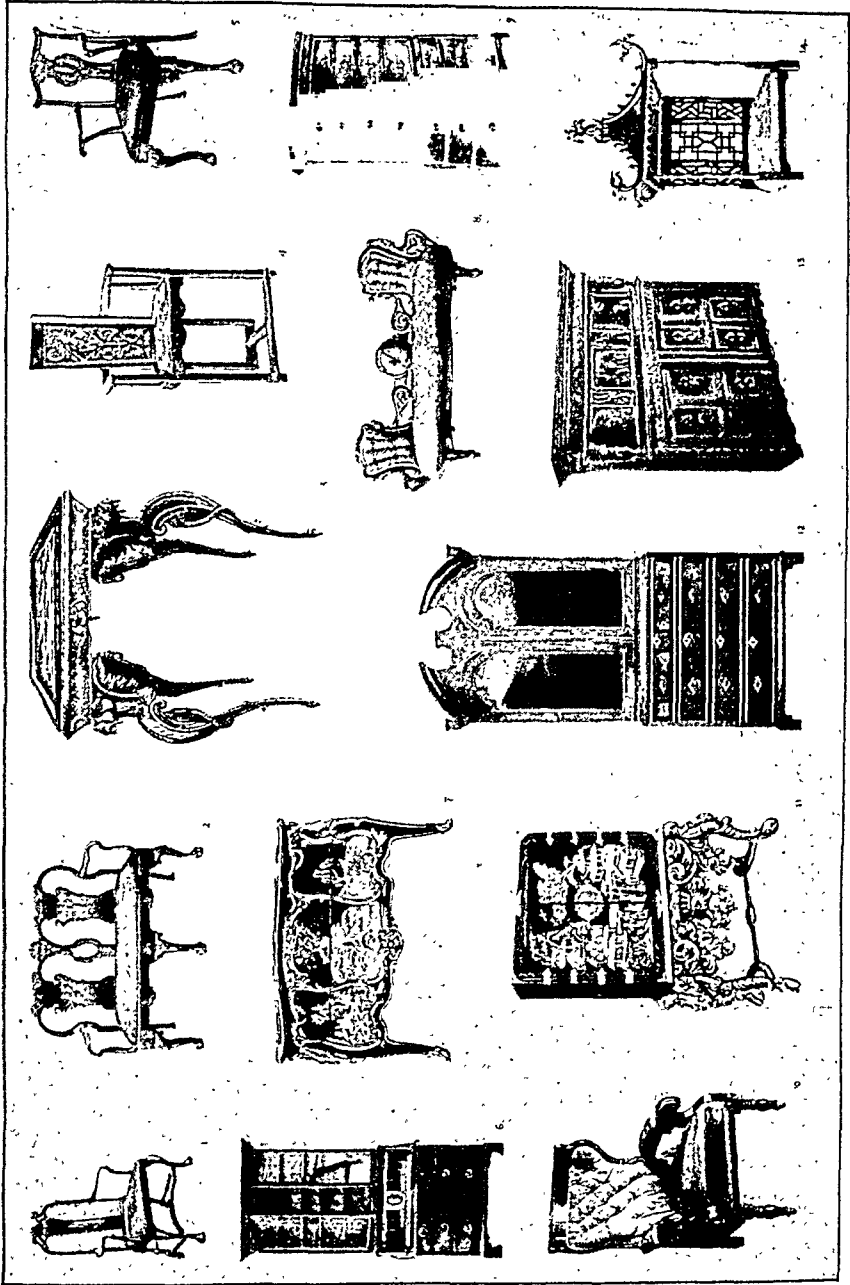
**Fylfot**: *see* SWASTIKA.

**Fyzabad**, **Faizabad**, 1) dist., United Provs., India. 2) Cap., dist.; pop., 56,200. *See also* FAIZABAD.

**F.Z.S.**, abbr. Fellow, Zoological Society, London.



Wilhelm  
Furtwängler



STYLES OF FURNITURE

1 William and Mary Walnut Chair, 2 Queen Anne Walnut Settee, 3 Louis Quatorze Table, 4 Tudor Early Oak Armchair, 5 Chippendale Mahogany Armchair, 6 Sheraton Mahogany Bookcase, 7 Louis Quinze Commode, 8 Early Victorian Walnut Settee (1860), 9 Hoppelwhite Mahogany Bow-front Double Chest, 10 Early Victorian Mahogany Library Chair (1837), 11 Charles II Lacquer Cabinet, 12 Queen Anne Walnut Cabinet, 13 Elizabethan Court Cupboard, 14 Chinese Chippendale Bedstead.

**G.**, abbr., 1) gramme; 2) gravity acceleration.

**Ga**, (chem.) symbol of gallium.

**Ga.**, abbr. Georgia (U.S.A.).

**Gabardine**, 1) diagonally ribbed cloth; 2) a loose cloak; in Mid. Ages obligatory garment for Europ. Jews.

**Gabes**, see **CABES**.

**Gable**, (archit.) vertical end of a roof; usu. triangular; see **PEDIMENT**.

**Gaboriau**, Émile (1833-73), Fr. novelist, father of the modern detective story; *Le Dossier No. 113*, 1867; *M. Lecog*, 1869; *Le Corde au Cou*, 1873.

**Gabriel**, (N.T.) one of the archangels; announced coming birth of Jesus to Mary.

**Gabun, Gabon**, Fr. colony, Equatorial Africa, on Gulf of Guinea; area, 106,000 sq.m.; pop., 389,000; cap., *Libreville*, on Gabun estuary (c. 44 m. long).

**Gad**, (O.T.) 7th son of Jacob, founder of one of the Twelve Tribes.

**Gadara**, (N.T.) city, E. of Sea of Galilee; scene of Christ's miracle of casting out devils into a herd of swine.

**Gadfly**, alternative name for horse-fly (q.v.).

**Gadget**, any ingenious mechanical fitting; gen. small and detachable.

**Gadolinite**, greenish-black, rare earth mineral (silicate of yttrium) fnd. in Scandinavia and Texas.

**Gadolinium**, (chem.) sym. Gd., at. wt. 173.3; rare earth element found in gadolinite.

**Gaea, Gē**, (Gr. myth., Rom. *Tellus*) goddess of the Earth, mother of Uranus (q.v.).

**Gaelic**: see **LANGUAGE SURVEY, Celtic**.

**Gaff**, spar for extending upper edge of those fore-and-aft sails which are not set on stays (q.v.).

**Gafsa, Capsa**, prov., cap. Tunis; pop., 5,000; phosphate mines. Gives name to *Capsian culture* (q.v.).

**Gage d'amour** (Fr.), pledge of love; love token.

**Gainsborough**, Thomas (1727-88), Eng. portr. and landsc. painter; foundation member of R.A., 1768; *Blue Boy*, in Huntington collection, [California; *Elizabeth, Duchess of Devonshire*, stolen in London, 1876, found by Amer.



Gainsborough

detectives 1901 and sold to J. P. Morgan, Senior.

**Gaiters**, leg-coverings of leather or cloth; pt. of offic. dress of a bp.; in form of spiral wrapping as *puttees*, worn by soldiers, sportsmen, etc.

**Gaius**, St., Pope (283-96), tomb, with orig. epitaph discovered in cemetery of Calixtus.

**Galactometer**, instrument for testing quality of milk by measuring specific gravity.

**Galactose**, crystalline glucose, obtd. by treating milk with acids.

**Galago**, African lemuroid mammal, large eyes and ears, insectivorous, commonly called "bush baby."

**Galahad**, hero of Grail episode in Arthurian romance-cycle; 1st repres. as direct descendant of Joseph of Arimathea; later as son of Lancelot (q.v.).

**Galalith**, moulded composition made from the casein of milk, to which various pigments are added; chfily. for small ornamental objects. See **CASEIN**.

**Galapagos Islands** (*turtle islands*), group in Pacific belonging to Ecuador; area 2,940 sq.m.; giant turtles; cap., *San Christobal*; pop., 2,000.

**Galashiels**, tn. in Selkirksh, Scotl., 30 m. S.E. of Edinburgh; wool manuf., tanneries; pop., 14,000.

**Galata**, suburb Constantinople, N. side Golden Horn.

**Galatea**, 1) sea-nymph of Gr. mythology. 2) Statue made by Pygmalion (q.v.), given life by Aphrodite.

**Galatians, Epistle to the**, (N.T.) from Paul to churches of Galatia (c. A.D. 55); vindicates writer agst. Jewish defamations.

**Galatz**, important port of Rumania, on L. bank Riv. Danube; grain export; naval school; seat of Danube Commission (q.v.); pop., 101,150.

**Galaxy**: see **MILKY WAY**.

**Galba**, Servius Sulpicius (5 B.C.-A.D. 69), Rom. Emp. in 68; murdered by followers of his successor, Otho.

**Galbanum**, aromatic, resinous juice, obtained from variety of plant *Ferula*, native to Persia and Turkey; used in pulmonary complaints and for plasters.

**Galdós**, Benito Pérez (1845-1920), Sp. auth. and political dramatist.



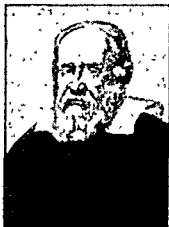
**Galen** (c. 130-c. 200), Gr. physician and philos.; after Hippocrates (*q.v.*) the foremost name in ancient medicine: *On the Uses of the Parts of the Body of Man*. **Galenic medicines**, term sometimes given to drugs of vegetable origin (herbs), as distinct from chemical drugs. **Galenicals**, the tinctures, extracts, etc., of crude vegetable drugs, used by the pharmacist in compounding prescriptions.

**Galena**, nat. lead sulphide, PbS, principal source of lead; in nature gen. mixed with zinc blende (*q.v.*) as at Broken Hill, Australia.

**Galicia**, 1) dist. Poland, N. slopes of Carpathians, with rivs. Vistula, San, Bug, and Dnieper. Rich coal fields; also iron, lead, zinc, sulphur, salt, and petroleum; exports timber; agric. products: grain, flax, hemp, pulses, potatoes, and turnips; cattle- and poultry-breeding; little industry. **Upper G.**, autonomous Pol. voivodeship; area, 30,300 sq.m.; pop., 8,478,550 (Poles, Ruthenians, Jews); cap., *Lemberg*. Pol. since 1919; E. portion since 1923. 2) Dist., N.W. Spain; divided into provs. La Coruña, Lugo, Orense, Pontevedra; area, 11,260 sq.m.; mountainous; cattle-breeding, fisheries, few industries; cap., *Santiago de Compostela*; largest tn., Coruña.

**Galilee**, N. part of Palestine; area, 1,600 sq.m. **Sea of G.**, N. Palestine (77 sq.m.), 680 ft. below sea-level; Riv. Jordan flows through. Also called *Lake of Tiberias* and *Sea of Gennesaret* (N.T.), and in O.T. *Sea of Chinnereth*.

**Galileo, Galilei** (1564-1642), It. scholar, philos. and astron.; conducted exps. with pendulum and falling bodies; establd. principles of dynamics. Constructed telescope, 1609; disc. Jupiter's satellites, sun spots, Moon's libration (*q.v.*). Cited before Inquisition, 1633, to recant belief in *Copernican* doctrine; see **COPERNICUS**.



Galileo

**Galium**, genus of plants of family *Rubiaceae*. *Galium verum*, known as yellow bedstraw or lady's bedstraw, has small yellow flowers, wh. are used to curdle milk. See **BEDSTRAW**.

**Gall**, Franz Joseph (1758-1828), Ger. physician; fndr. of phrenology (1796).

**Gall**, 1) (physiol.) green bile secreted by liver; first collected in gall-bladder, and flows thence into duodenum or first part of the small intestine; serves for digestion of fat. **G.-stone colic**, painful cramp in duct of gall-bladder often caused by passage of a *gallstone*, a solid deposit from the bile. 2) (P.) Normal growth on plants caused by or fungi; *G.-nut*, on oaks

(see **OAK-APPLE**) is commonest; made by *G. wasps*. 3) (Vet.) Swelling or sore, esp. on horse, produced by friction. **G. wasp**, **g.fly**, very small wasp; lays its eggs in plants, the resulting larvae causing excrescences, esp. on oaks, willows, and roses.



Gall-wasp

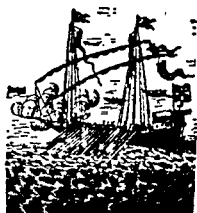
**Galla**, *Orma*, Hamitic race, mostly cattle-breeders, of S. Abyssinia.

**Galle**, *Point de Galle*, S.W. coast of Ceylon; pop., 39,175; exports: rubber, tea, and coconut oil; largely superseded as port by Colombo.

**Galleon**, under-part of bowsprit, often decorated with figure-head; also term used for Span. craft of 15th-16th cents., employed in transport of treasure.

**Gallery**, 1) tunnel advanced horizon. into ground, see **MINING**. 2) (Theatre) The seats highest and farthest from stage. 3) (Art) **Picture g.**, for displaying collections. 4) Gen., in any large building, raised platform projecting from walls, usu. supported by pillars.

**Galley**, 1) long battleship of anc. Rome and of Mid. Ages, in latter case with 25 to 50 benches for rowers, on each of wh. sat 3 to 5 *galley slaves*. Convicted criminals were condemned to the *hulks*, i.e., to forced work in chains at the galleys. 2) (Naut.) Ship's cook-house; on mod. luxury liners includes grills, still rooms, bake ovens, hot presses, hot cupboards, etc.; large rowing boat. 3) (Printing) Tray to which type is transferred from composing-stick.



Galley

**Gallic acid**, *trihydroxybenzoic acid*,  $C_6H_2(OH)_3COOH$ , prepd. by hydrolysis of tannin, used in med. internally and externally as astringent; in dyeing and in manuf. of ink.

**Gallicanism**, tendency to enlarge the prerogatives of a national church and restrict those of the Pope. So called from this movement in France in the 17th century.

**Gallicism**, expression imitated from French language.

**Gallieni**, Jos. Simon (1849-1916), Fr. gen. and African explorer; Mil. Gov. of Paris 1914; played leading part in victory of 1st battle of the Marne; Min. of War, 1915-16; Marshal of France, 1921.

**Galliformes**, order of birds including all the gallinaceous birds, and the ostriches, parrots, cuckoos, and rails.

**Gallinaceous birds**, an order of birds, inclgd. pheasants, partridges, grouse, turkeys, pea-fowl, and domestic fowl; all of polygamous habit.

**Galliot**, small galley with oars or sails; also small craft used on Dut. water-ways.

**Gallipoli**, 1) the anc. *Thracian Chersonese*, Turk. penins. in the Aegean Sea, on the N.W. side of the Dardanelles (q.v.), 53 m. long, 2-12 m. wide; highest point Achi Baba (730 ft.). Portions occupied by the Brit. from April 25, 1915, to Jan., 1916 (see WORLD WAR). 2) Tn. and port, at N.E. end of penins.; pop., 5,450.

**Gallium**, (chem.) sym. Ga; at. wt. 69.72; rare metallic element, occas. found in combination with zinc.

**Gallon**, 1) Brit. and U.S. dry meas.:  $\frac{1}{8}$  bushel. 2) Brit. liquid meas.: imperial g. 277.27 cu. in.; 4 quarts. 3) U.S. liquid meas.: wine-gallon, 231 cu. in.; beer-gallon, 282 cu. in. (= 833.11 Brit. gall.).

**Gallop**, 1) quickest gait of horses, etc., with all 4 feet off ground at every stride. 2) (Danc.) See GALOP.

**Galloway**, anc. dist., S.W. Scotland, comprising Kirkcudbrightsh., and Wigtownsh. (qq.v.) and (in 12th cent.) dist. of Carrick (Ayrsh.); famous for cattle and horses (*Galloways*). In S.W. is double penins. of the *Rhinns of G.*, with *Mull of G.* (210 ft.), southernmost point of Scotland.

**Gallows**, structure or framework for carrying out sentence of death by hanging; in England used in public until 1868. The **gibbet**, a term sometimes used as a synonym for G., is a vertical post with projecting arm from which corpses of male-factors were hung as a warning.

**Galop**, lively ballroom dance of Hung. orig., pop. from 19th century; in 2/4 time.

**Galsworthy**, John, (1867-1933), Eng. novelist (*Forsyte Saga*, etc.) and dramatist (*Strife*, *Loyalties*, etc.); awarded Order of Merit, 1929; Nobel Prize (Lit.), 1932.

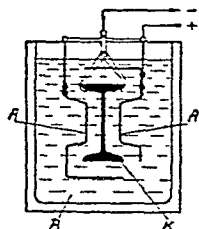
**Galt**, John (1779-1839), Scot. novelist; *The Ayrshire Legates*, 1820-21; *Annals of the Parish*, 1821; *The Provost*, 1822; *Lawrie Todd*, 1830.

**Galtee Mountains**, range cos. Tipperary and Limerick, I.F.S.; *Galteemore*, 3,018 ft.

**Galton**, Sir Francis (1822-1911), Eng. anthropologist; fndd. eugenics.

**Galvani**, Luigi (1737-98), Ital. anatomist, discov. galvanic electr., action of elec. on animal nerves. **Galvanic current**, elec. current generally; in more restricted sense, current from *galvanic cell*, or battery of cells; 2 metals, i.e., copper and zinc, dipped into dilute acid, give electromotive force (voltage) wh. discharges thr. conductors as elec. current (until zinc is completely dissolved); *Voltaic element*, zinc and copper in sulphuric

acid; *Bunsen element*, zinc in sulphuric acid, gas-retort carbon in nitric acid (separation by porous diaphragm); *Leclanché element*, zinc, and carbon surrounded by manganese dioxide, in solut. of sal ammoniac (common dry cell, pocket torch battery); also *Daniell cell* (q.v.). **Galvanization**, use of constant direct current for remedial purposes. **Galvanizing**, coating iron or steel with zinc to prevent rust by (1) dipping in molten zinc (hot spelter galvanizing); (2) electrolysis (q.v.) (cold electro-galvanizing); (3) heating with zinc dust in cylinders ("Sherardizing," q.v.); (4) spraying with molten zinc.



**Galvanometer**,

(elec.) sensitive instr. for indic. and measur. small elec. currents. **Galvanization of a Girder** A Anode; K Cathode; B Zinc bath (solution of zinc salts in water).

**Moving-coil g.**, coil with pointer or mirror suspended in strong magnetic field. **Moving-magnet g.**, minute magnet with mirror suspended in field of coils thr. wh. current is passed. **String g.**, of extreme sensitivity and rapidity of response, current being sent thr. extremely fine conducting fibre set in a strong magnetic field. Motion of fibre is observed by microscope; usu. photographed.

**Galveston**, port, Texas, U.S.A., on G. Island; pop., 52,950; cotton, grain, oil, coffee, sugar-cane, rice centre; rice mills, sugar refineries. City destroyed by hurricane, 1900, and completely rebuilt.

**Galway**, 1) Marit. co., Connaught, I.F.S.; area, 2,293 sq.m.; pop., 169,400; coast-line much indented; *Aran Is.* in Galway Bay; interior mountainous in W. (*Connemara Mtns.*; *Twelve Pins*, 2,695 ft.) and S. (*Slicke Aughty Mtns.*, 1,243 ft.); flat and marshy in E.; div. into two by *Lough Corrib* (27 m. by 7); rivs. Shannon, Suck, Clare; cattle- and sheep-breeding, fisheries, limestone, marble, iron, lead, copper. 2) Cap., Co. G., at mouth Riv. Corrib, Galway Bay; pop., 14,200.

**Gama**, Vasco da (c. 1460-1524); Port. navigator; disc. sea route to India, 1497; Viceroy of India, 1524.

**Gamaliel**, (N.T.) Pharisee and celebrated rabbi; teacher of St. Paul.

**Gambetta**, Léon (1838-82), Fr. statesm.; procl. 3rd Republic, 1870; Pr. Min., 1881-82.

**Gambia**, 1) riv., W. Africa; rises Fouta Jalon Plateau (q.v.); length c. 1,000 m.; navigable up to 150 m. 2) Brit. crown colony and protectorate, on banks of riv. as far as Yarbuteendi; area, 4,130 sq.m.; pop., 211,000; ground nuts exported; cap., *Bathurst*.

**Gambit**, (chess) the offer of a pawn to the opponent in the opening moves of the game.



Galsworthy

**Gamboge**, brownish gum-resin obtained from trees of Siam, Cambodia, and Ceylon; used medic. and in manuf. of yellow pigment.

**Gambrinus**, mythical inventor of beer.

**Game**, animals, etc., which are objects of the chase: esp. (Eng.) birds which may not be shot without a *game licence*, viz., partridge, pheasant, red grouse, black game, and ptarmigan. **G.-keeper**, man employed to breed and preserve game, prevent poaching, etc. **G. laws**, statutes regulating the right to kill game.

**Gamelyn**, *Tale of*, poem, formerly attrib. to Chaucer; source of Lodge's *Rosalynde*; basis of Shakespeare's *As You Like It*.

**Gamma** (Γ), 3rd letter of Gr. alphabet.

**G. rays**, see RADIO-ACTIVITY.

**Gammer Gurton's Needle**, 2nd extant Eng. comedy, wrongly attrib. to Bp. Still; prob. by W. Stevenson (d. 1575); acted at Christ's Coll., Cambridge, 1575.

**Gander**, male goose.

**Gandhi**, Mahatma Mohandas Karamchand (1869– ), Hindu lawyer; leader of Ind. Nationalists. Championed cause of Indians in S. Africa, 1893–1914; his activities led to Com. of Inquiry 1914, wh. removed graver causes of discontent. Returned to India and became leader of independence movement, inaugurating campaign of passive non-co-operation, and civil disobedience; imprisoned, 1930; was released and suspended campaign after compact with Viceroy; attended first Round Table Conference but rejected proposals; reimprisoned; released 1933 on starting fast on behalf of Untouchables; again imprisoned—and released—Aug., 1933.



Gandhi

**Gandzha**, *Elizavetpol*, tn. in Soviet Republic, Azerbaijan; textiles, soap manuf.; pop., 57,400.

**Ganges**, Hindustani **Ganga**, sacred riv., N. India; rises centr. Himalayas as *Bhagirathi*; at confluence with Alaknanda (130 m. from source) takes name of Ganges; reaches plains at Hardwar (United Provs.); joined by Riv. Jumna at Allahabad; flows past Benares and Patna through Bihar into Bengal, where it is joined by the Brahmaputra; drains into Bay of Bengal through largest delta in the world (31,880 sq.m.; W. mouth Riv. Hugli, *q.v.*); length 1,500 m.; drainage area 430,000 sq.m.; navigable as far as Hardwar; floods make riv. basin extremely fertile. **Ganges Canal**, navigable channel and irrigation system, betw. Hardwar and Cawnpore; main channels 700 m., branches 3,000 miles.

**Ganglion**, (physiol.) an enlargement of a nerve or group of nerve-cells wh. receives and

sends out nervous impulses; such cells are spec. present in brain, spinal cord, and sympathetic nervous system.

**Gangotri**, temple in state of Garhwal (*q.v.*) on r. bank Riv. Ganges (Bhagirathi), 8 m. from source; Hindu place of pilgrimage.

**Gangrene**, (med.) death of body tissue; parts most often affected are the fingers, toes, and leg below the knee; generally due to changes in the blood-vessels, so that the supply of blood to lower part is partially cut off. **Gas g.**, infection of skin and muscles with a gas-producing bacillus, so that the muscles become distended with gas and the tissues die.

**Gang saw**, machine-driven saw with several parallel, vertical blades, for slitting logs into planks.

**Gangue**, a valuable mineral, obtained by ore-dressing.

**Gannet**, large sea-bird of sub-order *Sulac*. **European or white g.**, distribtd. over seas of N. Hemisphere; resort in great numbers, during breeding season, to inaccessible cliffs and rocky islands, such as Ailsa Craig and Bass Rock, off Scot. coast. **Cape g.**, of S. Africa, distribtd. over S. Hemisphere; white, with black tail. See NOOBY.

**Ganoid**, term applied to fishes having scales coated with *ganoin*, an enamel-like substance; almost extinct; represtd. by 3 families, members of wh. incl. N. Amer. mud-fish (*Armia*), bony-pike (*Polypterus*), gar-pike, etc.

**Gantry**, framework or other structure for carrying travelling-crane; see CRANE.

**Ganymede**, (Gr. myth.) cup-bearer of Zeus, who assumed form of an eagle and carried him up to Olympus.

**Gap**, cap. dépt. Hautes-Alpes, France; pop., 10,660; cathedral.

**G.A.R.**, abbr. Grand Army of the Republic (U.S.A.; Civil War).

**Garage**, storage place for motors; often several floors with inclined approach (see Illust.) or elevators; design controlled by extensive official regulations.

**García**, Manuel del P. Vicente (1775–1832), Sp. singer and composer; fndd. sch. of singing, London, 1823; his son, **Manoel** (1805–1906), teacher of singing; prof. at Paris Conservatoire, 1830–48; prof. at Roy. Acad. of Music, Lon-



Ganymede



Model of Modern Garage

don, 1848-95; inventor of laryngoscope (q.v.).

**Garçon** (Fr.), boy, waiter, bachelor.

**Gard**, 1) dépt. France (2,270 sq.m.), betw. Rhône and Mediterranean; vines, wheat, oats; coal in N.W.; centre silk industry; pop., 403,000; cap., Nîmes. 2) Riv., trib. Rhône; subject severe floods; length 85 miles.

**Garda**, lake, largest N. Ital. lake (143 sq.m.), S. foot of Alps; 35 m. (N. to S.) by 10 m.; max. depth, 984 ft.

**Garden**, open-air pleasure-ground for private or public use. **Kitchen g.**, ground reserved for growing of vegetables, fruit, etc., for domestic use. **Market g.**, in wh. flowers, vegetables, etc., are grown for sale.

**Rock g.**, artificially built mounds of stones, etc., betw. wh. rock-plants, ferns, Alpine flowers, etc., are cultivated. **Public g.**, enclosed ground planted with flowers and trees, maintained by public authority for public use or instruction. See LANDSCAPE GARDENING. **G.**, or **cross spider**, of family *Epeiridae* or orb-spinners; spins web in the form of a wheel; has cross-like marking on the back. **G.-warbler**, small, migrant singing bird; arrives in Eng. in May. Widely distribtd. thr. Eur.; winters in Africa. Inconspicuous, soft fawn and brown tints.

**Garden of the Gods**, tract nr. Colorado Springs, U.S.A., covered by grotesquely formed ridges of brightly coloured sandstone.

**Gardenia**, evergreen tropical trees and shrubs, with handsome white fragrant blossoms; often cultivated in hot-houses.

**Gardinas**: see GRODNO.

**Gardiner**, **Sam. Rawson** (1829-1902), Eng. historian; a leading authority on Stuart Period, 1603-60 (16 vols., 1863-1903). **G., Stephen** (c. 1493-1555), Eng. bp. and Lord Chancellor; vindicated Henry VIII's claim to supremacy of Ch., 1535; recanted this under Qn. Mary, and took part in persecution of Protestants.

**Garfield**, James Abram (1831-81), Amer. statesm.; 20th Pres. U.S.A., March-Sept., 1881; assassinated.

**Gar-fish**, genus of Brit. and Europ. fishes with jaws produced into a long beak.

**Gargantua**, giant eater and drinker, the creation of Rabelais (q.v.).

**Garget**, (vet.) inflammation of the udder in cows and ewes.

**Gargoyle**, (archit.) Gothic waterspout often carved as a grotesque face, through the mouth of wh. the roof is drained of rain-water.

**Garhwal**, 1) native state, United Provs., India, S.W. Himalayas; area, 4,200 sq. m.; pop., 318,000; source of Ganges and Jumna. 2) Brit. dist., adjoining; area, 5,600 sq.m.; pop., 485,000.



Gargoyle

**Garibaldi**, Giuseppe (1807-82), It. patriot; com. volunteer armies in Ital. wars of independence of Italy, and volunteer corps on Fr. side in Fr.-Pruss. War.

**Garlic**, *Allium sativum*, culinary plant of the lily family, the bulb of which consists of a number of "cloves," very strong pungent odour and flavour; juice used in med. as an anti-septic and occasionally in pulmonary tuberculosis.

**Garnet**, semi-precious, crystallized, Garlic siliceous stone, occurring in different mineral combinations of various bright colours, most usually red; very hard; cut as a gem.

**Garnishee**, person warned not to pay money wh. he owes to another person when the latter is indebted to person giving the warning.

**Garonne**, riv., S.W. France, 400 m. long, rises Pyrenees; with Dordogne forms estuary of Gironde, 45 m. long; empties into Atlantic; navigable to Bordeaux.

**Garrick**, David (1717-79), Eng. actor; joint auth. with Colman of *The Clandestine Marriage*, 1766.

**Garrison**, Wm. Lloyd (1805-79), Amer. journalist and abolitionist; began as compositor; fndd. the *Liberator* (advocet. abolition of slavery), 1831, and the New Eng. Anti-Slavery Soc. (Boston), 1832; pres. Amer. Anti-Slavery Soc., 1843-65.



Garrick

**Garrotte**, Span. neck-iron for throttling; instrument of capital punishment (q.v.) in Spain and, formerly, Portugal. **Garrotting**, form of robbery with violence, wh. broke out in Eng., 1862-63; the victims were nearly strangled by a cord thrown over their heads from behind; checked by imposition of penalty of flogging in addition to penal servitude.

**Garshin**, Vsevolod Mikhailovich (1855-88), Russ. novelist: *The Signal*; *The Red Flower*.

**Garter**, **Order of the**, highest Eng. order of knighthood, traditionally estabd. 1348; only one class; numbers limited to 26, incl. the Sovereign. Insignia: Garter of dark blue velvet, bearing motto *Honi soit qui mal y pense* (Shame on him who evil thinks); mantle of dark blue velvet; hood and surcoat of crimson velvet; hat of black velvet; collar of gold; George (enamelled fig. of St. George and the Dragon); lesser George or Badge; star (silver) of eight points; ribbon blue; stalls in St. George's Chapel, Windsor. **G. King of Arms**, the senior English herald. See HERALD. **G. Principal King of Arms**,

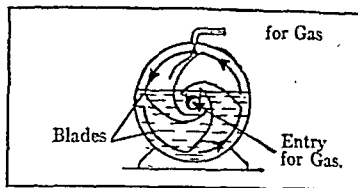
chief officer of College of Arms; K. of A. to Order of the Garter. See *HERALD* and *Ill. s.v. KNIGHTHOOD, ORDERS OF*.

**Garth**, Sir Samuel (1661-1719), Eng. physician and poet; mock-heroic poem, *The Dispensary*, 1699.

**Gary**, tn., Indiana, U.S.A., on L. Michigan; pop., 100,450; steel, tin-plate works, largest in U.S.A.

**Gas**: see GASES (*below*), also COAL GAS; INCANDESCENT GAS. **Natural G.**, mixture of methane ( $\text{CH}_4$ ) and other gases, emitted from borings in earth in many parts of world, esp. in N. Amer. and Russia. **Producer G.**: see G. PRODUCER (*below*). **G.-coal**, suitable for gas-making; cont. about 40% of volatile matter. **G.-coke**, residue after (high-temp.) carbonisation of coal to produce coal gas. Low-temp. carbonisation produces *Coal-ite*, easily combustible coke which burns in ord. grate with good heat and little smoke. **G.-cylinder**, strong steel C. in wh. gas (oxygen, hydrogen, carbon dioxide) under grt. pressure is transported. **G.-engine**: see INTERNAL COMBUSTION ENGINE. **G.-filled lamp**, electric incandescent lamp with tungsten filament coiled into close spiral, whereby a non-oxidising gas (nitrogen) may be used in the bulb, thus enabling lamp-filament to be heated to a high temperature. **G.-holder**, **Gasometer**, reservoir for gas; gen. bell rising and falling between guides, lower end immersed in water. Now also made without water, tar being used as gas-seal. (See *Ill.*). **G.-light paper**, photo. printing paper; similar to bromide paper (*q.v.*) but much slower. **G.-mask**, mask with filter thr. which air passes before it is inhaled; usu. coconut charcoal, wh. adsorbs and destroys most poisonous gases and fumes. **G.-meter**, apparatus recording amt. of G. consumed. *Wet G. meter* consists of a drum more than half filled with water; rotating part provided with blades turned as G. displaces the water underneath them. *Dry meter*, two bellows wh. fill and empty alternately; less accurate, but not sensitive to frost. **G.-poisoning**: see POISONING. **G. producer**, for making mixture of carbon monoxide and hydrogen by action of steam and air on hot coke (known as *producer G.*). Used to add to coal gas (*q.v.*) and as fuel for gas engines. **G.-tester**, appar. indicating

how much carbon-dioxide acid is contained in gases given off by fuel. **G.-turbines**, sim. to steam T. but driven by the gas resulting from burning fuel in air under pressure. For efficiency, temp. of gases must be very high



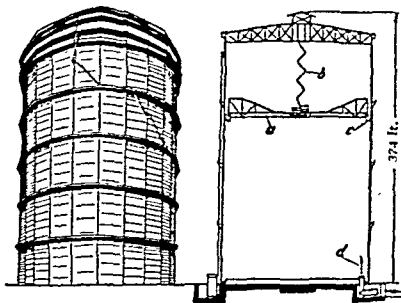
Wet Gas-meter

and no material is known wh. will resist it for any length of time.

**Gascoigne**, George (c. 1535-77), Eng. poet; satire, *The Steele Glas*, 1576.

**Gascony**, anc. prov. S.W. France; incl. modern dépts. Landes, Gers, Hautes Pyrénées, and part Basses-Pyrénées; area c. 9,000 sq.m.; pop., c. 800,000.

**Gases**, (chem.) bodies which, when introduced into an empty vessel, fill it completely and uniformly, heat motion of their particles being sufficient entirely to overcome cohesive force (see KINETICS). Can only be



Outside View      Elevation, in Section  
a) Movable disk, b) Movable conductor, c) Packing, d) Gas supply

GAS-HOLDER



Gas Mask

liquefied when cooled below critical temperature. Gases with very low critical temps formerly called *permanent* (hydrogen, oxygen, nitrogen, etc.). Properly, term "gas" applies only when critical temp. is below ordinary temps., "vapour" being used for bodies having higher crit. temps. but in practice gas is used up to crit. temp. about 150°C. **G.s., rare or noble**, argon, krypton, helium, neon and xenon, in all making about 1% of the air: also contained in radio-active minerals. Chemically inert, but may be recogd. by spectroscope.

**Gaskell**, Eliz. Cleghorne (1810-65), Eng. novelist; *Mary Barton*, anon., 1848; *Cranford*, in *Household Words*, 1851-53; *The Moorland*

*Cottage*, 1850; *Ruth*, 1853; *Life of Charlotte Brontë*, 1857.

**Gasoline**, petroleum ether, highly volatile, distilled from petroleum at 70°; used for cleaning garments and for extracting fat from wool; in small quantities in gas-works for enriching illuminating gas (*q.v.*). In N. Amer. gasoline or gas is the name used for petrol.

**Gasometer**: see GAS-HOLDER, *S.V.* GAS.

**Gasquet**, Francis Aidan (1846-1929), Brit. cardinal and historian; *Henry VIII and the Eng. Monasteries*, 1888-89; *Parish Life in Medieval England*, 1906; *Monastic Life in the Middle Ages*, 1922; *Pius XI*, 1922, etc.

**Gassendi**, Pierre (1592-1655), Fr. philos. and physicist; auth. of treatises on the life and doctrine of Epicurus (*q.v.*).

**Gasteln**, a side valley of the Riv. Salzach, in the Hohe Tauern, Salzburg. **Bad-G.** (3,430 ft.); pop., 2,250; warm springs (up to 120°F). **G. Pact**, betw. Austria and Prussia, in regard to administration of Schleswig-Holstein (1865).

**Gastric**, pertaining to the stomach (*q.v.*). **G. fistula**, opening into the stomach thr. abdominal wall; artificial feeding can be effected by means of rubber tube passed thr. the opening. **G. juice**, (physiol.) fluid secreted by the glands of the mucous membrane of the stomach; consists of dilute hydrochloric acid and pepsin. **Gastritis**, inflammation of the stomach.

**Gastropoda**, class of molluscs (*q.v.*), having head-like extension of body and moving by means of muscular disk on ventral surface; include all snails and slugs.

**Gastroscope**, instrument for exam. interior of stomach; consists of metal tube cont. elec. lamp and fitted with mirror.

**Gastrula**, (biol.) an early stage in the development of the embryo in multi-cellular animals.

**Gat**, (naut.) a narrow, navigable passage between sand-banks.

**Gatacre**, Sir John (1841-1932), Eng. major-gen.; served in Indian Mutiny, 1858; China War, 1860; Afghan War, 1879-80; Burmese Expedition, 1886-88.

**Gatchina**, former residence of the Russ. Tsars; see TROTSK.

**Gateshead**, co. bor., Durham, Eng., S. bank Riv. Tyne, opp. Newcastle; locomotive, glass, chemical works; pop., 122,400.

**Gatling**, quick-firing 6- or 8-barrelled weapon (Amer. invention, 1862), operated by hand (crank), fed from hopper, mounted on a light gun-carriage. Superseded by machine-gun (*q.v.*).

**Gatwick**, race-course, Surrey, nr. Horley, 2½ m. S. of London; meetings (2 days) in May, June, Sept., Oct.; stplchs., Jan., Feb., March, Dec.

**Gaacho** (Span.), cowboy, rider of Argentina or Uruguay, of mixed European and Indian blood.

**Gaudeamus igitur** (Lat.), therefore let us rejoice; 1st line of Lat. students' song, esp. pop. in Germany.

**Gaudier - Brzeska**, Henri (1891-1915), Fr. vorticist sculptor: *The Dancer*; *The Embracers*.

**Gauge**, 1) (mechan.) instr. for measuring and checking: *water G.*, records level in boiler; *pressure G.*, *limit G.*, indicates surplus and deficiency (see TOLERANCE). 2) (Rly.) Distance betw. rails on permanent way (*q.v.*). In Gt. Brit. 4 ft. 8½ ins.; in Ireland, 5 ft. 3 ins.; on Continent of Europe, chfly. 4 ft. 9 ins. *Narrow g.*, less than standard width, 2 ft. to 3 ft. 6 ins.; cheaper to construct and allows of sharper curves; in use on Egypt-Sudan line. **G. glass**, vertical glass tube fixed to boilers and other containers of liquid; top of tube connected to top of container, bottom to bottom, so that liquid level can be seen in glass. For high-pressure boilers special glass and protective devices.

**Gauguin**, Paul (1848-1903), Fr. painter; pioneer post-impressionist; lived in native fashion in Tahiti, 1891 and 1895 onwards; pictures: *The Flight, Alone*; autobiographical novel, *Noa Noa*. **Gaul**, anc. country of the Celts (Rom.: Gauls), present-day Belgium and France; Po valley Cisalpine Gaul. Won for Rome by Caesar, 58-50 B.C. Raided by Germanic tribes 3rd and 4th cents. A.D. Hun attack under Attila beaten back by Aëtius, 451. Greater part conquered by Franks under Clovis, who founded Merovingian dynasty, c. 486.

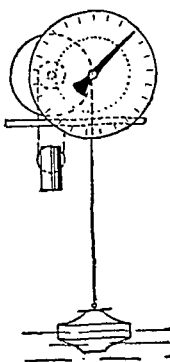
**Gault**, beds of clay betw. upper and lower greensand (*q.v.*).

**Gaunt**, John of: see JOHN OF GAUNT.

**Gauntlet**, glove with deep cuff, orig.



Gaacho



Water-gauge



Gauguin

armour. **To fling down the g.**, a form of challenge to fight in the Mid. Ages. **Running the g.**, 18th-cent. milit. punishment, in wh. the condemned man was made to pass betw. two ranks of soldiers who thrashed him on his way.

**Gaur**, or Indian bison, variety of wild cattle fnd. in S.E. Asia.

**Gauri Sankar**, snow peak, Everest group, Himalayas, India; height, 23,400 ft.

**Gauss**, Karl Friedrich (1777-1855), Ger. mathemat. and physicist; *Disquisitiones Arithmeticae*, 1801.

**Gaussberg**, extinct volcano on Kaiser Wilhelms Land (E. Antarctic), 1,215 ft.

**Gautama**: see BUDDHA.

**Gautier**, Théophile (1811-72), Fr. auth. and critic; *Mademoiselle de Maupin*, 1835.

**Gauze**, very fine transparent fabric of silk, cotton, wire, or other thin substance.

**Gavarni**, Paul (1804-66), pseudon. of Sulpice-Guillaume Chevalier, Fr. satirical artist; caricaturist on *Le Charivari*.

**Gavial**, the Gangetic crocodile, inhabiting the Ganges, Indus, Brahmaputra, and Mahanadi rivs. of India. Distinguished by the greater length and slenderness of the snout; grows to 20 ft. in length; feeds entirely on fish.

**Gävle**, Swed. port, cap. of Gävleborg, (7,600 sq.m.; pop., 277,700), on Gulf of Bothnia; iron works, shipb.; pop., 39,200.

**Gavotte**, O. Fr. dance of peasant orig., resembling minuet (*q.v.*) but quicker and less formal.

**Gawain**, hero of Arthurian romance-cycle; in earlier redactions hardly second to Arthur in noble and knightly qualities. Chf. authority 14th-cent. romance *Sir Gawain and the Green Knight*, in alliterative verse.

**Gawk**, simpleton, awkward, tactless, clumsy person.

**Gay**, John (1685-1732), Eng. poet; *The Beggars' Opera*, 1728.

**Gay science** (*El gai saber*), Provençal name for Troubadours' (*q.v.*) art; comprised set forms of lyric poetry: *Partimen*, *Pastorela*, *Tenson*, *Alba*, *Estampie*, etc.; title of work on Criticism by E. S. Dallas (1866).

**Gaya**, 1) dist., Bihar and Orissa, India; area, 4,700 sq.m.; pop., 2,200,000. 2) Tn. cap. of dist., associated with Buddha; in vicinity vill. Buddha-Gaya; pilgrim centre; pop., 67,600.

**Gayal**, or **Mithan**, variety of cattle found in Indo-China, allied to Gaur (*q.v.*).

**Gay-Lussac**, Jos. Louis (1778-1850), Fr. physicist and chem.; discovered Gay-Lussac law (1802) accdg. to wh. "equal increments of temperature add equal amounts to the product of volume and pressure of a given mass of gas."

**Gaza** (Hebr., *Azzah*), port in S. Palestine; pop., 17,500; aerodrome. Former Philistine

cap.; Temple of Dagon, destroyed by Samsun (O.T.).

**Gazelle**, slim, small-horned antelope of Africa and W. Asia; mainly confined to desert regions; slender, elegant, more or less sandy in colouration; in majority of species horns developed in both sexes.

**Gazelle River**, **Bahr el-Ghazal**, riv., Equatorial Africa, forms, together with Bahr el-Jebel, the White Nile.

**Gazette**, newspaper giving summary of important news items. The **London Gazette** official organ for announcements by Brit. Govt., published Tuesdays and Fridays; originated as the *Oxford G.*, 1665; became *London G.*, 1666.

**G.B.**, abbr. Great Britain.

**G.B.E.**, abbr. Grand Cross, Order of the Brit. Empire.

**G.C.B.**, abbr. Knight Grand Cross of the Bath.

**G.C.F.**, abbr. greatest common factor.

**G.C.I.E.**, abbr. Grand Commander, Order of the Indian Empire.

**G.C.L.H.**, abbr. Knight Grand Cross, Legion of Honour.

**G.C.M.**, abbr. greatest common measure.

**G.C.M.G.**, abbr. Knight Grand Cross of St. Michael and St. George.

**G.C.S.I.**, abbr. Knight Grand Commander, Star of India.

**G.C.V.O.**, abbr. Knight Grand Cross (Royal) Victorian Order.

**Gd**, (chem.) symbol of gadolinium.

**G.D.C.**, abbr. Grand Director of Ceremonies (Freem.).

**Gdynia**, port of Poland, on W. coast Gulf of Danzig; naval and commercial harbour; pop., 50,000.

**Ge**, (chem.) symbol of germanium.

**Gear ratio**, (tech.) ratio of sizes effective in transmission betw. the forces (or speeds) conveyed *in* and forces (or speeds) conveyed *out*; e.g., in case of gear-wheel and belt-drive, R. of number of revols.; in hydraulic presses R. betw. forces on the piston and on the ram.

**Gearing**, arrgmt. of cog-wheels, cranks, shafts, belts, and other mech. parts, for trans. motion from one machine to another, freq. with alteration of speed.

**Gecko**, small lizard of tropical countries; able to climb up walls and tree trunks by means of adhesive disks on the extremities of the toes; tail often prehensile; generally sombre-hued; can be very active.



Gecko

**Geddes**, **Auckland Campbell**, Sir (1879-), Brit. anatomist and politician; prof. of anatomy at McGill Univ., Montreal; Director of Recruiting (Eng.), 1916-17; Min. of Nat. Service, 1917-1919; pres. Board of Trade, 1919; Brit. ambass. at Washington,

1920-23. **G., Eric Campbell, Sir** (1875-), brother of above, Brit. rly. director and politician; dir-gen., milit. rlys., etc. 1916-17; M.P., Cambridge, 1917-22; Imp. War Cabinet, 1918; Min. of Transport, 1919-21; in charge of economics ("G. axe"), 1921-22.

**Gedrosia**, anc. name of the Baluchistan desert traversed by Alexander the Great on return from India.

**Geelong**, port, Victoria, Australia, on Corio Bay; pop., 43,400; wool export; cloth; tanneries.

**Geez**: see LANGUAGE SURVEY, *Ethiopi. Language*.

**Geffrye Museum**, museum in N.E. district of London, in bldgs. wh. were formerly the Ironmongers' Almshouses (blt. 18th cent.). Opened by London County Council, 1914, for exhibits of furniture and domestic craftsmanship; these include a mahogany-panelled room by A. Stevens (q.v.), a panelled room formerly in Coutts's Bank, Strand; rooms with furniture, etc., of 17th and 18th centuries, etc.

**Gehenna**, (O.T.) vall. of Hinnom, nr. Jerusalem, site of sacrifices to Moloch (q.v.) and pollution by Josiah (II Kings, xxiii); name became synon. for hell in N.T.; see TOPHET.

**Gelke**, Sir Archibald (1835-1924), Scot. geologist; director-general Geol. Survey of U.K., 1881; pres. Brit. Assoc., 1892; Royal Society, 1909; O.M., 1914; auth., *The Ancient Volcanoes of Great Britain*, 1897.

**Geisha**, Jap. dancing girl.

**Geissler tubes**, discharge tubes (q.v.), filled with rarefied gases, exhibiting great variety of luminous effects accdg. to gas and pressure of same. See also NEON.

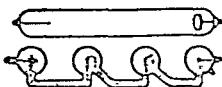
**Gel**: see COLLOID.

**Gelasius**, name of 2 popes: **G. I** (492-96), confirmed schism betw. E. and W. churches by removal of the name of Acacius, Bp. of Constantinople, from the diptychs. **G. II** (1118-19), opposed Emp. Hy. V (q.v.) in matter of lay investiture.

**Gelatine**, stiff elastic substance obtained by boiling solid parts (muscles, cartilages, bones, etc.) of animals; used for making all kinds of jellies and for manuf. of photographic plates and of explosives.



Geisha



Geissler Tubes

**Gelderland**, Dut. prov. betw. Zuyder Zee, Germany, and Riv. Meuse; area 1,940 sq.m.; pop., 800,000; fertile, marshy country (cattle-breeding); cap., *Arnhem*; chf. commercial tn., Nymegen. Belonged in early days to Ger. Empire; county, c. A.D. 1000; duchy, 1339; united with Jülich, 1393, and united by Charles V. to Burgundian Netherlands, 1543. N. part passed to Holland, 1579; S. part, in 1814, was divided betw. Prussia and Limburg.

**Gelding**, castrated horse (q.v.); also, in general, a castrated animal.

**Geligaer**, urb. dist., Glam., S. Wales, 14 m. N. Cardiff; coal-mines; pop., 41,000.

**Gelimer** (6th cent. A.D.), last Kg. of the Vandals, deftd. by Belisarius (q.v.), 534 A.D.

**Gelon**, Tyrant of Syracuse, 491 B.C.; expelled Carthaginians, 480 B.C., and ruled over all Sicily.

**Gelsenkirchen**, tn., Westphalia, Prussia (Ruhr District); coal mining; steel manufacture; pop., 336,200.

**Gemara**: see TALMUD.

**Gem-cutting**, performed by copper or steel wheels charged with diamond dust, the particles of which stick in the soft metal and turn it into powerful cutting agent.

**Gemination**, 1) repetition of word for emphasis, e.g., "O, that this too, too solid flesh would melt." 2) Doubling of a consonant orig. single; e.g., red, redder.

**Gemini** ("The Twins"), zodiacal constell. containing stars Castor and Pollux (q.v.); 3rd Sign of the Zodiac; symbol II; see PL., ASTRONOMY, N.C.H., C.

**Gemmae**, (bot.), bud-like bodies detached from the parent plant by means of wh. certain algae and fungi reproduce.

**Gemmi**, pass (7,640 ft.), Switzerland, over the Bernese Alps from Kandersteg (Bernese Oberland) to Leukerbad (canton of Valais).

**Gemsbok**, S. African antelope, with long, slender horns, often exceedg. 1 yd. in length; inhabits open plains and associates in small herds.

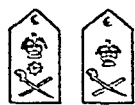
**Gender**, gram. distinction betw. masculine, feminine, and neuter.

**Gene**, (biol.) hypothetical factor in transmission of acquired characteristics to descendants, thr. the sperm-cells, cf. MENDEL'S LAWS.

**Genealogy**, hist. or study of descent and development of families.

**General**, milit. rank in three grades: full *gen.* (next below field-marshal) commands army in the field; *lieut.-gen.* commands corps; *major-gen.* commands division.

**General average**, (marine insur.) loss of cargo when jettisoned (thrown overboard) in



General  
Lieut.-General



order to save ship; borne collectively by all the owners of cargo and ship in proportion to their financial interest in having the ship saved, instead of falling entirely on owner of jettisoned cargo. Important, complicated principle of Marine Insurance. See PARTICULAR AVERAGE.

**General headquarters** (G.H.Q.), higher command of armies in the field.

**General Post Office**, dept. of Brit. Govt. holding monopoly of carrying mails, and telegraphic and telephonic communication. Also manages savings bank, deals in Govt. stocks, and is vehicle for paying Govt. pensions; headquarters sit. in St. Martin's-le-Grand, London.

**General Staff**, (milit.) body of staff officers dealing with questions of strategy and training (see STAFF). **Imperial G.S.**, dept. at War Office whose duty is to collect information and make plans relating to the strategic position and resources of the Empire; under **Chief of Imp. G.S.** (see ARMY COUNCIL) are Directorates of Milit. Operations and Intelligence and of Mil. Training, and Inspectorates of Cavalry, R.A., R.E., Royal Tank Corps, Army Educational Corps, and Physical Training.

**General strike**: see STRIKE.

**Generation**, 1) act or process of procreation; 2) a single stage in natural descent.

**Generator**, plant or appar. for generating, e.g., electr. (dynamo), gas (producer), oxygen and hydrogen (electrolyser), acetylene, etc.

**Genesis**, (O.T.) 1st bk. of Pentateuch (composed c. 8th cent. B.C.); history of creation and of world to confusion of tongues, and origin of the Hebrew people.

**Genet**, small, spotted carnivore inhabiting Africa, S. Eur. and Syria. Lives chiefly on the ground, where it hunts its prey (rodents, small birds, nestlings, and eggs). Nearly allied to Civets, but without scent-gland.

**Genetics**, branch of biology dealing with principles of heredity (q.v.).

**Geneva** (Fr. *Genève*), cap. of Swiss canton of G., situate at point where Rhone leaves Lake of G.; pop., 142,800; univ.; cathed.; seat of Internat. Red Cross and (since 1919) League of Nations; clock-making, jewellery, and instrument-making; important tourist centre. Headquarters of Calvinists, 1535.

**The G. Catechism**, prepared by Calvin (q.v.) in 1536; came into regular use in Scotland; defined true worship as belief in and obedience to God, and the invocation and recognition of Him as the source of all good.

**G. Convention**, an internat. agreement signed on Aug. 22, 1864 (renewed 1906), "for the improvement of the conditions of the sick and wounded of an army in the field." Sign of the G.C.: a Red Cross (q.v.); a red crescent used by Moslem powers.

**Geneva, Lake, Lac Lemman**, betw. France

and Switz.; largest Alpine lake (225 sq. m. 45 X 9 m.); max. depth 1,015 ft.; Riv. Rhon flows through it E. to West.

**Geneviève**, St. (c. 422-512), patr. st. of Paris. **St. G. of Brabant**, med. legend heroine.

**Genitive**, gram. case; ans. to question "whose?" e.g., *father's hat*.

**Genius**, creative intellectual endowment. c. highest kind.

**Gennesaret**: see GALILEE.

**Genoa, Genova**, cap. prov. same name (1,300 sq. m.; pop., c. 1,000,000), Italy, on Gulf of Genoa; pop., 630,000; built in ten races; univ. founded 1775; cathed.; harbour centre emigration and shipbuilding. Cap. of commercial republic 11th-18th cents. Had colonies in Levant and on Black Sea. **G Conference**: see REPARATIONS.

**Genre** (Fr.), class, kind. **G.-painting** the painting of scenes of everyday life or anecdotal, sentimental, and humorous interest.

**Gen-san, Wensan**, Jap. port, N.E. Korea, on Sea of Japan; pop., 36,900; export rice.

**Genseric**, fndd. Vandal kgd. in Africa sacked Rome, A.D. 455.

**Gentian**, *Gentiana campestris*, field gentian; small herb with dull purple flower used in folk med. as a bitter tonic. The G. of the Pharmacopoeia from the root of which the official drug is prepared is *G. lutea*, which grows abundantly in France and Spain.

**Gentile**, Giovanni (1875- ), Ital. philos. and statesman; Min. of Educ. in Mussolini's 1st Cabinet, 1922.

**Gentile**, person not of Jewish race.

**Gentlemen-at-arms**, instituted in 1509 and formerly called Gentlemen Pensioners; bodyguard of the Brit. sovereign, consisting of 40 retired officers of the army or marines. See also YEOMEN OF THE GUARD.

**Gentlemen's agreement**, diplomatic agreement betw. statesmen, economists, etc. not embodied in a formal document; applied spec. to the agreement re reparations (q.v.) reached at Lausanne, 8 July, 1932, betw. Gt. Brit., Fr., It., Belg., and Germany.

**Genus** (Lat.), term applied in natural science to an assemblage of species with certain characteristics in common which distinguish them from all others. **G. irritabile vatum** (Lat.): "the irritable tribe of poets," phrase used with reference to the "artistic temperament."

**Geodesy**, science of determining the shape and size of the earth.















**Geoffroy Saint-Hilaire**, Étienne (1722-1844), Fr. zoologist; his views led to a famous dispute with Cuvier (q.v.).

**Geographical mile**, 1.15 statute m. (2,024 yards).

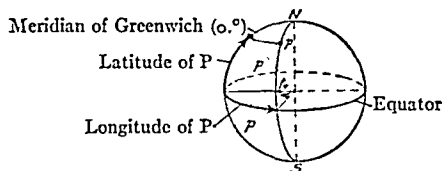


Gentian

# GEOLOGICAL FORMATIONS

FORMATION	CHARACTERISTIC ROCKS	USEFUL MINERALS	FOSSIL REMAINS	CONDITIONS IN ENGLAND
Archæan	Crystalline schists, gneiss, quartzite, granite	Metallic ores	None	England, part of Continent
Primary or Palæozoic Cambrian, Silurian, Devonian	Slate, shales, red and purple sandstones, flagstones 	Roof-slate 	First fish and plants, trilobites, corals, etc. 	Eng. submerged 
Carboniferous	Coal measures	Coal 	First land-snails, amphibians, ferns, giant equiseta	Eng., part of Continent Eng. submerged
Permian	Red and yellow sandstone, marls, slates		First reptiles, conifers	Eng., part of Continent
Secondary or Mesozoic Triassic	Keuper marls and sandstones, conglomerates and pebbles	Chalk and sandstone	First mammals Ammonites Molluscs	Eng. submerged 
Jurassic	Limestone lias. blue clays. Oolites	Chalk, iron-ore, lithographic stone	Birds Giant saurians	Eng. submerged 
Cretaceous	Chalk, clay, green-sand 	Marble, chalk	Giant reptiles (dinosaurs) First deciduous trees	Eng. submerged 
Tertiary Eocene Oligocene Miocene, Pliocene	London-clay Bagshot beds Red crag 	Clay, sand, peat, gravel 	Palms, earliest horses and monkeys Mastodon	Eng., part of Continent. Formation of the Alps
Quaternary Diluvium, Post-tertiary, Pleistocene	Gravels, boulder-clay, drift, moraines, etc.	Alluvial gold, tin, platinum 	Mammoth cave-bear, reindeer, primitive man.	Eng., part of Continent 

**Geography**, study of the earth's surface divided into *mathematical*, *physical*, and *political* G. **Math. g.** includes astronomical G., which considers the form and size of the earth and its position in the universe, and geodesy (*q.v.*); **phys. g.** (*geophysics*) deals with the earth's phys. properties (density, weight, heat, magnetism, etc.) and its surface (land, water, and atmosphere), and with the life upon it; **polit. g.** with the distribution of polit. power over the earth. In its fullest application, G. includes the co-ordinated study of the inter-relationship of geogr. factors of diff. regions of earth's surface. **Applied or commercial g.** is concerned with productive and trade potentialities of various areas. The G. *position* of a place on



Geographical Positions

the earth's surface is determined by its *latitude* and *longitude* (*see both words*).

**Geoid**, the figure of the earth; an irregular sphere.

**Geological formations.** The table on precedg. page gives approximately and in outline a conspectus of the earth's strata from the earliest (Archaean) times to the modern period from the European—and esp. the English—standpoint. It will be understood (*see GEOLOGY*) that there is no definite break betw. the various sections; that the rocks, minerals, and fossils characteristic of each period overlap; and that in very few areas will the whole of the series here given be found in its entirety.

**Geological Survey of Great Britain**, originated 1835 by Sir Henry Thomas de la Beche (1796-1855); collation and classification of all available geological data relating to structure of Gt. Britain. Many foreign countries and British Dominions and Colonies have founded similar institutions.

**Geology**, science that investigates the material (esp. mineral) constitution, structure, and history of the earth; divided into general and historical G. **General g.** deals with the processes and forces that have operated to bring about changes in the earth (*dynamical*), and with the material wh. constitutes the earth's crust (*petrology*). **Historical g.** attempts to trace the course of the growth of the earth, esp. of its crust, by investigating the composition and structure of rocks (*palaeontology*), and to classify rocks in geolog. eras according to their age (*study of rock formation and stratification*); for wh.

purpose fossils (*q.v.*) are of special value. *See GEOLOGICAL FORMATIONS.*

**Geometers, Loopers**, family of small to medium-sized moths, the caterpillars of wh. have legs on front and hinder segments only and so progress in a series of loops.

**Geometric progression:** *see PROGRESSIONS.*

**Geometry**, branch of maths. dealing with space and its relations. *Infinitesimal G.*, G. in wh. infinitesimal calculus is applied to curves and surfaces. *Co-ordinate or analytical G.*, includes study of co-ordinate systems, conics, algebraic curves, and surfaces. *Pure G.*, includes *elementary G.* (with topics of planimetry, stereometry, trigonometry, etc.); *projectional G.*, concerned with properties and relations of figures unchanged by projection and *positional G.* (concerned with changes in locus consequent upon a change in the determining equation). **Geometer**, a geometrician.

**Geophysics:** *see GEOGRAPHY.*

**George, St.**, (d. 303), patron saint of Eng., Aragon, and Greece, tradit. Cappadocian; usu. depicted on horseback, killing a dragon.

**George, Kings, England:**

**G. I** (1660-1714-27), g.g.s. of James I; Kg. of Gt. Brit. and Ireland; Elector of Hanover. **G. II** (1683-1727-60), s. of G. I; Kg. of Gt. Brit. and Ireland; Elector of H.; Seven Years' War (*q.v.*). **G. III** (1738-60-1820), g.s. of G. II; Kg. of Gt. Brit. and Ireland, Elector of H.; Amer. War of Independence, 1775-83. **G. IV** (1762-1820-30), s. of G. III, Kg. of Gt. Brit. and Ireland; Elector of H. **G. V** (1865-1910- ), 2nd s. of Ed. VII; Kg. of Gt. Brit. and N. Ireland and of Brit. Dominions beyond the Seas, Emp. of India. **Greece: G. I** (1845-63-1913), 2nd s. of Christian IX of Denmark, Kg. of the Hellenes; elected on recomm. of Brit. Govt.; Balkan War, 1912-13. **Saxony: G.** (1832-1902-04), yngst. s. of Kg. John of Saxony; distinguished commander in Austro-Pruss. War.

**George, Pr. of Denmark** (1653-1708), consort of Qn. Anne (1683), 2nd daughter of James II; created Bn. of Wokingham, Earl of Kendal, Duke of Cumberland; generalis-



St. George Killing the Dragon



George I



George II

simo of Qn.'s forces and Lord High Admiral.

**George, Henry** (1839-97), Amer. pol. econ.; spec. in land reform; *Progress and Poverty*, 1879.

**George, Lake**, in N.Y. State, U.S.A., 44 sq.m., S. of L. Champlain, with which it is



George III



George IV

connected; scene of fighting in wars with French and Indians, and in War of Independence.

**Georgetown**, 1) cap. and chf. port of Penang, Straits Settlements, on Penang Isl.; pop., 160,000. 2) (**Demerara**) cap. and principal harbour (fortified) of Brit. Guiana, on Riv. Demerara; pop., 62,700; exports: sugar and diamonds.

**Georgette**: see CRÊPE.

**Georgia**, 1) (**Gruziya**), Soviet republic, Russia, member Transcaucasian Republics (q.v.), on E. coast Black Sea; area c. 30,000 sq.m.; pop., c. 2,680,000 (Georgians, Armenians, Turko-Tatars, Ossetians, Russians); mountainous in W., flat in E.; maize, wheat, oranges, tobacco, tea, wine; manganese, copper, coal, naphtha; cap., *Tiflis*. 2) ("Empire State of the South") Southern State, U.S.A., on Atlantic coast; 59,265 sq.m.; pop., 2,900,000 (42% Negroes); highlands in the N. (Appalachians); cotton, maize, rice, sugar-cane, tobacco, fruit; timber; cap., *Atlanta*. Fndd. by Gen. Oglethorpe, 1773, as a refuge for persecuted Eur. Protestants and insolvent though deserving debtors. Named after George II.

**Georgian** (Russ. *Gruzin*), anc., fair-skinned, civ. Caucasian race (c. 1,000,000), mostly Christians, included in Russ. Emp. since 1801. **G. language**: see LANGUAGE SURVEY, *Caucasian Languages*.

**Georgievsk**, Russ. tn., N. Caucasus; pop., 22,600; grain market.

**Geotectonics**, science dealing with the construction of the *Earth's Crust* (q.v.). **Geothermic**, relating to earth's centr. heat, see EARTH'S TEMPERATURE. **Geocentric**, regarding the earth as centre of the universe as opposed to *heliocentric*, regarding the sun as centre of the planetary system.

**G.E.R.**, abbr. Great Eastern Railway.

**Gera**, tn., Thuringia, Ger.; pop., 83,600; from 1806 to 1920 cap. of Principality Reuss (Younger Line), now of Free State of that name.

**Geranium**, various plants of family *Geraniaceae*; see CRANE'S BILL; PELARGONIUM.

**Géricault**, Théodore (1791-1824), Fr. realistic painter: *Wreck of the Medusa*.

**German**, form or seed out of wh. something develops. **G.-cell**, specialised cell wh., when united to one of opposite sex, forms a new individual of the species.

**German**, Sir Edward (1862- ), Eng. composer; light operas incl. *Merrie England*, 1902; incidental music Shakespearean plays incl. Henry VIII dances; two symphonies.

**German**: see LANGUAGE SURVEY, *Germanic*.

**German Confederation**, confed. of Ger. States est. by Congress of Vienna, 1815, consisting of 35 principalities and 4 free cities; lasted until 1866.

**German East Africa**: see TANGANYIKA TERRITORY. **G. South-West Africa**: see SOUTHWEST AFRICA.

**German measles** (*Rubella*), children's disease, usu. harmless; similar to measles; characterised by red, spotty skin eruption with swelling of the lymphatic glands. Quarantine, 21 days.

**German National Assembly**, 1) Assembly of Ger. Deputies, 1848-49 (Frankfurt Parl.). 2) Ger. assembly at Weimar, 1919, to draw up Constitution of Ger. Republic.

**German National People's party**, orig. 1919 (mainly from Conservative party), bourgeois, monarchist, nationalist; opp. to internationalism, pacifism. In alliance with Nazi party took part in Hitler Govt., 1933. Leader, A. Hugenberg.

**German People's party**, liberal party fndd. by Stresemann in 1919; see LIBERALISM.

**German silver**, silver-white alloy, 59% copper, 30% zinc, remainder nickel. Used when hard, untarnishable, springy metal is needed.

**German Volga**, auton. Sov. Repub., S.E. Russia, on Riv. Volga; created 1923; c. 10,500 sq.m.; pop., 570,860 (66% Germ., 20% Russ.); cap., *Pokrovsk*. Colony fndd. by Catherine II, 1764-67. Over 100,000 died through famine, 1920.

**Germander**, (bot.) *Teucrium*; wood G., wood-sage; *T. scorodonia*, common in woods, 2 ft. high, small yellowish flowers. Formerly used as substitute for hops. **Wall g.**, *T. chamaedrys*, much smaller with purple flowers; rare. Used in folk med. as a tonic. **Water g.**, *T. scordium*, rare; grows in marshy places; reddish flowers.

**Germani**, generic name given to Indo-Eur. races betw. Rhine, Danube, and Vistula (referred to by Tacitus as "Germania"). Divd. into 3 groups: *Northern G.* (Danes,

Icelanders, Norwegians, and Swedes), *Western G.* (Alemanni, Bavarians, Franks, and Saxons), and *Eastern G.* (Goths, Burgundians, and Vandals). Present repres. are Ger., Eng., Dutch, Flemish, Danes, Scandinavians, and German-Swiss.

**Germanic:** see LANGUAGE SURVEY, *Indo-Ger. A* group.

**Germanicus** Caesar (c. 15 B.C.-A.D. 19), son of Drusus; named G. for victories over the Germani, A.D. 13-16.

**Germanium**, (chem.) sym. Ge, at. wt.

land-locking the Stettiner Haff, at the mouth of the Oder), and in E. Prussia, by the Gulf of Danzig. E. Prussian coast has two more extensive lagoons, the Frisches Haff (mouth of the Vistula) and the Kurisches Haff (mouth of the Niemen or Memel). Most famous riv., the Rhine, wh. forms frontier in S.W., flows through Holland into North Sea.

Surface flat in N. Germany, forming part of the Great Lowland Plain, with large stretches of moorland or "heath," incl. Lüneburger Heide (largest in G.). Chf. mtn. ranges are



72.60; rare metal, extremely hard; occas. found in assoc. with zinc.

**Germany**, federal repub., centr. Europe, bounded N. by North Sea, Denmark, and Baltic, W. by Holland, Belgium, Luxembourg, and France, S. by Switzerland, Austria, and Czechoslovakia, E. by Poland. E. Prussia separated from rest of G. by Polish Corridor and bounded E. by Lithuania. Area 80,968 sq.m.; pop., incl. Saar terr., 63,200,000 (40,100,000 Prot.; 20,200,000 R.C.). Seaboard interrupted by isthmus of Schleswig-Holstein (crossed by Kiel Canal) North Sea coast, with Ger. Frisian Isls., Heligoland, and N. Frisian Isls.; indented by estuaries of Ems, Jade, Weser, and Elbe; Baltic coast (often ice-bound in winter) by Kiel, Lübeck, and Pomeranian Bays (the last with isls. of Rügen off Stralsund and Usedom and Swinemünde



*Harz Mts.* in centr. G. (Brocken, 3,744 ft.), *Black Forest*, in S.W. Germany (Baden and Württemberg; Feldberg, 4,900 ft.). The *Bavarian Alps* (Zugspitze, 9,722 ft.; highest peak in G.), and the *Böhmer Wald*, *Erzgebirge*, *Riesengebirge*, and *Sudetes Mtns.*, on borders of Czechoslovakia.

Climate mainly temperate (mean ann. temp. 46-48° F.); mean ann. rainfall 25-27 inches. Rye, wheat, barley, potatoes, tobacco, and sugar beet are grown; vines cultivated on banks of Rhine, Moselle, and Main; State forestry on a large scale; fisheries important. But G. is predominantly industrial: coal, lignite, and iron in Ruhr dist. and Upper Silesia; most important branches of industry are manuf. of iron and steel machinery, chemicals, paper, and textiles. Rlys. 36,300 m.; inland waterways (rivers, canals, and canalised rivers.) 7,700 m.; commercial air services highly developed (mileage

c. 15,000). Largest tns.: *Berlin* (cap.), Cologne, Leipzig, Munich, Dresden, Breslau, Essen, Frankfurt-on-Main; chf. ports: Hamburg, Bremen, Stettin; 23 univs. (Bonn, Heidelberg, Cologne, etc.).

Constitution (31 July, 1919): *President* (7 yrs.), *Reichstag* (single chamber), and *Reichsrat* or Council of the Reich; 17 *Republics* or *States*: Prussia, Bavaria, Württemberg, Baden, Saxony, Mecklenburg-Schwerin, Thuringia, Oldenburg, Brunswick, Hesse, Anhalt, Mecklenburg-Strelitz, Lippe, Hamburg, Bremen, Lübeck, Schaumburg-Lippe. The Saar Territory (*q.v.*) is subject of special treatment under Treaty of Versailles.

HISTORY: Rom. colonisation of S. Ger. frontier region (*limes*) abt. beg. of Christian Era. During migrations large Germanic States arose throughout Europe. On partition of emp. of Charlemagne by Treaty of Verdun (843) the *German Kingdom* was formed under Louis the German (843-76). Conrad I (911-18), first elective monarch. Under Henry I, (919-36), expansion of kngdm. eastward; 936-73, Otto I (the Great), crowned Emp. (962); 1024-1125, *Frankish (Salic) Emperors*; height of power under Henry III (1039-56); declension under Henry IV (1077, Canossa, *q.v.*); 1138-1254, *Hohenstaufen*: Frederick I, Barbarossa (1152-90); wars in Italy, Crusades; Frederick II (1212-50); 1268 Conradin, the last of the race, execu. at Naples; 1254-73: *Interregnum*: Rudolf of Habsburg elected 1273. Under Charles IV (1347-78) the Golden Bull (*q.v.*); confirmation of rights of electoral princes. Sigismund (1410-37) ended schism by Council of Constance (*q.v.*), Hussite Wars. In 1438-1806: *Habsburgs*. Constitutional reforms under Maximilian I (1493-1519). *Reformation*. Peasants' War; Internal wars; 1555, Peace of Augsburg (*q.v.*). Counter-reformation under Rudolf II (1576-1612); led to *Thirty Years' War*, 1618-48. By Peace of Westphalia polit. reorganisation, abt. 350 States being made autonomous. Switzerland, Holland, etc., permanently sep. from Empire. Interest of Habsburgs inclining towards Austria; rise of Brandenburg-Prussia. *Seven Years' War*, 1756-63; Frederick the Great agst. Maria Theresa. League of princes agst. revol. France. Collapse of Prussia and Austria. Abdic. of Francis II and abol. of Holy Roman Empire (1806). Domination of Napoleon. *War of Liberation* 1813-15; Vienna Congress: Ger. Confed. under Aus. dominion, liberal and national movements; revol. of 1848; 1866, separ. from Aus. effected by Bismarck (Austro-Prussian *Brüder-Krieg*). N. Ger. Confed., 1867. After *Franco-Prussian War* (*q.v.*) (1870-71) the new Ger. Emp. as feder. State under Pruss. Kg. (William I, 1861-88). Berlin Congress, 1878. Policy of alliance

(1879 with Aus.; 1883 with Italy; neutrality pact with Russ. 1887-90). Colonial policy 1884. William II (1888-1918). Dismissal of Bismarck (1890). 1900, Ger. took part in the Boxer Campaign; 1904-07 S.W. Afr. War. Policy of development of navy and armaments. (Morocco Crisis: see FASHODA.) World War, 1914-18 (*q.v.*). *Revolution* 5-9 Nov., 1918. Abdication of ruling princes. Workers' and Soldiers' Councils; government by representvs. of people under Ebert. *National Assembly* at Weimar granted constitution (1919). German Repub.; Ebert, Pres. June 28, 1919, Treaty of Versailles. March, 1920, "Kapp Putsch"—fruitless rising. Depreciation of currency. Reparations demands of the *Entente* refused. Occup. of Rhineland, customs barriers. London ultimatum demanding 132 milliards accepted. In 1922 Pact of Rapallo; 1923 occup. of Ruhr. Nov. 8, abortive Hitler Putsch, Munich. Rising of Separatists in Rhineland and Pfalz. Stabilisation, "Rentenmark." 1924 Dawes Plan. 1925 Hindenburg Pres.; Locarno Pact. 1926 Ger. entered League of Nations; Kellogg Pact; 1929 Young Plan; 1930 evacua. of Rhine district. Brüning Chancellor; govt. by emergency decrees; 1931 attempt to form Customs Union with Austria; Hoover Plan: see REPARATIONS HOLIDAY; 1933 Nazi revolution, Hitler Chancellor.

**Germinal**, Mar. 21st-April 19th in Fr. Repub. Calendar (*q.v.*).

**Germination**, bud-formation, first act of growth, by means of wh. new indep. individuals are developed in plants and animals.

**Germiston**, tn., Transvaal, S. Africa, 10 m. E. Johannesburg, in the Rand; pop., 24,000 (Europeans); gold mines.

**Gérôme**, Jean Léon (1824-1904), Fr. painter, pupil of Delaroche; *Gladiators Saluting Caesar*; also noted as sculptor of *Tanagra* (Luxembourg).

**Gerona**, cap. prov. same name (2,265 sq.m.; pop., 326,000), N. Spain; fortress; textiles, mineral springs; pop., 16,000.

**Gerontes**, members of the *Gerusia* (*q.v.*).

**Gers**, dépt. S.W. France; 2,428 sq.m.; pop., 193,134; watered by Riv. Gers, left trib. of Garonne; agric., poultry, Armagnac brandy. Cap. *Auch*.

**Gershwin**, George (1898- ), Amer. composer; best known as writer musical comedies and revues; also *Rhapsody in Blue* (1923); piano Concerto in F (1925); *An American in Paris* (1928).

**Gerund**, noun-form of a verb, e.g., "He likes *playing* tennis." **Gerundive**, adjectival form (from *gerund*) in Lat. and some other langs., but non-existent in Eng.; e.g., *amandus* (lovable), from *amandum* (act of loving).

**Gerusalemme Liberata** (*Jerusalem Delivered*), epic poem by Tasso concerng. de-

liverance of J. from unbelievers by Crusaders under Godfrey of Bouillon (1581); Eng. trans. Fairfax (1600), James (1865).

**Gerusia**, in anc. Gr., senate, council of 28 Elders (*Gerontes*) at Sparta.

**Gesenius**, Wilhelm (1786-1842), Ger. orientalist; set Semitic philosophy on a scientific basis.

**Gesso**, composition, mainly plaster of Paris (*q.v.*), used for modelling and decorating objects.

**Gesta Romanorum** (*Deeds of the Romans*) pop. collection of stories in Lat. compiled in 13th-14th cents.; subject-matter not confined to deeds of Romans, supplementary tales added; much used for didactic purposes.

**Gestation period**, period elapsing betw. impregnation and parturition; in humans normally reckoned as 280 days from first day of last menstruation.

**Geste, Chansons de**, lyric-epic ballads of 9th cent. describng. deeds of some heroic, often semi-historical, personage, *e.g.*, *Song of Roland*.

**Gethsemane**, (N.T.) garden at foot of Mt. of Olives; scene of Christ's agony and betrayal (Matt. xxvi).

**Gettysburg**, bor., Pennsylvania, U.S.A.; pop., 5,600; granite, iron; scene of decisive victory of Federal over Confederate forces, 1863 (Lincoln's "Gettysburg address," 1863).

**Geum**, generic name for species of herb of family *Rosaceae*, fnd. in temperate regions; roots of some species used in med. for their tonic effect. *Herb bennet* or *Arens* is wild species of *Geum*.

**Geyser**, intermittent hot spring of volcanic origin, in Iceland, N. Zealand, Yellowstone Park, U.S.A., etc.



Geyser

**G.F.S.**, abbr. Girls' Friendly Society.

**G. gr.**, abbr. great gross (144 dozens).

**Ghat**, 1) a mtn. pass; erroneously applied by Europeans to mtn. ranges (W. and E. Ghats). 2) An Indian riverside landing stairway (*see* BENARES).

**Ghats**, two mtn. ranges, Deccan, India, parallel with coast, and fringing the centr. tableland. W. *Ghats* extend 800 m. from Tapti Vall. (N.) to the Nilgiri Hills S. (junc. E. and W. Ghats); highest pt. 6,300 ft.; passes Thalghat, Bhor-ghat, Palghat. E. *Ghats* in Madras; av. height 1,500 ft.; Gorges of Rivs. Godavari, Kistna, and Cauvery. Several hill stations, incl. Ootacamund.

**Ghazel**, Moorish poet. form, esp. at Moslem Court in Sicily; 14 line ode, prob. origin of sonnet (*q.v.*).

**Ghazi**, (1912- ), Kg. of Iraz.; educatd.

Harrow Sch., Eng., succd. his father, Feisal, 1933.

**Ghee**, boiled, clarified butter, used for cookery in India.

**Ghent, Gand**, city, Belgium, at junctioe rivs. Scheldt and Lys; cap. of E. Flanders; numerous canals; indust. textiles. Belg. since 1830; centre of Flemish nationalist movement; pop., including suburbs, 217,000.

**Ghetto**, the Jewish quarter of a town (esp. S. European); orig. Venetian isl. occupied by the *Ghetto Nuovo* ("New Foundry"), allotted in 1516 to the Jews.

**Ghibellines** (corrupt. of "Waiblingen"), name given to party that supported the Emp. (Hohenstaufen) in It. in Mid. Ages; their opponents were the Guefts (Welfen), who supported the Popes.

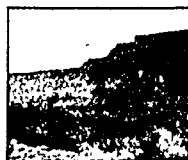
**Ghiberti**, Lorenzo (1378-1455), It. sculptor; *Bronze Door* of Baptistry, Florence.

**Ghirlandajo**, Domenico (1449-94), Florentine painter; teacher of Michelangelo (*q.v.*); *Adoration of the Shepherds*, in Academy at Florence.

**G.H.Q.**, abbr. General Headquarters.

**Giant Mountains, Riesengebirge**, high-

est part of *Sudetic Mtns.*, on Silesian-Czecho-slovakian border, 23 m. long; numerous granite peaks, highest being *Schneekoppe* (5,260 ft.).



Giant's Causeway

**Giant's Causeway**, basaltic promontory, N. coast, Co. Antrim, N. Ire., 7 m. E. Portrush (40,000 basaltic columns).

**Giant's Ring**, dolmen (*q.v.*) on hill at Drumbo, Co. Down, N. Ireland.

**Giaour**, term used by Turks for a non-Moslem, an infidel.

**Gibberish**, unintelligible talk.

**Gibbet**: *see* GALLOWS.

**Gibbon**, Edward (1737-94), Eng. histor.; *Decline and Fall of the Roman Empire*, 1776-88; *Autobiog.* (pubd. 1796).

**Gibbon**, long-armed anthropoid ape, native of S.E. Asia, esp. Malay Penins. and islands. Arboreal; slender, very long arms and fingers; extraordinarily active. At dawn and sunset gives vent to loud, wailing cries.



Edward Gibbon

**Gibbons, Grinling**

(1648-1721), Eng. wood-carver; foliage and festoons in choir of St. Paul's Cathed., London. **G., Orlando** (1583-1625), Eng. composer; called "the English Palestrina."



Gibbon

Madrigals, anthems.

**Gibeon**, (O.T.) one of 4 cities of Hivites; inhabitants, *Gibeonites*, escaped massacre by covenant with Joshua; became drudges of Temple (Josh. ix.). **Pool of G.**, scene of battle betw. David and Ishbosheth (II Sam. ii).

**Gibraltar**, anc. *Calpe*, one of the "Pillars of Hercules," rocky promontory (1,396 ft.), near S. point of Spain, separated from Spain by sandy isthmus and from Africa by *Strait of Gibraltar* (here 14 m. wide); Brit. crown colony, fortress, garrison, and naval station; light-house on *Europa Point* (S. extremity); civilian pop., 16,600. *Bay of Gibraltar*, betw. Gibraltar and Algeciras (Andalusia). Fortified 710 by the Saracen Tarik; taken from Moors by Spain, 1462; captured by Brit., 1704; vainly besieged by Fr. and Spaniards, 1779-1782.



Gibraltar  
The Rock from Spain

**Gibson**, Chas. Dana (1867- ), Amer. artist and illustrator; contrib. to *Collier's Weekly*; illustrated *Prisoner of Zenda*; published books of drawings: *The Education of Mr. Peppy*; *A Widow and Her Friends*; etc.

**Gid**, sturdy, (vet.) disease of sheep, usu. lambs a year old, caused by formation of cyst in brain by minute parasitic worms, embryos of tape-worm; animal shows tendency to turn round in circles owing to pressure on brain, or (if cyst is in centre of forehead) move forward continuously with high-stepping gait.

**Giddiness**, (med.) unsteadiness, often caused by temporary deficiency of blood in the brain.

**Gide**, André (1869- ), Fr. auth.; *L'Im-moraliste*, *Les Faux Monnayeurs*.

**Gideon**, Jerubbaal, (O.T.) judge of Israel, relieved his people from the oppress. of the Midianites (Jud. vi-viii).

**Gifu**, Jap. dist. (4,040 sq.m.; pop., 1,132,560) and tn. (pop., 82,000); metal works.

**Gig**, 1) open, 2-wheeled vehicle drawn by one horse. 2) Clinker-built rowing boat, sometimes on warships reserved for commanding officer; made of at least 10 overlapping planks of same breadth, with wooden bar keel.

**Gigantes**, giants of Gr. myth.; attempted in vain to drive the gods from Olympus. The fight (*Gigantomachia*) is frequently represented in Gr. art.

**Gigolo**, prof. male dancing partner.

**Gijon**, free port, N. Spain; on Bay of Biscay; pop., 57,600; manuf.: copper, linen, jet ornaments; fisheries.

**Gil Blas de Santillane**, *Histoire de*, romance by Le Sage, 1st pub. 1715 but not completed till 1735. Eng. transl. by Smollett, 1761.

**Gila Cliff Dwellings**, nat. monument (1907) in New Mexico, U.S.A.; four prehist. dwellings in good preservation.

**Gila River**, left trib. of Colorado Riv., New Mexico and Arizona, U.S.A., 605 miles.

**Gilan**, Persian prov. (c. 6,000 sq.m.), S.W. coast Caspian Sea; dense forests, swamps, unhealthy climate; produces rice; mulberry plantations; cap., *Resht* (pop., c. 80,000).

**Gilbert**, Sir Alfred (1854- ), Brit., sculpt.; designed Shaftesbury Memor. Fountain (Eros), Piccadilly Circ., 1884. **G.**, Henry Franklin Belknap (1868-1928), Amer. composer; ballet, *The Dance in Place Congo*, 1918. **G.**, Sir Humphrey (c. 1539-83), Eng. navigat. and pioneer; fndd. 1st Brit. colony, Newfoundland, 1583. **G.**, Sir Wm. Schwenck (1836-1911), Eng. humor. poet and playwr.; collab. with Sir Arthur Sullivan (q.v.) in *Operas*, of which he wrote the libretti; *Bab Ballads*.

**Gilbert Islands**, group of 17 coral islands, W. Pacific, on Equator, E. of New Guinea; Brit. crown colony with Ellice Isls. and Fanning Isl. (qq.v.); copra; total pop., 30,000 (260 Europeans).

**Gilbertines**, Eng. double relig. order, fndd. (c. 1123) by St. Gilbert of Sempringham (c. 1083-1189); gov'd. by general superior of the canons, known as "Master of Sempringham"; abt. 25 monasteries at time of the Dissolution.

**Gildersleeve**, Basil Lanneau (1831-1924), Amer. scholar; *Syntax of Classical Greek*.

**Gilding**, effected by application of gold-leaf (q.v.) or by electro-plating (q.v.).

**Gilead**, (O.T.) wooded region, E. of Jordan, occupied by Israelites.

**Giles**, St. (d. c. 712), hermit; accidentally wounded by the king (? Childeric), who fndd. monastery on site of Giles' cell and made him abbot; commem. Sept. 1st; rep. in art: standing beside a hind, with his hand, pierced by an arrow, resting on its head. Another St. G., said to have fl. 6th cent., is the patron saint of cripples; commem. 1 Sept.

**Gilgamesh**, Babylonian epic (c. B.C. 2,000), containg. legend of the Flood, wh. was adopted in altered form in Bible.

**Gilgit**, prov., N.W. India, under suzerainty of Kashmir, admin. by Brit. polit. agent; mtns. 15-20,000 ft.; glaciers and ice-fields, named after hill-stn. of Gilgit (5,000 feet).

**Giliaks**, Mongol. tribe inhabiting Amur dist. of Siberia; Shamanistic religion.

**Gill**, Eric Rowland (1882- ), Eng. stone-carver and wood-engraver; *Stations of the Cross* (Westminster Cathedral); sculptures of Broadcasting House, London.

**Gill**, Brit. and U.S. liquid meas.; Brit. 0.142 litre, U.S. 0.118 litre;  $\frac{1}{4}$  pint. See NOCCIN: QUARTERN.



**Gillingham**, 1) munic. bor. and largest tn. in Kent, Eng., on Riv. Medway; dock-yard; R. N. Hosp.; cement works; pop. 61,000. 2) Mkt. tn., Dorsetsh., Eng.; pop., 3,500. 3) Vill., Norfolk, Eng.,  $1\frac{1}{2}$  m. N. Beccles; early Nor. Church.

**Gillray**, James (1757-1815), Eng. caricaturist; satirized "Farmer George" (George III).

**Gills**, (zool.) respiratory organs of fishes and certain other animals; gen. plate-like or filamentous outgrowths supplied with a number of blood-vessels wh. absorb oxygen from the water.

**Gilly flower**, popular name for wallflower and also for carnation (*qq.v.*).

**Gilmour**, Sir John (1876-), Brit. politician; Scot. Cons. M.P. since 1910; junior Ld. of the Treasury, 1921-22; Sec. for Scotl., 1924-29; Home Sec., 1932.

**Gilt-edged securities**, Consols (*q.v.*), war bonds, and other govt. securities considered particularly safe.

**Gimlet**, hand tool for boring holes in wood.

**Gimp**, **guipure**, plaited or twisted cord of silk or other matl. used for trimming; esp. for naval and milit. uniforms, some academic gowns, etc.

**Gin**, 1) (mechan.) machine for cleaning cotton from seed; also used for various other mechanical contrivances. 2) Spirit distilled from grain, flavoured with juniper.

**Ginger**, the root of *zingiber officinale*, a plant indigenous to Asia, and cultivated in several tropical countries. The root is peeled, dried in the sun, or preserved in syrup to be used in confectionery and cookery; used in its dried form, in medicine, as a carminative and aromatic stimulant.

**Gingham**, cheap cotton or linen cloth, striped or checked and dyed in the yarn; used for aprons, children's clothes, etc.

**Ginkgo**, *G. biloba*, decorative tree from E. Asia, with fan-shaped leaves.

**Ginsburg**, Christian David (1831-1914), Hebr. scholar, converted to Christianity, 1845; memb. of committee for revising Eng. version of O.T., 1870.

**Ginseng**, plant of ivy family fnd. in N. Amer. and China; root is used in China medicinally.

**Giolitti**, Giovanni (1842-1928), It. statesm.; sev. times Pr. Minister.

**Giorgione** (c. 1478-1510), Ital. painter: *The Sleeping Venus*, at Dresden; *The Concert*, in Louvre, Paris.

**Giotto di Bondone** (c. 1266-1337), Ital.

painter; fndd. Florentine school of art; allegorical pictures in honour of St. Francis in Lower Church at Assisi.

**Giovanni da Bologna** (1524-1608), Fr. sculpt., settled in Florence; bronze *Meleager*; marble *Rape of the Sabines*.

**Gippsland**, level maritime dist., S.E. Victoria, Australia, S. of Australian Alps 13,010 sq.m.; farming and grazing; gold mining, coal, lignite; valuable forests.

**Giraffe**, African ungulate; tallest of all living mammals; extremely long neck and limbs, and dappled hide. Frequents open, arid country in small herds.

**Giralda**, belfry tower of the Cathed. of Seville; lower part (c. 1180) a monument of Arab. art, upper part (Renaissance) added 1570.

**Giraldi**, Giambattista (1504-73), It. writer; *Hekatomithi*; direct or indirect source of Shakespeare's *Measure for Measure* and *Othello*.

**Giraldus Cambrensis**, (c. 1146-1220), Brit. scholar and historian; *Itinerarium Cambrense*.

**Girasole**, **fire-opal**, bluish-white var. of opal, translucent, with reddish reflections.

**Girder**, (bldg.) construction, usu. of metal, consisting of rods, strips of special section, tubes, etc., in the form of a framework, giving strength in desired directions with minimum weight of material.

**Girgenti**, **Agrigento**, cap. prov. same name, S. Sicily; sulphur mines; ruined temples; pop., 30,000; area of prov., 1,176 sq.m., pop., 433,000.

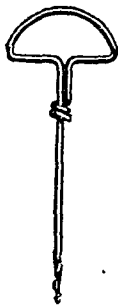
**Girl Guides**, organization for girls, fndd. in Gt. Brit. 1910 and based on princ. of Boy Scout movement.

**Gironde**, 1) estuary of the Garonne on W. coast of France. 2) Dépt. W. France (4,150 sq.m.); rivs.: Garonne, Dordogne; vineyards; cap., *Bordeaux*.

**Girondists**, **Girondins**, moderate Republican party in Fr. Revolution; overthrown in 1793; so called since many of their leaders came from the dépt. of Gironde (*q.v.*). Cf. JACOBINS.

**Girtin**, Thomas (1775-1802), Eng. artist; pioneer of water-colour painting.

**Girton College**, Cambridge; fndd. 1869 by Barbara Leigh Smith Bodichon for women students. Removed to Cambridge



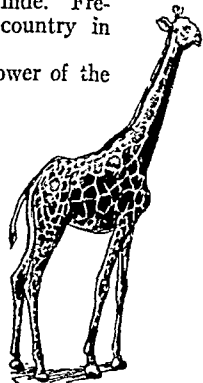
Gimlet



Ginger



Ginkgo



Giraffe



Girl Guide

from Hitchin 1873. With Newnham, only wom. college forming part of university.

**Gisborne**, port, E. coast N. Island, New Zealand; pop., 19,500; export of wool and hides.

**Gissing**, George Robert (1857-1903), Eng. novelist; *New Grub Street*, 1891; *Private Papers of Henry Ryecroft*, 1903.

**Giulio Romano** (1499-1546), It. painter; pupil of Raphael, fresco work in "Hall of Constantine," Vatican.

**Givenchy**, vill., Pas-de-Calais, France, 5 m. E. Béthune; attacked by Germans in World War (Nov., 1914, and April, 1918).

**Gizeh**, tn., Egypt, on left bank Nile; pop., 19,000; Pyramids and Sphinx; 5 m. W.; to S. ruins of Memphis.

**Gizzard**, one of the digestive organs of birds, forming a second stomach.

**G.J.D.**, abbr. Grand Junior Deacon (Freem.).

**Gjellerup**, Karl (1857-1919), Dan. novelist; *Der Pilger Kamanola*, 1906; Nobel Prize (Lit.), 1917.

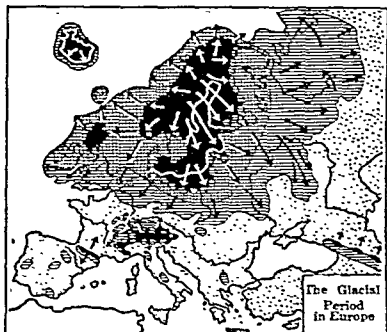
**G.L.**, abbr. Grand Lodge (Freem.).

**Glacé**, fine lamb or kid leather, with a glazed finish.

**Glacial periods**, name given to three or four periods during which the earth suffered great loss of heat, and esp. to the *Great Ice Age*, a relatively recent geological period, abt. 60,000 to 20,000 yrs. ago, coincident with, but not causally connected with, the Pleistocene period (see GEOL. FORMATIONS), when the N. and W. of Europe and N.E. America

and knolls, and striation due to action of stones borne along by ice; various moraine (q.v.) deposits were formed; erratic blocks and boulders (q.v.) were distributed over large areas; masses of stratified rock were transported from their beds; the courses of rivers were changed. Effects on animal and plant life were enormous; over large areas, e.g., of Scotland, Scandinavia, Canada, the entire soil was removed to be deposited elsewhere; men and other animals sought shelter in caves and under ledges of rocks.

**Glacier**, stream of ice in mountainous or polar regions, flowing at varying rates of few inches to few yards a day; formed by pressure from *firn* (q.v.), and transformed into crystalline ice. Carries boulders and small pieces of rock along its edges (lateral *moraine*, q.v.), along its bottom (ground moraine), or along centre (medial moraine); on thawing, deposits this rubble as terminal moraine. Numerous in Alps, Caucasus, Himalayas, Andes, Rockies, etc. **G. mill**: see MOULIN.



**Glacier**, national park (1910) in Montana, U.S.A., 1,534 sq.m.; 250 glacier-fed lakes; 60 glaciers; steep precipices; trout-fishing.

**Glacier Bay**, national park (1925) in Alaska, N. Amer., 1,820 sq.m.; includes Brady and Muir glaciers, and several ice-covered mountains.

**Glacis** (Fr.), unsheltered slope surrounding a fort.

**Gladbach-Rheydt**, tn., Rhineland, Prussia (pop., 200,700), 16 m. W. of Düsseldorf: centre textile indust.; iron and steel manufacture.

**Gladbeck**, Westphalian tn., Ruhr district, Germany; pop., 61,000; coal mines.

**Gladiators**, in anc. Rome, fighters in public games; gen. recruited from prisoners of war, criminals, and slaves.

**Gladiolus**, handsome iris-like garden plant, orig. from S. Africa.

**Gladkov**, Fyodor (1883- ), Russ. "proletarian" novelist: *Cement*, 1926.

**Gladstone**, Herbert John, 1st visct. (1854-1930), Brit. politician; youngest son



Eiger Glacier

were covered by glaciers and vast sheets of ice up to a depth of 3,000 ft. Its causes have never been satisfactorily explained. Its effects upon geol. formation and the development of human civilization are immense and largely traceable; the erosive action of moving ice caused rounding of excrecent rocks



Gladiolus

of W. E. Gladstone; Home Sec. 1903-10; Gov.-General of S. Africa, 1910-14; created visct., 1910. His father, **Wm. Ewart** (1809-98), Brit. Liberal statesm. and party leader, orator, and financier; M.P., 1832-46, 1847-95; pres. of Bd. of Trade, 1843; Sec. of State, 1845-46; Ch. of Ex., 1852-55, 1859-66; Pr. Min., 1868-74, 1880-85, 1886, 1892-94; carried through disestablishment of Irish Ch., 1869; introd. 2 unsuccessful Irish Home Rule bills, 1886, '93; author of many works on theol. and the classics, inclgd. *The State in Its Relation to the Church*, 1838; *Homeric Synchronism*, 1876; and numerous contributions to reviews, etc., repubd. as *Gleanings from Past Years*, 8 vols., 1879-90.

**Glam.**, abbr. Glamorganshire.

**Glamis**, vill., Angus, Scotland, 6 m. W.S.W. Forfar; pop., 1,100; **Glamis Castle** (E. of Strathmore), mainly 17th-18th cents., erroneously identified with Macbeth's castle; supposed to contain a secret haunted chamber.

**Glamorganshire**, marit. co., S. Wales; area 808 sq.m.; pop., 1,225,713; mountainous in N. (S. Wales coalfield), in S. fertile Vale of Glam. and Gower Penins.; dairy farming, sheep-breeding; coal-mining, smelting of tin, copper, lead; iron and steel; includes *Cardiff* (co. tn.); Swansea, Rhondda, Merthyr Tydfil.

**Gland**, (physiol.) organ that produces a secretion. Two types: 1) *G. of external secretion*, in which secretion passes from *G.* through a duct to another part of body, e.g., salivary *G.*, pancreas, lachrymal *G.*

2) *G. of internal secretion*, ductless or endocrine *G.*, in which secretion passes direct into blood, e.g., thyroid, pituitary. The internal secretions are called *hormones*. See also SECRETION.

**G.-grafting**, operative grafting of ductless *G.*, from one animal to another or to a human being; see STEINACH: VORONOFF.

**Glanders**, (vet.) infectious disease of horses; characterised by enlargement of the glands, inflammation and ulceration of the nose, broncho-pneumonia, and skin lesions.

One of these manifestations alone may be present, or there may be an admixture of them. Communicable to man and other mammals.

**Glasgow**, royal burgh, mainly in Lanarksh., on Riv. Clyde, second city in Gt. Brit. (pop., 1,130,675) and one of her greatest seaports; extensive commerce and shipb. industry; manuf.: cottons, woollens, machinery; bleaching and dye works; cathed., univ. (1450), art gallery. **G. Art Gallery**, Scottish museum and picture gallery; nucleus of art collection formed (1854) by works of art presented by Archibald M'Lellan; now includes many Old Masters and a fine modern collection. **G. School**, name given to a group of Scottish painters in late 19th cent.; incldd. Sir D. Y. Cameron, Sir John Lavery, E. A. Walton, etc.

**Glashütte**, tn., Saxony, Germany, pop., 3,100; watches and clocks.

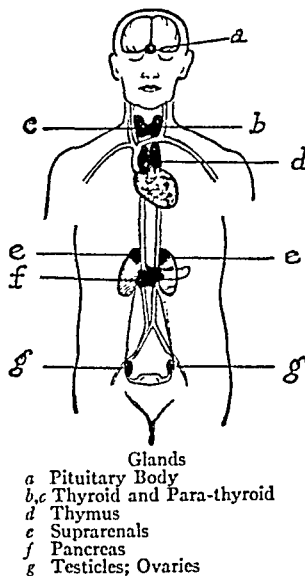
**Glasi**, relig. sect founded by John Glas (1695-1773), a minister in Forfarsh., whose doctrines on the Kingdom of Christ and the relations betw. Church and State brought him into conflict with the Solemn League and Covenant (*q.v.*).

**Glaspell**, Susan (1882- ), Amer. novelist and playwright: *The Glory of the Conquered*, 1909; *Inheritors*, 1921; *Verge*, 1922; *Brook Evans*, 1928.

**Glass**, homogeneous, amorphous substance obtnd. by solidification of a molten mass without formation of crystals. *G.* is actually supercooled (*q.v.*) liquid. When hot it is soft, ductile, and easily workable: offers grt. resistance to chem. influences, with exceptn. of caustic alkali. Composition varies; commonest, sodium-calcium-silicate; sodium may be replaced by potassium, calcium by lead, silicic acid by boracic. **Bottle g.** is alkali *G.*, cntg. alumina and iron; **coloured g.** is made by adding var. metals: gold for ruby, cobalt for blue, oxide of iron for green, chrome for yellow, etc.; **crystal g.** is lead *G.*; **flint g.**, **English g.**, or **lead g.** is silicate of lead and potassium, has high refractive index and therefore used for cut-glass; best *G.* for sealing-in platinum wires; good resist. to sudden change of temp.; **ground g.** has surface roughened so as to be translucent but not transparent; **milk g.** is rendered opaque by add. of boneash; **splinterproof g.** consists of 2 thin sheets of *G.* with layer of celluloid betw., used for motor-goggles, windscreens, etc.; **window and mirror g.** is sodium *G.*; **plate g.** is cast and polished by mach. on large revolving tables. Bottle and



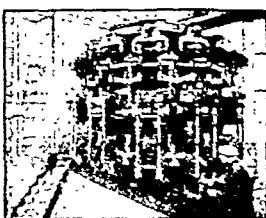
Glasgow University



Glands

- a Pituitary Body
- b,c Thyroid and Para-thyroid
- d Thymus
- e Suprarenals
- f Pancreas
- g Testicles; Ovaries

window G., also elec. lamp G., made on spec. machines (now automat.). **Toughened g.**, produced by rapid cooling of molten glass; resists concussion. **G.-blowing**, method of shaping glass, either from pot of molten glass, or from tube, rod, etc., held before a blow-pipe. Most bottles, etc., are blown into moulds; now usu. carried out by automatic machinery. **G.-painting**, the art of painting on glass; or building up pictures by means of tinted pieces of glass



Glass-blowing Machine  
Producing 50,000 Lamp Bulbs  
per Day

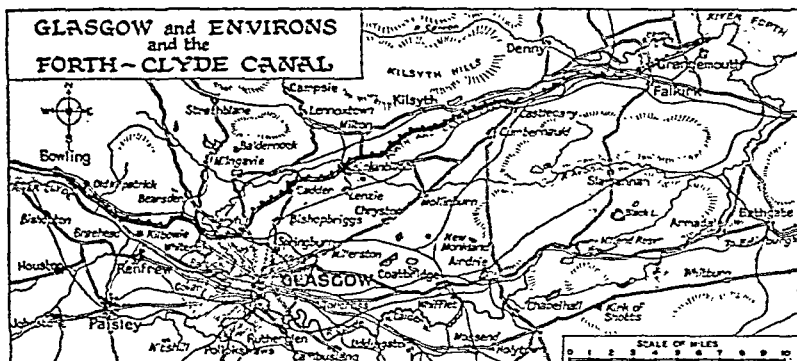
of Arimathaea (A.D. 63); existing ruins 12th-13th centuries. **G. Thorn** (St. Joseph's miraculous staff) grew on neighbouring hill. See AVALON.

**Glauber**, Joh. Rudolf (1604-68), Ger. chem.; prepared "*sal mirabile*," Glauber's salt. **G.'s salt**, sodium sulphate, occurs naturally and forms act. ingredient of many spa waters; strongly purgative.

**Glaucoma**, (med.) very painful disease of eyeball, accomp. by headaches; may lead to blindness.

**Glauconite**: see GREENSAND.

**Glaze**, (ceramics) glossy surface on ceramic ware (earthenware, porcelain), obt. by applying to surface in form of fine powder a suitable mixture of silicates of lime, magnesia, lead, and other metals, and then firing article, whereby G. melts and runs smoothly over surface. G. must have same coefficient



kept in place with strips of lead, which at the same time act as outlines of the pictures. Used specially in Gothic art, for church windows. **G. paper**, or *emery cloth*, paper coated with emery or glass powder; used for rubbing down and polishing. **G. snake**, *Schelopisik*, snake-like limbless lizard, resembling blind worm, fnd. in Russia, S. Asia, and N. America; name also given to the British blindworm (q.v.), *Anguis fragilis* and to *Ophisaurus centralis* of the U.S.A. **G. wool**, spun glass, fine threads drawn from molten glass; used for filtering and other chem. operations, also decoratively. **G. wort**, maritime plant growing in salty marshes, from ashes of wh. soda was formerly obt. and formerly used in glass-making.



Glastonbury Abbey

**Glastonbury**, munic. bor., Somerset; pop., 4,500; 10th-cent. Benedictine abbey (oldest Eng. Christian fndtn.) said to be on site of ch. of St. Joseph

of expansion (q.v.) as body; otherwise cracks will form. **Salt G.**, common salt vapourised in furnace attacks surface of earthenware, forming a gloss.

**Glazunov**, Alexander Constantinovich (1865- ), Russ. composer; ballets, symph., etc. Hon. Mus. D., Cantab., 1907.

**Glebe**, in eccles. law, land attached to a benefice and held by incumbent during his tenure. The Eccles. Leasing Acts (1842) made it permissible for the incumbent to lease G. land for fixed term, with the exception of his house and 10 acres.

**Gleiwitz**, tn., Upper Silesia, Ger., on Riv. Klodnitz; iron and steel works, coal-mines; pop., 110,200.

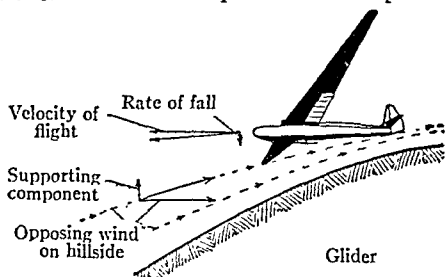
**Glenalmond**, Trinity College, Scot. public school for boys; fndd. 10 m. from Perth, 1841; abt. 200 boys.

**Glencoe**, vall. in N. Argyllsh., Scotland; scene of *Massacre of G.* (1692), when some 40 of the clan Macdonald were treacherously slain (for alleged refusal to submit to Crown) by royal troops whom they were entertaining.

**Glengariff**, vill., head of Bantry Bay, Co. Cork, Munster, I.F.S.; tourist resort.

**Glengarry**, 1) mtn. vall., Inverness-sh., Scotland, watered by Riv. Garry (14 m.); route of main Highland section of L.M.S. rly. (Dalnaspidal Summit, 1,484 ft.; highest rly. summit in Gt. Brit.). 2) Tight-fitting Highland cap, with ribbons at the back.

**Glider**, (aeronaut.) heavier-than-air flying machine, propelled without engines; impetus given by launching from a height or releasing by means of a cable. Experiments with Gs. by Lilienthal (1896) and Wright brothers (1903) resulted in devlpmt. of modern power-



driven aeroplane (q.v.). Practice revived 1920. Record flights: duration 14 hrs. 7 m. (3 May, 1927); distance 165 m. (4 May, 1931); altitude 8,502 ft. (30 July, 1929). *Brit. Gliding Assoc.* was fndd. 1930.

**Gli Hecatommiti**, It. collect. of 100 tales by Cinthio; used by Shakespeare for plots of 2 plays, also by Beaumont and Fletcher.

**Glima**, Icelandic form of wrestling.

**Glinka**, Mikhail Ivanovich (1804-57), Russ. composer; opera: *A Life for the Tsar*, 1836.

**Glissando**, (mus.) gliding rapidly over the notes, as on the piano with a finger tip.

**Globe**, round or spherical body; anything nearly spherical in shape; sphere on wh. is map of earth or heavens. **G.-fish**, **sea-hedgehog**, found in trop. seas; has bony spines, which it erects at will; can inflate its body into a globular shape. **G.-flower**, *Trollius europaeus*; Ranunculus; handsome yellow flowers.

**Globe Theatre**, Southwark, built by Burbage, 1599; demol., 1644; public theatre; Shakespeare's plays performed for 17 years; also plays of Jonson, Beaumont, Fletcher, Ford, Massinger, Chapman, etc.

**Globigerina**, marine Protozoa which secrete a globular shell of carbonate of lime.

**Globularia**, globe-daisy, small Europ. herbaceous plant grown for ornamentation.

**Globulins**, a group of proteins insoluble in water but soluble in acids and alkalis, e.g., blood fibrin.

**Glockenspiel**, orchest. instr. with tuned, short steel rods; also, set of bells played from keyboard of organ.



Globe Theatre



Globe-flower

**Glommen**, riv., Norway (c. 350 m.), from Lake Oeresund in prov. of Trondhjem into the Skagerak.

**Gloria** (Lat.), the Doxology; the Song of Praise in High Mass. **G. in Excelsis Deo** (Lat.), Glory to God in the highest; **G. Patri**, Glory be to the Father, etc.

**Glorious First of June**, name given to a battle fought in 1794 betw. Brit. and Fr. fleets off Ushant, resulting in victory for former.

**Glory**, (theol.) state of divine and celestial beings; adoration accorded to God ("Glory to God in the highest"); a halo (q.v.). **Old G.**, the Stars and Stripes, nat. flag of U.S.A.

**Glos.**, abbr. Gloucestershire.

**Gloss**, explanation of some difficult passage or unfamiliar word (often interlinear) in anc. MSS., esp. (eccles.) one of two celebrated elucidations of the Vulgate (q.v.); 1) the *Glossa Ordinaria* of Strabo (b. 807); 2) *Interlinearis* of Anselm of Laon (d. 1117).

**Glossop**, munic. bor. and mkt. tn., Derbysh., 12 m. S.E. Manchester; pop., 19,500; cotton-mills.

**Glo'ster**, abbr. Gloucester.

**Glottis**, (physiol.) aperture betw. vocal cords (see LARYNX). **Spasm of G.**, closing of G. owing to cramp of vocal cords, occurs in nervous infants.

**Gloucestershire** (Glos.), co. in S.W. Eng., watered by Severn; area, 1,259 sq.m.; pop., 785,700. **Cotswold Hills** in E., fertile riv. vals. in centre (dairy-farming); **Forest of Dean** (coalfields) in W.; co. tn., **Gloucester**; largest tn., Bristol. **Gloucester**, on the Severn, pop., 52,937; cathed.; coal and iron trade; rly. carriage works. **Duke of G.**, title of Eng. royal prince., 3rd. son of H. M. the King.



Gloucester Cathedral

**Gloucs.**, abbr. Gloucester.

**Glover tower**, part of plant for recovery of nitric oxide in manuf. of sulphuric acid by the lead chamber process.

**Glow discharge**, discharge of electr. thr. gases producing luminous effects. In open air, *Corona* (q.v.). In closed tubes, *Geissler tubes*, *discharge tubes*, *Neon lamps*, *Mercury vapour lamps*, etc.

**Glow-worm**, beetle of family *Lampyridæ* characterized by phosphorescent organs in abdomen; the wingless female has more brilliant light than the winged male; larvae also emit light; feeds on snails. Most numerous in tropical regions, but found throughout the world.



Glow-worm

**Gloxinia**, *Sinningia speciosa*, ornamental S. Amer. plant with bell-shaped flowers; many cultivated varieties.

**Glozel**, hamlet, dept. of Allier, France; scene of excavations under Dr. Morlet of Vichy and alleged discovery (1924-26) of prehist. objects since proved to be fabrications.

**Gluck**, Christoph. Willibald (1714-87), Ger. operat. composer; *Orpheus* and *Euridice*, *Iphigenia in Aulis*.

**Glucose** ( $C_6H_{12}O_6$ ), dextrose, or grape-sugar, m.p.  $86^\circ$ , is formed by action of acids on cane-sugar, producing mixture of glucose and fructose, known as *Invert sugar*. Commercial G. (dextro-g., saccharum, etc.) made by action of hot acids on starch. Product contains more maltose than glucose; when refined is colourless syrup, used in confectionery, brewing, etc., and as food.

**Glue**, impure gelatine, colloid nitrogenous substance, extracted from animal matter (skin, gristle, bones, sinews) by boiling or steam pressure. Chf. component, Glutine. Purest form of G. is *isinglass*.

**Glume**, (bot.) husk or shell of flowering grasses.

**Gluten**, nitrogenous part of wheat, obtained by washing away starch with cold water. Used for making "Diabetic" bread, also as adhesive.

**Glutton**: see WOLVERINE.

**Glycerin**, **glycerole**,  $C_3H_5(OH)_3$ , sp. gr. 1.265, m.p.  $17^\circ$ , b.p.  $290^\circ$ ; by-product in soap manuf.; obtd. by the action of alkalis on superheated steam on fats and fixed oils; chfly. used in manuf. of nitroglycerine (g.r.); used in med. as an emollient dressing and internally as a demulcent and laxative; sometimes used as a sweetening agent in place of sugar; useful preservative and solvent.

**Glycogen**, animal starch; is stored in the liver and forms the body's reserve of sugar.

**Glyptic**, carving in stone; sculpture.

**Glyptodon**, extinct giant mammal of armadillo type, ind. in S. and N. America.

**Glyptothek**, Museum, Munich, built by Von Klenze, 1830. Collection of Assyrian and Egyptian down to modern sculpture; Aeginetan Marbles.

**Gm.**, abbr. gramme.

**G. M.**, abbr. Grand Master (Freem.).

**G. M. T.**, abbr. Greenwich Mean Time.



Gloxinia



Gluck

**Gmünd**, tn. on Riv. Rems, Württemberg; pop., 20,400; gold, silver, jewellery; wood-carving.

**Gmunden**, Spa in Upper Austria, at head of Traun See; pop., 6,800.

**Gnat**, delicate fly resembling mosquito, but with mouth parts poorly developed. Larvae live in water or in damp situations; adults frequently gregarious.

**Gneisenau**, Ct. Neithardt von (1760-1831), Pruss. F.-M.; fought at Waterloo.

**Gneiss**, composite rock consisting of quartz, feldspar, and mica.

**Gnesen**, **Gniezno**, tn. Poland, 30 m. N.E. Posen, pop., 25,700; R.C. abpric.: horse mchts., metal factories, linen and wool-len manuf. Coronation tn. Pol. kgs. until 1300. Burialpl. St. Adalbert. Prussian 1793-1919; Polish since.

**Gnosticism**, doctrine of the Gnostics, an Early Christn. sect wh. claimed to have special knowledge (*gnosis*) of divine mysteries, and whose theories would have transformed Christianity into a mythical philos. embracing many heathen ideas. Cf. EMANATION.

**Gnothi seauton** (Gr.), "Know thyself"; inscription on Temple of Apollo at Delphi.

**G.N.R.**, abbr. Great Northern Railway.

**G.N.S.R.**, abbr. Great North of Scotland Railway.

**Gnu**, **Wilbebeest**, S. African antelope, with short head and heavily maned neck. If alarmed, a herd performs amazing antics before stampeding.

**Go**, Jap. national theatre play for 2 actors.

**Goa**, Portu. territory.

W. coast, India; area. 1,447 sq.m.; pop., 515,875; cereals, rice, trop. fruits, pepper, forest-timber; cap., New Goa (pop., 18,345).

**Goal**, two upright posts with cross-bar, between which a ball must be played to score a point in Association Football, Hockey, etc. In Rugby the ball must be kicked over the cross-bar between the uprights.

**Goat**, hairy ruminant with hollow, backward-curved horns, sometimes spirally twisted; bearded chin; males emit strong, characteristic odour. Found in mountainous districts of Eur., Asia, Abyssinia, Egypt, and Palestine. Domesticated and bred for its milk, coat, etc.; many breeds. **G.'s-beard**, *Tragopogon pratensis*, (bot.) meadow plant growing about



Gnat



Gnu



She-Goat

24 ins. high; yellow flowers which close in early afternoon, hence sometimes known as "John-go-to-bed-at-noon." **G.-sucker:** see NIGHTJAR.

**Gobat**, Albert (1843-1914), Swiss polit. and pacifist; head of Internat. Peace Bureau, 1892; Nobel Peace Prize, 1902.

**Gobbing**, refuse of a coal-pit; see MING.

**Gobelin**, tapestry first woven in France by Gobelin family in 15th cent.; their factory acquired by Royal Hse. of Fr. in 17th cent.



Gobelin Tapestry

and continued till Revolution. Revived at Restoration, but with inferior workmanship.

**Gobi Desert**, plateau S. and centr. Mongolia, with shifting sands; c. 773,000 sq.m.; av. alt., 3,000 ft.; cattle, wheat, and barley. Scientific discoveries (dinosaur's eggs, etc.); see MONGOLIA.

**Gobineau**, Joseph Arthur, Ct. de (1816-82), Fr. writer; *The Renaissance*, 1877.

**Goblin**, mischievous fairy (q.v.) or spirit, usu. represented as small human figure, similar to Germ. Kobold (q.v.)

**Goby**, small, bony fish with somewhat flattened head; often to be found in deep rock-pools on the sea-shore. The male mounts guard over the eggs, which are deposited on the inner surface of an old cockle or mussel shell, inverted so as to make a little dome-shaped chamber, partly buried in the sand. Widely distributed.

**G.O.C.**, abbr. General Officer Commanding.

**God**, the ultimate cause of all things, regarded and worshipped as a Person; the Supreme Being, Creator of the Universe, Eternal, Almighty, All-merciful, Omnipresent; hence (in popular use) applied to any

spirit, person, or thing made an object of worship.

**Godalming**, munic. bor. and mkt. tn., Surrey, on Riv. Wey, 4 m. S.W. Guildford; pop. 10,400; hosiery, paper, gloves; Charterhouse School (q.v.),  $\frac{1}{2}$  m. north.

**Godard**, Benjamin (1849-1895), Fr. opera composer; *La Vivandière*, 1895.

**Godavari**, 1) dist. Madras, Brit. India, containing delta Godavari Riv.; cap. *Co-canada*. 2) Riv., India, longest in Deccan (q.v.); rises W. Ghats, flows through Hyderabad into Bay of Bengal; length 900 m.; navigation impeded by rapids.

**Godetia**, garden flower, native of America; related to evening primrose (q.v.); bears handsome crimson, purple, and white blossoms.

**Godfrey of Bouillon** (c. 1060-1100), leader in 1st Crusade, 1096.

**Godhavn**, chf. tn., Greenland, on Disko Isl.; pop. 415; biolog. station.

**Godiva**, (1040-80), wife of Leofric, E. of Mercia, Ld. of Coventry; said to have ridden naked through Coventry as a condition of her husband's remission of heavy taxation.

**Godley**, Sir Alexander John (1867- ), Brit. gen.; com. N. Zealand Exped. Force, 1914-18; c-in-c. Brit. Army on Rhine, 1922-24.

**Godolphin**, Sidney G., 1st. Earl of (1645-1712), Eng. statesm. and financier; M.P., 1668-1706; Ld. of Treasury, 1690-97, 1700-01; corresponded secretly with Jas. II during reign of Wm. III; Pr. Min. and Ld. High Treasurer, 1702; supported Marlborough; created earl, 1706; dismissed from office at fall of the Marlboroughs, 1710.

**God save the King**, Eng. Nat. Anthem; attrib. to John Bull (c. 1607), Henry Carey (c. 1740), and James Oswald (c. 1740); present words and music evolved out of earlier versions.

**Godwin** (d. 1053), earl of the West-Saxons; most influential Englishman of his time; procured election of Edw. the Confessor, who married his daughter; exiled and recalled, 1051.

**Godwin, Mary Wollstonecraft** (1759-97), Eng. writer, m. 1797; d. at birth of a dau., Mary, who was afterwards wife of P. B. Shelley; *A Vindication of the Rights of Woman*, 1792; *Mary, A Fiction*, 1788; *Original Stories of Real Life*, 1791. Her husband, **Wm.** (1756-1836), Eng. philos., novelist and historian; *Inquiry Concerning Political Justice* (1793).

**Godwin-Austen**, K2, or *Dapsang*, Karakoram Mtns., India, second highest peak in the world (28,250 ft.); named after Robt. Godwin-Austen (1808-84), Eng. geologist.

**Godwit**, migratory bird of plover fam., closely resembling sandpiper.

**Goeben**, Ger. battle cruiser, escaped to

Constantinople, 10 Aug., 1914, together with light cruiser *Breslau*.

**Goes**, Hugo van der (1440-82), Dut. painter; *Portinari altar-piece*.

**Goethals**, Geo. Washington (1858-1928), Amer. mil. engineer; Chf. Engin., Panama Canal, 1907-14; Civ. Gov. Pan. Canal Zone, 1914-16.

**Goethe**, Johann Wolfgang von (1749-1832), Ger. dramat. and lyric poet; *Faust*, *Götz von Berlichingen*, *Wilhelm Meister*, *Sorrows of Werther*.

**Gog and Magog**, two gigantic effigies (14 ft. high) in Guildhall, London, carved in 1707 to replace those burnt in the Grt. Fire; fabled to represent survivors of race extirpated by the mythical Brut. Names prob. taken from the Bible. (Ezek. xxxviii; Rev. xx).

**Gogh**, Vincent van (1853-90), Dut. post-impressionist painter; *l'Arlesienne*, *Asylum Garden*.

**Gogmagog Hills**, low chalk range, Cambs., Eng., 4 m. S.E. Cambridge; traces of Brit. and Rom. fortifications.

**Gogol**, Nikolai Vasilievich (1809-52), Russ. novelist and dramatist; comedy, the *Inspector-General*, 1836; novel, *Dead Souls*, 1842.

**Goidels**, section of early Celtic peoples, who reached Ireland during Bronze Age, c. 600-500 B.C., and subseq. Scotland and Isle of Man; traces also in W. Wales.

**Goitre**, pathological enlargement of thyroid gland. **Exophthalmic g.** (Graves' or Basedow's disease), enlarged thyroid gland, accomp'd. by prominence of eyes, palpitations, and condition of nervous excitement; most common in women.

**Gokcha**, lake, Armenia, 550 sq.m.; alt., 6,400 ft., surrounded by mtns., 12,500 ft. high; famous Armen. monastery (Sevanga) on lava island in centre of lake.

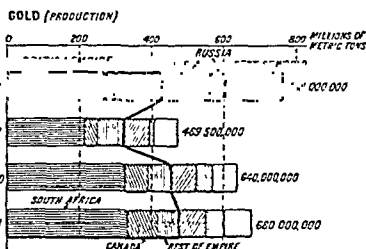
**Golconda**, ruined city, centr. India, 5 m. W. Hyderabad; ruled by Kutub Shah dyn. until its capture by Moguls in 1688. Famous in 16th cent. for diamond-cutting; hence (generally) a mine of wealth.

**Gold**, (chem.) element, sym. Au; at. wt. 197.2, sp. gr. 19.32, m.p. 1063°; precious metal, widely distrib. in nature; most malleable and ductile of all metals; not attacked by acids except Aqua Regia (nitric acid 1 part, hydrochloric acid 3 parts). Apart from its ornamental use, is occasionally employed in medicine (alcoholism, consumption); also used to colour glass, giving a deep ruby colour. G. is fnd. in combination with

silver, or in copper, lead and zinc ores; deposits may yield from 0.1 to 4 or 5 oz. of gold per ton. G. also occurs "free" in alluvial sands or gravels (*placers*), or in veins in quartz. Main sources of world-supply are: S. Africa (over 55%); Australia (5%); U.S.A. (abt. 15%); Russia is producing G. in increasing quantities. G. production reached highest point in 1915, after wh. it declined, recovering in 1920 and attaining new record, 1932. Fluctuations due to fact that fall in prices increases value of commodities in terms of gold; also, when G.-producing countries leave G. Standard (*see below*) their profits in proportion to cost of prodn. increase; hence increased prodn. from low-grade ores. *Fineness* of G. is calculated on basis of 24 carats; e.g., an alloy containing



Goethe



6 parts base metal is known as "18-carat gold," etc. **G. amalgam**, gold, mercury, and silver alloy for filling teeth. **G. beater's skin**, thin substance made from outer membrane of ox-intestine; used to separate sheets of gold-leaf, to cover wounds, and sometimes to line gas-bags of airships. **G. bullion standard**: *see* GOLD STANDARD. **G. certificates**, paper currency issued by U.S. Treasury, from \$20 to \$10,000, till 1933 redeemable in gold; legal tender. **G. exchange standard**, system by wh. centr. banks of countries with note issue on gold basis may keep a portion of their reserves in foreign exch. of currencies on a gold standard inst. of keeping them all in gold. In recent years many countries have adopted G.E.S., keeping part of their reserves chfly. in dollars and sterling, with a view to economy in gold. *See* GOLD STANDARD. **G. injection**, (med.) injection used in the treatment of tuberculosis; composed of a compound thiosulphate of gold and sodium, known as *Sanocrysin*. **G.-leaf**, pure gold beaten out into a sheet of abt. 1/200,000-inch thick; used for gilding. **G. points** (export, import): *see* GOLD STANDARD. **G. reserves**, (monetary) of the world in note-issuing banks and treasuries at end of 1932 (excl. of Indian gold treasure in private hands) amtd. to \$12,000,000,000 (£2,466,000,000) of which U.S.A. held 34% (abt. \$4,045,000,000, or £831,000,000); proportion in Eur. amtd. to abt. 54%, Fr. taking



1st place with £669,000,000, followed by Eng. with £121,000,000; G. Rs. of other countries at end of 1932 were:

Argentina . . . . .	£51,000,000
Belgium . . . . .	74,000,000
Germany . . . . .	43,000,000
Holland . . . . .	85,000,000
India . . . . .	33,000,000
Italy . . . . .	63,000,000
Japan . . . . .	44,000,000
Norway . . . . .	8,000,000
Spain . . . . .	90,000,000
Sweden . . . . .	11,000,000
Switzerland . . . . .	98,000,000

**G. standard**, basis of exch. values betw. countries, establd. by fixing of currency units in each country in given wts. of gold; a country is on G.S. when its currency is either gold coins or paper notes convertible into gold; when there are no restrictions on import and export of gold; when cent. bk. of issue is legally obliged to purchase all gold offered to it at a fixed price. Owing to changes in relation of supply and demand for foreign currencies, rates of exch. betw. currencies of diff. countries fluctuate continually; they gen. remain, however, within limits of "gold points," i.e., rates at wh. G. will be imptd. or exptd. by dealers or banks for sake of profit accruing from margin betw. parity (q.v.) and current rate of exch. Diff. betw. G. import or export points and G. parity cannot remain greater than cost of transport and insur. and loss of int. during transport betw. 2 countries. For G. EXCHANGE STANDARD see above. **G. bullion standard**, system by wh. notes are convertible into B., not coin, at amts. exceeding a fixed total, e.g., betw. 1925-31 Bk. of Eng. converted notes only into bars cntg. 400 oz. fine G. (at £3 17s. 10½d. p. oz), i.e., in minimum amts. of £1,557. See POUND. **G. Stick**, officer of Brit. royal household; apptmt. held for 1 month by colonels of household cavalry regiments in rotation. **G.-tail moth**, a small, whitewinged moth, having a tuft of golden hair at the end of the body; larvae sometimes a pest to fruit trees.

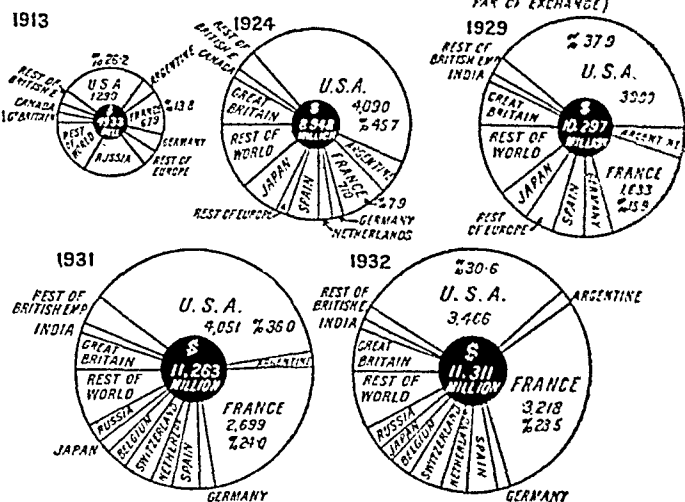
**Gold Coast**, Brit. Crown colony and protectorate, Gulf of Guinea, Africa; comprises **Gold Coast Colony** (cap., Accra), **Ashanti**, and **N. Territories**; area, 78,800 sq.m.; pop., 2,845,300; surrounded by Fr. W. Afr. colonies; principal export cocoa; also gold, manganese, diamonds.

**Gold crest**, small bird belonging to warbler tribe, of Northern habitat; smallest of Brit. native birds; a regular migrant across the N. Sea. Tiny nest, slung like a hammock from the branch of a yew or pine tree.

**Golden Age**, 1) mythol. age of perfect innocence, peace, and happiness, under rule of Saturn (q.v.); 2) period, the prime of Roman literature (80 B.C. to A.D. 14).

**Golden Bull**, docmnt. drawn up by Charles IV in 1356 settling manner of elec-

GOLD RESERVES OF CENTRAL BANKS AND GOVTS. (IN MILLIONS OF DOLLARS CONVERTED AT PAR OF EXCHANGE)



Gold Reserves greatly increased since 1913 owing to withdrawal of gold from circulation and substitution of paper money. U.S.A., by remaining on Gold Standard during World War, attracted gold of belligerents, but with stabilisation of franc in 1923 France began to follow U.S.A. and by withdrawals from latter as well as elsewhere had in June, 1932, almost reached U.S.A. figure. 1932 U.S.A. total again \$1,000,000,000. Thus U.S.A., France, Belgium, Holland and Switzerland (then all on Gold Standard), possessed over 70% year refer to reserves at 31st Dec. 1 to June 30th.

tion of future emperors. It remained valid until the abol. of Holy Roman Empire, 1806.

**Golden Calf**, (O.T.) idol erected by Aaron and worshipped by Israelites in absence of Moses on Mt. Sinai (Ex. xxxii).

**Golden Fleece**, 1) (Gr. myth), fleece of the winged ram sacrificed by Phryxus to Zeus after it had carried him from Thessaly to Colchis; the object of the expedition of Jason and the Argonauts (q.v.). 2) Chief of the European Orders of knighthood fndd. by Philip the Good, Duke of Burgundy, 1429; Grd.-Mastership held by Ho. of Habsburg, 1477-1588, by Span. kings 1588-1714, and thereafter O. existed independently in Aus. and Sp. until Repubs. were formed.

**Golden Gate**, 1) gate in city wall, Constantinople, Turkey, now part of fortress of Yedi Kuleh. 2) Channel connecting B. of San Francisco with Pacific Ocean. 3) **G. G. Park**, in San Francisco, California, U.S.A., 1,013 acres; playgrounds, athletic grounds; museum, etc.

**Golden Horn**, inlet (5 m.) on the Bosphorus, separating Pera and Galata from rest of Constantinople, and forming harbour.

**Golden Legend**, 13th-cent. collectn. of biographies of saints, compiled by Jac. de Voragine; used by Chaucer for his *Nun's Tale*; printed by Caxton (1483); also, dramatic poem by Longfellow (q.v.) (1851), forming trilogy with the *Divine Tragedy* and *New England Tragedies*; set to music by Sullivan (q.v.) and produced as cantata at Leeds (1886).

**Golden Number**, the number of the year of the Lunar Cycle (see CYCLE), this having been marked in letters of gold in ancient calendars. If 1 be added to the year of the Christian Era, and the sum divided by 19, the quotient will be the number of lunar cycles elapsed since the birth of Christ, and the remainder will be the Golden Number (19 if no remainder).

**Goldenrod**, yellow-flowered plant of genus *Solidago*, native to N. Amer.; tall stems terminating in clusters of small flowers.

**Golden Rose**, an ornament blessed by the Pope on the 4th Sun. in Lent and sent by him, as a mark of special honour, to Catholic sovereigns, cities, etc.

**Golden section**, (math.) division of a line into 2 unequal parts in such a way that the ratio of shorter to longer is the same as that of the longer to the whole; e.g., AF:FB=FB:AB.

**Golden Spur, Order of**, former Hung. order of knighthood, fndd. c. 1310, conferred only on coronations.

**Goldfinch**, migrat. bird related to siskin and hawfinch. Black head, red cheeks, yellow wing-feathers; feeds on insects and small seeds. Fnd. over most of Eur., N. Africa, and N. Asia. Migrates from Eng. in autumn. The *American gf.* belongs to siskin group; fnd. on open plains of N. America. Colouring: black, white, and golden yellow. **G.-fish**, carp from E. Asia; frequently bred in aquaria and ornamental ponds; by long selection and breeding, many varieties have been obtained, including telescope-eyed and veil-tails.

**Goldmark**, Karl (1830-1914), Hung. composer; opera, *The Queen of Sheba*, 1875.



Oliver Goldsmith

**Goldoni**, Carlo (1707-93), Ital. dramatist; pioneer of Ital. comedy; *The Crabbed Philanthropist*; *The Fan*.

**Goldsmith**, Oliver (1728-74): Eng. man of letters; novel, *Vicar of Wakefield*, 1766; play, *She Stoops to Conquer*, 1773; poem, *The Deserted Village*, 1770.

**Goldsmiths' art**, the making of jewellery, artistic tableware, plate, etc., of gold and silver.

**Golem**, clay mannikin wh., acc. to Jewish legend, was made and endowed with life by wonder-working rabbis. Earliest mention, c. mid. 16th cent.; most famous example, that of Rabbi Löw, of Prague, c. 1595. Mrs. Shelley's *Frankenstein* (q.v.) may be indebted to the legend.

**Golf**, game in which a small hard ball is struck with a club into a hole on each of 18 smooth greens separated by rough ground.

**Golgotha**: see CALVARY.

**Goliardic literature**, collectn. of Med. Latin songs, *Carmina Burana*, by wandering scholars, purporting to be by Goliardi or Goliards.

**Goliards**, itinerant medieval buffoons; satirists dealing mainly with abuses in the Church.

**Goliath**, (O.T.) giant of Gath, champion of Philistines; slain by David (1 Sam., xvii). **G. beetle**, a large beetle of tropical Africa; attains a length of four inches.

**Gollancz, Sir Hermann** (1852-1930), Jewish rabbi and scholar prof. of Hebrew at Univ. Coll., Lond. (to which he presented his library), 1902-24; preacher at Bayswater Synagogue, Lond., 1892-1923; knt., 1923. **G., Sir Israel** (1863-1930), Brit. scholar, esp. of Anglo-Saxon and Elizabethan lit.; ed. Mid-Eng. poem *Pearl*; gen. ed. *Temple Classics*.

**Goltz, Colmar, B. von der** (1843-1916), Ger. F.-M., Com. 1st Turkish Army, 1915.

**G.O.M.**, abbr. "Grand Old Man," term applied to Rt. Hon. W. E. Gladstone.

**Gomel, Homel**, tn. in White Russia, on Riv. Sozh; pop., 86,400; rly. junc.; timber, hemp, linseed; match industry.

**Gomer**, (O.T.) eldest son of Japhet; trad. ancestor of Celts.

**Gomorra**, one of 5 cities in region of Dead Sea, destroyed with Sodom (Gen. xix).

**Gompers**, Samuel (1850-1924), Amer. labour leader; Pres. Amer. Fed. of Labour,



Goldsmith's Work from Augsburg



Golf Clubs  
a) Driver  
b) Putter  
c) Brassie  
d) Iron  
e) Niblick  
f) Mashie

1882-1924; chmn. Peace Conf. Commission on Labour Legislation, 1918-19.

**Goncharov**, Ivan Alexandrovich (1812-91), Russ. novelist; *Oblomov*, 1857.

**Goncourt, De, Edmond** (1822-96), and his bro. **Jules** (1830-70), Fr. writers. Col. lab. novels, *Sister Philomène*, 1861; *Madame Gervaisais*, 1869; by Edmond alone, *Faustin*, 1882. **G. Academy**, fndd. in 1902 accordg. to will of the Gs.; awards *Goncourt Prize* annually for a work of fiction.

**Gond**, Indian of Dravidian (*q.v.*) stock: half black; see GONDWANA.

**Gondola**, 1) Venetian boat propelled by *gondolier* by means of pole. 2) Basket attached to air vehicle for carrying passengers and ballast.



Gondola

**Gondwana**, region, Centr.

Provs., India; mountainous, much jungle; inhabited by aboriginal *Gonds*, a Dravidian people (c. 2,000,000).

**Gonfalonier**, milit. and civil title of magistrates, etc., of certain Ital. city republics, e.g., Florence; also title of a sovereign bound to defend the Papacy.

**Gonfanon**, rectangular flag, sometimes with streamers, carried by religious bodies.

**Gong**, drum-like mus. instr. made of brass or bronze, originating in China; see TOM-TOM.

**Goniometer**, apparatus for measuring the sloping angles of 2 surfaces, esp. in crystallography and craniometry. **Goniometry**, art of measuring angles.

**Gonococci**, bacteria discovered by Neisser (1889); present in cases of gonorrhœa (*q.v.*).

**Góngora y Argote**, Luis de (1561-1627), Span. poet; *Polifemo*; fndd. peculiar artificial style, *Gongorism*, consisting of a peculiar diction for serious poetry combined with intricate constructions of Greek and Latin; each word supposed to be invested with extraordinary depth of meaning. Introduced into prose lit. by Gracian (d. 1652).

**Gonorrhœa**, disease caused by bacteria, gonococci (*q.v.*); usu. due to sexual intercourse with infected persons. G. spreads from urethra to other parts of genital tract, and may affect the eyes and the joints, e.g., knee. Treatment in many countries is compulsory.

**Gonville and Caius College**, Cambridge; fndd. 1348 by Edmund Gonville (Gonevil). Enlarged by John Caius, the physician, one of its alumni, 1557. Fam. known as Caius (pron. "Keys").

**Good Conduct Medal**: see LONG SERVICE AND GOOD CONDUCT MEDALS.

**Good Friday**, the Friday before Easter; sacred commem. of Christ's crucifixion.

**Good Templars**, internat. union for strict

temperance; fndd. 1851 in Utica, N. Y.; non-sectarian; 63 grand lodges.

**Good-will**, intangible value of an undertaking, lying in its general reputation, circle of customers, etc.; G. of a co. may be sold and appears as asset in balance sheet.

**Goodwin Sands**, shoal off E. coast Kent, Eng., in Strait of Dover, 5 m. from mainland, separated by the Downs; 10 m. by 2-3; dangerous; several lightships.

**Goodwood**, seat Duke of Richmond, Sussex, Eng.; 4½ m. N. Chichester; race-course in *Goodwood Park*, property of Duke of Richmond; meeting 4 dys. from last Tues. in July; Stewards' and Goodwood Cups; last society function of season.

**Goodyear**, Charles (1800-60), Amer. inventor; disc. process of vulcanising rubber, 1839.

**Googly**, (cricket) ball breaking from the "off," though apparently delivered with a "leg-break action."

**Goole**, urb. dist. and scapt., W. Riding, Yorks, Eng., at confluence rivs. Ouse and Don; docks; pop., 20,200.

**Goosander**, diving bird, species of merganser (*q.v.*), brilliantly coloured; occas. breeds N. Britain; found throughout N. Europe and Asia.

**Goose**, large aquatic bird of sub-family *Anserinae*, related to the duck; wild species are found in all nrthn. parts of Old and New Worlds, breeding in the high N. and migrating S. in immense numbers in winter. **Grey lag g.** distribtd. over nrthrn. Gt. Brit., Eur., and N. Asia is prob. ancestor of *domesticated g.* Other varieties: **bean g.**, **pink-footed g.** The **snow g.**, a N. Amer. species, nests in Arctic regions; two varieties, smaller measuring 23 in. in length.

**Gooseberry**, *Ribes grossularia*, thorny shrub of N. and Centr. Eur., producing pleasantly flavoured pulpy berries, green, red, or golden yellow. Many cultivated varieties.



**Goose's Foot**, stinking **arrach**, *Chenopodium Olidum*, herb, grows near sea; egg-shaped leaves, with strong odour; used (*folk-med.*) as nerve tonic in hysteria.

**Goose-grass**, trailing weed with prickly, adhesive leaves and stems; seed-vessels in form of **burrs**, wh. stick to clothes and animals' coats.

**Goossens**, Eugene (1893- ), Eng. composer and conductor, member of Belg. family settled in Eng. since 1873; opera *Judiith*; orchest. works, chamber music, songs.

**G.O.P.**, abbr. "Grand Old Party" (Republican party, U.S.A.).

**Gopher State**: see MINNESOTA.

**Goral**, goat-like, greyish-brown Himalayan mammal, abt. 27 ins. high.

**Gorchakov**, noble Russ. family, descended from Rurik (G.v.); Pr. **Alexander Mikhailovich G.** (1798-1883), Russ. statesm.; as chancellor to Alexander II, played leading part in Europ. politics.

**Gordian knot**, (Gr. legend) knot uniting pole and yoke of the chariot dedicated to Zeus by Gordius. He who could unravel the knot was to become master of Asia; Alexander the Great cut it with his sword.

**Gordon, Adam Lindsay** (1833-70), Australian poet; *Sea Spray and Smoke Drift*; *Ashtaroth*; 1867; *Bush Ballads and Galloping Rhymes*, 1870; committed suicide. **G., Lord George** (1751-93), youngest son of

3rd Duke of Gordon; polit. agitator, figure-head of the G. Riots, 1780, demonstrations agst. proposed laws for the relief of R. Caths.; d. in Newgate Gaol. **G., Charles George** (1833-85), Brit. gen. and administ.; with Brit. Army of Occupation in China during Taiping Rebellion 1860-64; hence called "Chinese G."; Gov.-Gen. of Sudan, 1877; besieged by the Mahdi, and killed during storming of Khartoum.



General Gordon

**Gordon Highlanders**, Highland infantry regt., Brit. Army; union of 75th Foot (raised 1788) and 92nd Foot (1794); dépôt, Aberdeen; record office, Perth; 21 battalions in World War.

**Gordon-Lennox**: see RICHMOND AND GORDON, DUKES OF.

**Gordon Riots**: see GORDON, LORD GEORGE.

**Gore, Charles** (1853-1932), Eng. prelate; Bp. of Worcester, 1902; Birmingham, 1905; Oxford, 1911-19; fndd. Community of the Resurrection, 1892; leader of "Christian Socialists" (High Churchmen); ed. *Lux Mundi*, 1890; *The New Theology and the Old Religion*, 1908.

**Gorgas, William Crawford** (1854-1920), Amer. army surgeon; ch. sanitary officer Panama Canal; largely suppressed yellow fever.

**Gorget**, the top part of armour, protec. the neck. In the 18th cent., a small silver or gilt G. was worn by officers when on duty.

**Gorgias** (c. 483-375 B.C.), Gr. rhetorician and sophist; did much to standardise Attic dialect as literary language of Greece; views attacked in Plato's *Gorgias*.

**Gorgons**, (Gr. myth.) three female monsters with snakes for hair: Medusa (G.v.), Stheno, and Euryale.



Gorilla

**Gorgonzola**, cheese, named after its town of origin in Lombardy, It. (pop. c. 5,000). When ripe is permeated by a blue mould; rich flavour.

**Gorilla**, largest man-like ape; confined to

forests of Equatorial Africa. Live in small family parties ruled by the old male; females and young sleep in branches of large trees, whilst males remain on ground. Adult male is savage and courageous; immensely powerful.

**Gorizia, Görz**, tn. on riv. Isonzo, N. It.; seat of Abp.; pop., 49,200; winter sports; Austrian stronghold, in World War, taken by Italy, 1916.

**Gorkan**, formerly **Astarabad**, cap. prov. of G. (5,600 sq.m.), N. Persia, 20 m. E. of Caspiana; rice, wheat, pasture; pop., c. 20,000.

**Gorki, Maxim** (1868-

), pen-name of Alexei Maximovich Peskov; Russ. writer; novels, *Mother*, 1907; *Decadence*, 1927; autobiography, *Recollections*.

**Görlitz**, tn., Lower Silesia, Germany, on Riv. Neisse; pop., 94,400; textiles, machinery.

**Gorner Glacier**, second largest Alpine glacier, on N. slope *Monte Rosa* massif; 9 m. long.

**Gorner Grat**, c. 10,000 ft.

**Gorse**: see FURZE.

**Gorst, Sir John Eldon** (1835-1916), Eng. statesm.; M.P., 1864-68 and 1874-1906; reorganized Conservative party, 1868-73; joined the "Fourth Party"; solicitor-gen., 1885-86; under-sec. for India, 1886; financial sec. to Treasury, 1891; vice-pres. of committee of Council on Education, 1895-1902; opposed Chamberlain's tariff reform. His son **Sir J. Eldon** (1861-1911), financial adviser to Egypt. Govt., 1894-1904; succeeded Ld. Cromer as Brit. agent and consul-gen. in Egypt, 1907-11.

**Gosain Than**, peak, Himalayas, India, on Tibetan frontier; alt. 26,300 ft.

**Goschen**, Geo. Joachim G., 1st. visct.; (1851-1907), Eng. statesm. and financier; entered parliament, 1863; chancellor of duchy of Lancaster, 1866; 1st. ld. of Admiralty, 1871-74 and 1895-1900; prominent in Liberal-Unionist party, 1886-92; Chancellor of Exchequer, 1886-92; *Theory of the Foreign Exchanges*, 5th ed., 1864; *Cultivation of the Imagination*, 1877.

**Göschenen**, vill., Switzerland, on Riv. Reuss, at N. end St. Gothard Tunnel.

**Goshawk**, bird of prey of hawk fam., world-wide distrib. (except Australia), bluish-grey plumage, abt. 20 in. long; now rare in Gt. Brit.; formerly used for hawking.

**Goshen**, pastoral region of anc. Egypt, betw. Nile delta and mod. Suez Canal; scene of settlement of Israelites (Gen. xlvii).

**Gospels**, first 4 bks. of N.T., written 1st cent. A.D. Three synoptic gospels, Matthew, Mark, and Luke, of wh. Mark is earliest, record events in life of Christ; that of John



Gorki

written in more interpretive and doctrinal spirit.

**Gosport**, munic. bor., Hants; opp. Portsmouth; royal victualling yard; pop., 37,900.

**Gosse**, Sir Edmund (1849-1928), Eng. poet, biographer, and literary critic; librarian Ho. of Lords, 1904-14.

**Göta Canal**, Sweden; connects Gothenburg, on the Kattegat, with the Baltic (steamer service to Stockholm) via Lakes Vener and Vetter (57 locks); length, 240 m. (Gothenburg to Stockholm 360 miles).

**Göta-Elf**, riv., Sweden (55 m.), from Lake Vener into Kattegat; famous waterfall at *Trollhättan* (q.v.).

**Götaland**, southernmost terr. divn. of Sweden (35,760 sq. miles).

**Göteborg**: see GOTHENBURG.

**Gotha**, tn., Thuringia, Ger.; pop., 45,800; former cap. Saxe-Coburg Gotha; palace of Friedenstein, former royal residence; centre book trade.

**Gotham**, parish, Notts, England; once notorious for the simplicity of its inhabitants, the "Wise Men of G.", who built a hedge round a cuckoo and went to sea in a bowl.

**Gothenburg, Göteborg**, chief tn., prov. G. and Bohus (1,950 sq.m.; pop., 443,000), Sweden; pop., 242,000, mth. of Göta-elf; shipb., textiles, machinery, margarine; naval and free port.

**Gothic**: see LANGUAGE SURVEY, *Germanic*. Records of G. only extant in W. Goth; e.g., Ulfilas' trans. of Bible 4th cent. A.D.; oldest surviving record of Germanic. **G. architecture**, originated in N. France in 11th cent.; characterized by the pointed arch and gen. loftiness of lines, giving an aspiring

replace fresco, (q.v.) (Van Eyck; Cimabue; Witz): see also ART, HISTORY OF. **Late G.** (15th cent.) accentuates ornament.

**Gothic**, (print.) the early black-letter types of which "Old English," "Text," and the German text of to-day are descendants.

**Goths**, Germanic race on lower Vistula: wandered in 2nd cent. to Black Sea and divided into E. and W. Goths. W. Goths weakened before Huns and in A.D. 395, and after, under Alaric, invaded Italy, and then founded Empire N. and S. of Pyrenees. This was crushed in 507 by Chlodwig and in 711 by Arabs. E. Goths, after collapse of Huns, led by Theodoric (Dietrich von Bern) went to Italy and founded Empire there. In 555 they were annihilated by Narses.

**Göttingen**, tn., Hanover, Prussia; pop., 41,550; univ. founded by Geo. II of Eng., 1734; botanical gdns.; observatory; manuf. surgical instruments.

**Gottland**, 1) largest Baltic isl. (1,150 sq. m.); Swedish; chalky plateau with steep rocky cliffs: agric. and cattle; chf. tn., Visby. 2) Swed. prov. (1,225 sq.m.) inclgd. 1) and certain other isls.; pop., 57,000.

**Gouache**, painting in water-colours rendered opaque by mixture of gum arabic, and used as body colours. Employed by Medieval miniaturists and to end of 18th cent., when largely superseded by transparent washes. See WATER-COLOUR.

**Gouda**, tn. S. Holland, on Riv. Yssel; pop., 29,200; butter and cheese; pipes, pottery.

**Gouge**, (tech.) wood-working tool; chisel with rounded instead of flat section, for working concave surfaces.

**Gough, Sir Hubert de la Poer** (1870-), Brit. soldier; brig.-gen., III Cavalry Regt., at the Curragh, 1911; caused serious polit. crisis by attitude towards Ulster, 1914; commander of new V Army, France, 1914; played import. part in battle of Somme; much criticised when in charge of Ypres offensive, 1917; forced to fall back with heavy losses before main strength of German offensive, 1918; deprived of command; head of Brit. mission to Baltic States, 1919; retired, with rank of general, 1922. **G., Hugh**, 1st. visct. (1779-1864), Brit. soldier; assisted in capture of Cape Town and defeat of Dutch fleet, Saldanha Bay, 1796; served under Wellington in Portugal, 1809; comm.-in-chf., China, 1841-42; in India, 1843-49; commanded in person during Sikh Wars, 1845-49; created bn., 1846; visct., 1849.

**Goulash**, Hung. dish; pieces of meat well spiced and stewed.

**Gould**, Sir Frcis. Carruthers (1844-1925), Eng. politician and caricaturist; illustrated Christmas numbers of *Trull* from 1879; *Pall Mall Gazette*, 1887-93; on staff of *Westminster Gazette* from its fndtn.; *Froissart's Modern Chronicles* (2 vols.) 1902, 1903.



Gothic Window

quality; e.g., in the case of churches, leading the eye to High Altar; in Fr. usu. 2-towered façade (Rheims); in Eng. and Ger. single tower (Salisbury Cathed.; Freiburg). **G. sculpture** introduced into archit.; graceful drapery, animated expression (Apostles at Chartres). In **G. painting**, panel pictures

**Gounod**, Charles (1818-93), Fr. composer; operas: *Faust*; *Romeo and Juliet*; oratorio: *The Redemption*; songs and hymns: *Ave Maria*; *There Is a Green Hill*; *Maid of Athens*.

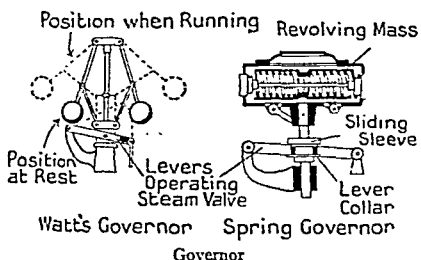
**Gourd**, 1) generic name for plants of family *Cucurbitaceae*, and for their hard, bulbous fruits (e.g., melon, pumpkin, marrow, etc.); 2) vessel made from dried and hollowed-out fruit of oriental plants of genus *Lagenaria*. See CALABASH.

**Gourmont**, Rémy de (1858-1915), French novelist, essayist, and critic; fndd. *Mercur de France*, 1890, to which he contributed *Epilogues*, 1903-13; *Promenades Littéraires* and *Promenades Philosophiques*, 1904-13; *Le Problème de Style*, 1907; novels: *Les Chevaux de Diomède*, 1897; *Une Nuit au Luxembourg*, 1906.

**Gout**, (med.) disease in wh. joints become exceedingly painful owing to deposits of sodium biurate; caused by an excess of uric acid in the blood. **G-fly**, small fly, of family *Oscinidae*, whose larvae live in the stalks of grass and corn and cause barren ears. **G-weed**, *Ægopodium podagraria*, umbelliferous plant, 12 in. high, white flowers; leaves are eaten as a vegetable in some country districts; used in folk medicine as a diuretic and sedative in cases of gout and sciatica, and externally as a fomentation.

**Government**, administration of a State; also govt. organs., esp. (in Eng.) the Cabinet. **G. monopoly**, assumptn. by State of sole rights in cert. enterprises (e.g., in Post Office); see MONOPOLY.

**Governor**, (tech.) device for regulating speed of engines and other moving machinery. Most commonly used is *centrifugal G.*



in wh. 2 or more revolving weights are attached to jointed levers controlled by weight or spring; if velocity becomes too great, centrifugal force causes them to fly apart, thus throttling steam supply. Same type of G. regulates speed of gramophone motor by application of brake.

**Governor-general**, gov. of one of Brit. self-gov. dominions, appointed by kg. on advice of dominion government.

**Governour**, The, treatise by Elyot (q.v.),

1531; earliest work in Eng. on mental, moral, and physical education.

**Gower**, John (c. 1325-1408), Eng. poet; *Confessio Amantis*, c. 1386; *Speculum Meditantis* (Fr.); *Vox Clamantis* (Latin).

**Gower**, penins., Glam., S. Wales, extending W. from Swansea, 15 m. by 5.

**Gowrie**, territorial dist. of Perthsh., Scotland. **G. Conspiracy**, attempt by Earl of Gowrie and others to kidnap James VI of Scotland: frustrated at Perth in 1600.

**Goy**, (Heb., pl. *Goyim*), Gentile.

**Goya y Lucientes**, Francisco (1746-1828), Span. painter: *Family of Charles IV*; *Knife-grinder*; etchings: *Horrors of the War*; *Tauromaquia*.



Goya

**Goyaz**, chf. tn., Brazilian State, Goyaz (285,000 sq. m., pop., 512,000), on Vermelho Riv.; pop., 21,200; cattle-breeding.

**Goyen**, Jan van (1596-1656), Dut. painter, 7 pictures in Nat. Gallery, London.

**Gozo**, Brit. isl. (25 sq.m.) in Mediterranean, 3 m. N.W. of Malta (q.v.), by which it is administered; pop., 22,500; cap., *Victoria* (pop., 5,200).

**Gozzoli**, Benozzo (1420-98), Tuscan painter, contemp. and assistant of Fra Angelico; mural paintings in Campo Santo, Pisa.

**G.P.**, abbr., 1) Graduate in Pharmacy. 2) *Gloria Patri* (Lat.), "Glory to the Father." 3) General paralysis. 4) General practitioner.

**G.P.I.**, abbr. general paralysis of the insane.

**G.P.M.**, abbr. Grand Past Master (Freem.).

**G.P.O.**, abbr. General Post Office.

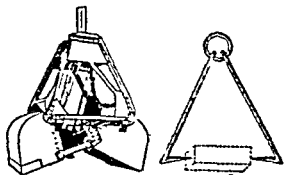
**G.P.R.**, abbr. *Genio Populi Romani* (Lat.), "to the genius of the Roman people."

**G.R.**, abbr. *Georgius Rex* (Lat.), King George.

**Graal**: see GRAIL.

**Grab**, clutching device or container on a

crane to lift loads or coal; closes automat. when being hoisted and opens when strain is relaxed. *Travelling g.*, truck on derrick of a crane for carrying or hoisting goods.



Grabs

**Gracchus**, **Tiberius** (163-133 B.C.), and his bro. **Gaius** (153-121 B.C.), Rom. tribunes; prop. radical social reforms; both killed in riots. See AGRARIANISM.

**Grace**, William Gilbert (1848-1915), Eng.

cricketer; holder of most cricketing "records" until eclipsed by J. B. Hobbs (*q.v.*).

**Grace**, 1) elegance, delicacy; charm, refinement; air or degree of willingness with which something is done, good manners; favour or kindness, respite (act of *g.*, days of *g.*); 2) (theol.) divine clemency and favour towards mankind ("by the grace of God"); *state of g.*, state of reconciliation with God, centre of various theol. controversies, *e.g.*, relation betw. grace and free-will, and respective value of *good works* and the *sacraments* as a *means of grace*; 3) thanksgiving before and after meals; 4) form in addressing duke, duchess, or abp.; 5) (mus.) flourish or trill; 6) (class. mythol.) *Three Graces*, sister goddesses associated with the Muses: Aglaia, Euphrosyne, and Thalia. **G. notes** (mus.) added to the melody as adornment, but without affecting the metre or time-measure.

**Gracian y Morales**, Baltazar (1601-58), Sp. Jesuit writer; supporter of *Góngorism*; see GÓNGORA.

**Gracioso**, generic name for shrewd, presuming, confidential servant of Span. comedy; 1st definite shape given to character by Lope de Vega (*q.v.*); adopted also in France.

**Gradient**, **Electrical**: see POTENTIAL DIFFERENCE.

**Gradual**, (R.C.Ch.) 1) *antiphon* (*q.v.*) sung during Mass after the Epistle; 2) book for use of choir, containing musical portions of the Mass. **G. psalms**: see DEGREES, SONGS OF.

**Graduate**, holder of university degree.

**Graduated taxation**, that based on a sliding scale; see TAXATION.

**Gradus ad Parnassum** (Lat.), "Step to Parnassus"; dictionary of prosody.

**Graeco-Roman**, (wrestling) style in wh.

no tripping is allowed, and no hold below the hips. Both shoulders touching the ground constitutes a "fall."

**Graffito**: see SCRAFFITO.

**Grafting**, 1) (hortic.) insertion of living bud or shoot (scion) into another plant (stock), usu. of allied species to form new growth. Various methods: *Budding*, grafting of bud by inserting in slit in bark of stock; *splicing*, scion cut obliquely and inserted in similar slit in stock; *whip g.*, both scion and stock cut obliquely, fitted together and tied with bast, space betw. them being filled with *G. clay* or *wax*. 2) (Med.) Living tissue (skin, bone, or gland) from person or animal inserted to replace injured tissue.

**Grafton**, Dukes of, title in peerage of England: **Henry Fitzroy** (1663-90), natural s. of Charles II and Barbara Villiers; cr. Duke of Grafton, 1675; comm. royal troops in Somerset, in Monmouth rebellion, 1685; joined William of Orange, 1689; killed at storming of Cork; his s., **Charles**, 2nd duke (1682-1757); his s. **Augustus Henry**, 3rd duke (1735-1811), Sec. of State under Rockingham, 1765; Privy Seal in North govt., 1771-75, and in Rockingham govt., 1782; his s., **George Henry**, 4th duke (1760-1844); his g.s. **William Henry**, 6th duke (d. 1882), was succ. by his bro., **Augustus Chas.**, 7th duke (1821-1918), served in Crimean War, 1854; his g.g.s. **John Chas. Wm.** 9th duke (b. 1914; succd. 1930), is hereditary ranger of Whittlebury Forest and hered. gamekeeper of Newmarket.

**Grafton**, Eng. hunt. fndd. by Duke of Grafton in 18th cent.; hunts Northants.

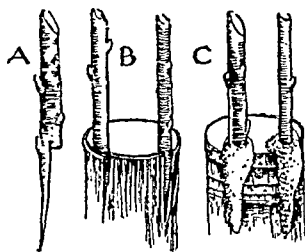
**Graham**, John, of Claverhouse, Visct. Dundee (c. 1649-89), Scot. soldier; vigorous attempt to suppress Covenanters' (*q.v.*) rebellion, 1678; deftd. at Drumclog, 1679; raised body of Highlanders agst. William III, 1689; won battle of Killiecrankie (*q.v.*) in which he was mortally wounded.

**Grahame**, Kenneth (1859-1932), Eng. author; *The Golden Age*, 1895, and *Dream Days*, 1898, are studies of childhood; *The Wind in the Willows*, 1908.

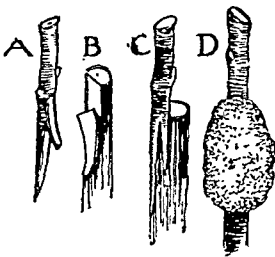
**Grahame-White**, Claude (1879- ), Eng. engineer and aviator; 1st Englishman to obtain aviator's certificate of proficiency, 1909; entered many flying races and won Gordon Bennett Cup, America, 1910; fndd. 1st Brit. flying school at Pau, France; superintended construction of govt. aeroplanes at outbreak of World War; *The Aeroplane: Past, Present and Future*, 1911; etc.

**Graham's Land**, part Antarctica, Brit. dependency of Falkland Islands (*q.v.*).

**Grahamstown**, 1) tn., Cape Prov., S. Africa; univ. coll.; Anglican and R. Cath. bps.; agriculture and pasture; pop., 15,000 (7,000 whites). 2) Gold-mining tn., N. Island, New Zealand; pop., 5,300.



Rind or Crown Grafting  
A) Scion cut to fit stock; B) Scion inserted on branch of stock. One, two or three scions may be inserted in common stock. C) Inserted scions covered with grafting-wax or puddled clay in which a little hay is mixed.



Whip or Tongue Grafting  
A) Scion prepared; B) Stock prepared to receive scion; C) Scion in position; D) Waxed, to make airtight and hold firmly in position.

GRAFTING

**Grail** or **Graal**, in Med. legend, cup used by Christ at Last Supper, in wh. Joseph of Arimathea caught Christ's blood; kept by Knights of the Grail; vanished when approached by anyone not perfectly pure; *Arthurian Cycle* centres in search for it when lost; further developed by Wolfram v. Eschenbach in *Parsifal*, (q.v.); see MALORY'S *Morte d'Arthur*.

**Grain**, 1) kernel of wheat, rye, oats, barley, etc.; also used collectively; any small, hard particle, or small portion; hence 2) wt. (0.065 gram) common to all current Brit. and U.S. systems;  $437\frac{1}{2}$  gr. = 16 drams or 1 oz. (avoirdupois); 480 gr. = 1 oz. (troy or apothecaries'); 24 gr. = 1 dwt. (troy); 20 gr. = 1 scruple (apothecaries'); 3.163 gr. = 1 carat (q.v.). **G.-weevils**, group of small beetles; most numerous in tropics (*palm-W.*); represented in Europe by *corn-W.* and *rice-W.* A pest in granaries.

**Grallae**, fourth order of birds in the Linnaean system, wh. incldd. the flamingo, spoonbill, ibis, heron, avocat, woodcock, etc.

**Grammar school**, endowed school of Elizabethan or earlier foundation, to meet local requirements in Gt. Brit.; now usu. of public school type (e.g., Sedbergh, Bedford G. S., etc.) or secondary school receiving parliamentary grant under Bd. of Education.

**Gramme**, metric unit of wt., = wt. of 1 cu. centimetre of water; 15.43 grains.

**Gramme-atom**, (phys.) of any element is its at. wt. in grammes; G.-A. of all elements contains same number of atoms. Similarly, the gramme-molecule of a substance is molecular wt. in grammes.

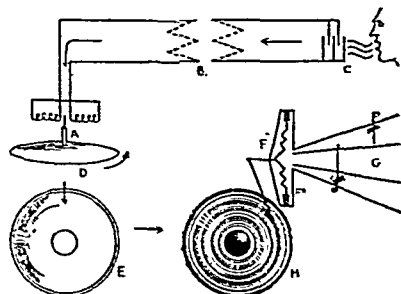
**Gramme-molecule** (abbr., mol.), term used in physics to indicate the quantity of a substance containing the same number of grammes as its molecular weight; thus, as oxygen = 16 and hydrogen = 1.0078, 1 mol.  $H_2O$  (water) = 18.0156.

**Grammont, Philibert**, Comte de (1621-1707), Fr. courtier, prominent at Charles II's Court from 1662; his *Memoirs* were written by Anthony Hamilton (1713).

**Gramont, Antoine Agénor Alfred**, Duc de (1819-80), Fr. statesman; as For. Min. 1870, involved in immed. causes of Franco-Pruss. War.

**Gramophone**, modern form of Edison's phonograph. *Record* in form of disc (shellac, cellulose acetate, synthetic resin) with spiral groove, wavy in accordance with sound. Rotated on clockwork or elec. *turn-table*. Needle (steel, fibre, tungsten) attached by lever to centre of diaphragm of *sound-box*, rests in groove and transmits waviness of same to diaphragm, wh. acts on air in *horn*. For good reprod. this must open out from sound-box according to logarithmic law; the wider the open end of horn, the lower the notes possible to reproduce. *Recording*

on thick cakes of special wax, by needle operated magnetically by amplified current from microphone; record gilded or silvered, then coated with copper by electrolysis, a



Making of a gramophone record

- A) Sapphire cutter—operated magnetically
- B) Amplifier
- C) Microphone receiving sound
- D) Rotating wax cylinder
- E) Matrix
- F) Sound-box membrane
- G) Horn
- H) Record

negative thus being obtd. This is not used, but is reprod. by electrotyping, produc. *matrix*, wh. is used to impress shellac or other material in hot state. For electr. reprod. see RADIO-GRAMOPHONE.

**Grampians**, great chain of heather-clad mtns. in centr. Scot., comprising many ranges; *Ben Nevis*, 4,406 ft., highest peak in British Isles.

**Grampus**, Killer whale, *Orca*, one of largest and most ferocious of cetaceans; ranges from Greenland to Australia. Only cetacean which preys upon other members of its own order. Grows to length of 20 ft. Several will combine to attack and kill large fin-whales.

**Granada**, cap. of G. (4,900 sq.m.; pop., 650,000), Spain, on N. slope of Sierra Nevada; pop., 109,000; Alhambra; cathed. (tombs of Ferdinand and Isabella); univ. fndd., 1531.

**Granadilla**, edible fruit of the passion flower (q.v.).

**Granados Campina**, Enrique (1867-1916), Span. composer; opera: *Goyescas*, etc.

**Granby**, John Manners, Marq. of (1721-70), Eng. soldier; eldest son of 3rd Duke of Rutland; M.P. for Grantham, 1741; colonel of "Leicester Blues," 1745; as lieut.-gen., served at Minden, 1759; comm.-in-chf. of Brit. forces in Germany, 1759; subject of 2 portraits by Reynolds.

**Gran Chaco**, S. Amer. forest region on borders of Paraguay, Bolivia, and Argentina, inhabited by nomadic Indians; tin in S.; cause of war between Bolivia and Paraguay, 1932-33.

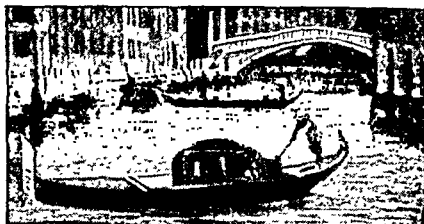
**Grand**, Sarah, pseud. of Frances Elizabeth M'Fall; Eng. novelist; mayoress of Bath,



1923, '25, '26, '27; *The Heavenly Twins*, 1893; *The Modern Man and Maid*, 1898; *Babs the Impossible*, 1900; *Variety*, 1922.

**Grand Almoner of England**, hereditarily office held by Marquess of Exeter, which includes distrib. of certain alms on occasion of a coronation.

**Grand Canal**, 1) S. Ire.; from Dublin to Riv. Shannon; length 165 m.; 64 locks. 2) Main thoroughfare, Venice; S-shaped



Grand Canal, Venice

waterway (2½ m.) dividing city into 2 main islands; many splendid palaces on banks; princ. bridge Rialto (*q.v.*).

**Grand Canyon**, gorge, Colorado Riv., Arizona, U.S.A.; 217 m. long; max. depth, c. 5,900 ft.; cuts through plateau 7-9,000 ft.



Grand Canyon

abv. sea-lvl.; splendid colour effects of rock; interesting geological strata; **G. C. National Park**, (1,009 sq.m.), most impressive section of gorge.

**Grand Cross**, highest class in most orders of knighthood.

**Grand Duke**, title of the princes of the former Russ. Imperial family.

**Grandee**, highest rank of Span. nobility since the 13th century.

**Grand Marnier**, Fr. liqueur with foundation of brandy; flavoured with orange.

**Grandmontines**, strict eremitical order of reformed Benedictines founded in 11th cent., and principally confined to France; dissolved shortly before Fr. Revolution.

**Grand National**, princ. English steeple-

chase (*q.v.*), 4 m. 856 yds.; fndd. 1839; run at Aintree in 1st wk. of flat-racing season.

**Grand Prix (de Paris)**, (horse-racing) run annually in June at Longchamps, near Paris, since 1863, for 100,000 frs. (1 m. 7 fur.).

**Grand Rapids**, tn., Michigan, U.S.A.; pop., 168,600; furniture and subsidiary manufs.; flour milling; aeroplanes; foundry products.

**Grand Teton**, national park (1929) in Wyoming, 150 sq.m.; includes noblest scenery of Teton Mountains.

**Grangemouth**, seaport, Stirlingsh., Scot., on Firth of Forth; pop., 11,800.

**Granicus**, riv., Asia Minor; scene of defeat of Persians by Alexander the Great, 334 B.C.

**Granite**, very hard, crystalline, granular rock of igneous origin, of grey or pink colour, chiefly composed of quartz and feldspar.

**Granite Peak**, mtn. of Beartooth Range, Montana, U.S.A.; 12,850 ft.

**Granite State**: see NEW HAMPSHIRE.

**Gran Sasso d'Italia**, highest mtn. chain of Apennines, Italy; situate in Abruzzi; Monte Corno, 9,580 ft.

**Grant**, Ulysses Simpson (1822-85), Amer. gen. of Federal Army in Civil War; 18th Pres., 1869-77.

**Granta**, local name for Riv. Cam, above Cambridge, England.

**Grantham**, munic. bor., Lincs, Eng., on Riv. Witham; pop., 19,700; Early Engl. church with spire 280 ft. high.

**Granulate**, (techn.) process of splitting up to size of grain, e.g., sugar.

**Granulation**, (med.) formation of new tissue during the healing of wounds.

**Granville**, Antoine Perrenot de, Cardinal (1517-1586), Fr. eccles. and statesm.; counsellor of Charles V and Philip II.

**Granville**, 1) **John Carteret**, Earl (1690-1763), Eng. statesm.; succeeded his father as Bn. Carteret, 1695, and his mother as E. Granville, 1744; envoy to Sweden, 1719-20; Ld.-Lieut. of Ireland, 1724-30; opposed Walpole, 1741, and became very unpopular through his attachment to Hanoverian rather than Eng. interests; failed in attempt to form cabinet, 1746. **G. Leveson-Gower**, 1st Earl of new creation (1773-1846), Eng. diplomatist; 3rd son of 1st Marquess of Stafford; Ambass. at St. Petersburg, 1804-05; Brussels, 1816; and Paris, 1824; created Visct. G., 1815, and Earl G., 1833; his son, **G. George Leveson-Gower**, 2nd Earl (1815-91); Eng. statesm.; entered H. of Commons, 1836; H. of Lords, 1846; Under-Sec. of State for Foreign Affairs, 1840-41; succeeded Palmerston in Foreign Office, 1851-52; Pres. of the Council, 1852-54; unsuccessful in attempt to form cabinet, 1859; Sec. of State for Colonies, 1868, and Sec. for Foreign Affairs, 1870-74, 1880-85.

**Granville-Barker**, Harley G. (1877-), Eng. playwright and producer; *Prunella* (with Laurence Housman), 1906; *The Voyage Inheritance*, 1905; with his wife, Helen, translations from Spanish plays, *A Lily among Thorns* (G. Martínez Sierra), 1927; *The Lady from Alfaceque* (Joaquin and Serafin Alvarez Quintero), 1927.

**Grape**, fruit of the vine (*q.v.*). **G.-fruit**, the fruit of *Citrus decumana*, with smooth, acid rind, and juicy, pleasantly acid pulp; main supplies from W. Indies and Florida; S. Africa and New Zealand also exporting. **G.-hyacinth**, *Muscarii*, liliaceous plant, with blue flower in dense racemes; fnd. chfly. in Mediterranean region. **G.-shot**, cluster of small iron balls, wired together on a base, shot from a smooth-bore gun; disperse at a short distance from the muzzle; obsolete. **G.-sugar**: see GLUCOSE.

**Graphite**, form of carbon; soft, black shiny substance; when mixed with fire-clay used to make crucibles; with clay to make lead pencils; also used as polish and lubricant. Found native, but chfly. made in elec. furnace from anthracite (Acheson graphite).

**Graphology**, art of interpretg. charact. from hand-writing.

**Grasmere**, vill., Westmor., Lake Dist., Eng.; pop., 1,100; close to **Grasmere Lake** (1 m. by  $\frac{1}{2}$ ); Wordsworth associations.

**Grass**, plants of the family *Grammeae* and class monocotyledons, with hollow, jointed stems, narrow, sheathing leaves, and flowers in spikelets, which are united into spikes. There are over 300 genera and ten times as many species, wh. include cereals, bamboos, and reeds. **G.-cloth**, cloth made of fibres of grass or ramie (*q.v.*).

**G.hoppers**, orthopterous insects of family *Locustidae*, with legs adapted for jumping; produce a chirping sound by friction of wing-covers; generally green, with markings resembling leaves. **G. snake**, the ring snake (*q.v.*).



Grasshopper

**Gratian** (Flavius Gratianus Augustus 359-383), Roman Emp. of the West, 375; deified by usurper Maximus.

**Gratianus**, Franciscus (12th cent.), Camaldulian compiler of *Decretum Gratiani*, a collection of the canon of the Church.

**Graticules**, (tech.) lines engraved on glass, or crosswires, in eye-piece of telescopes and microscopes, to serve as reference for position of object observed, *e.g.*, transit of star, object in measuring microscope.

**Gratis** (Lat.), free of charge, for nothing.

**Grattan**, Henry (1746-1820), Irish statesman; entered Irish Parliament, 1775; procured repeal of Poyning's Law, 1782; retired, 1797; returned to oppose legisl. union with Eng., 1800; elected to Imperial Parliament, 1806; *Speeches*, ed. by his son, 1839-46.

**Graubünden**: see GRISONS.

**Grave**, sign (˘) for lowered accentuation.

**Gravel**, 1) disintegrated portions of rock; mixture of small pebbles and sand, clay, etc., deposited on shore or in river-bed; used for making paths, etc., and in the composition of concrete. 2) (Med.) A gritty, crystalline deposit in urine.

**Gravelotte**, Fr. vill., near Metz; pop., 500. Scene of Ger. victory, 18 Aug., 1870, resulting in the Fr. being driven into Metz.

**Graves**, Alf. Perceval (1846-1931), Irish author; a fndr. of the Folk Song Society and of the Irish and Welsh Folk Song societies; trans. many Welsh and Irish songs into Eng. verse, esp. those of Ceiriog Hughes, the Welsh poet; wrote song *Father O'Flynn*.

**Graves**, Fr. wine of Bordeaux, gen. white.

**Graves' disease**: see GOITRE.

**Gravesend**, co. bor., Kent, Eng., on Riv. Thames; river port (incl. in Port of London); pop., 35,500.

**Gravitational field**, (phys.) any space in wh. G. force is exerted upon matter.

**Gravity**, (phys.) force of attrac. existing betw. all matter. Force of earth's attraction on body is called weight, and is propor. to mass. Attraction of sun for planets keeps them in their path. Acceleration prod. in bodies by earth's attraction at surface is abt. 32 ft. p. sec. p. sec. Decreases as sq. of distance from centre of earth. Any 2 bodies attract one another, with a force propor. to product of their masses and, inversely, propor. to sq. of their distance apart.



Thomas Gray

**Gray**, Stephen (c. 1670-1736), Eng. pioneer in electrical discovery. **G., Thomas** (1716-71), Eng. poet; *Elegy Written in a Country Churchyard*. His *Odes* are epoch-making in hist. of Eng. poetry, as a foreshadowing of the Romantic Revival.

**Grayling**, salmon-like fresh-water fish, found Europe, N. Asia and N. America; greenish-brown back; large dorsal fin.

**Gray's Inn**, Inn of Court (*q.v.*), N. of High Holborn, London; Hall (1555), chapel of same period with later additions.

**Gratz**, chf. tn., Styria, Austria, on Riv. Mur; pop., 152,700; univ. (1586); seat of bp.; iron, leather, machinery.

**Grease-paint**, used for theatrical makeup (*q.v.*). Basis, cocoa-butter, with pigment incorporated by grinding.

**Great Barrier Reef**, series coral reefs N.E. coast Australia, 10-150 m. from shore (av. 15-20 m.), extending c. 1,200 m. from Torres Strait to a point opp. Rockhampton, Queensland; broken by channels; route within the reef affords calm passage for steamers.

**Great Bear** (constell.): see URSA MAJOR.

**Great Bear Lake**, lake (c. 11,200 sq.m.), N.W. Territories, Canada, on Arctic Circle; discharges through Great Bear Riv. into Mackenzie Riv. (q.v.).

**Great Britain**, largest of Brit. Isles; comprises Eng., Wales, and Scot.; extreme length c. 608 m.; extreme width c. 320 m.; extreme points: N., Dunnet Head, Caithness; S., Lizard Point, Cornwall; E., Lowestoft Ness, Suffolk; W., Ardnarmurchan Point, Argyllsh.; area, 88,748 sq.m.; pop., 44,790,485.



**HISTORY**—**Constitution**: United Kgdom. of Gt. Brit. and N. Ireland. Hered. monarchy (Eng. House of Saxe-Coburg-Gotha, since 1917 Windsor) with male

and female succession, sons having preced. over daughters. King has right of veto (not exercised) over parl. decrees; can only counter-sign decrees. Parl.: Hse. of Lords (q.v.), Hse. of Commons (q.v.). Pr. Min., nominated by Kg., proposes ministers; all must have the confidence of lower house. The Brit. Emp. (Commonwealth) is a wider State in wh. Gt. Brit., the Dominions, Crown Colonies and Dependencies and India are united the King being head of all the divisions ("Emperor" of India). First known inhabts. of Britain were Celtic (Goidels and Brythons); invaded by Julius Caesar, 55 B.C. and conquered by Agricola A.D. 59, then under Rom. rule; after A.D. 400 immigration of Germanic Angles (*England*) and Saxons. Norman Conquest, 1066. From 1154 dyn. of *Anjou* (*Plantagenet*); 1215, Magna Carta (foundation of Eng. Constit.; limitation of royal power and establmt. of people's rights); dispute, 1350, over Continental possessions (1339-1453, *Hundred Years' War* agst. Fr.), and succession disputes (1459-85, *Wars of Roses*—Red Rose, House of Lancaster; White Rose, House of York). From 1485 Tudor dynasty; Henry VIII assumes headship of Ch. of E. and suppresses monasteries; under Elizabeth (1558-1603), Anglican Ch. finally separ. from Rome, colonisation in N. Amer., East India Com-

pany, Shakespeare, execu. of Mary Stuart, destruct. of Span. Armada. From 1603, Stuart dyn. (Scot. and Eng. under one Kg.); Gunpowder Plot, Civil War, execu. of Charles I; 1649, Commonwealth and Protectorate under Oliver Cromwell; 1660 monarchy restored (Charles II); 1673 Test Act (exclu. of Catholics from State offices; 1679 Habeas Corpus Act (protec. of persons), formation of parties *Whigs* (Liberals) and *Tories* (Conservatives); 1688 Revolution, flight of James II, William of Orange (William III) procl. Kg. Powers of monarchy limited by Bill of Rights. Union with Scot. 1707. From 1714 Hanoverian dyn.; unsuccessful Jacobite risings 1715, 1745. In war agst. Fr. (Seven Years' War) Eng. extended her colonial possess.; by Amer. War of Independence



His Majesty KING GEORGE V (George Frederick Ernest Albert), by the Grace of God, of Great Britain, Ireland and the British Dominions beyond the Seas, King, Defender of the Faith, Emperor of India. Created D. of York, E. of Inverness and Baron Killarney, 1802 Prince of Wales and E. of Chester, 1901. Succeeded his father, Edward VII, 1901. Among overseas and foreign honours held by him are: Legion of Honour (France); Annunciation (Italy); Elephant (Denmark); Seraphim (Sweden).

His Consort, QUEEN MARY (Victoria Mary Augusta Louisa Olga Pauline Claudine Agnes), only daughter of H.R.H. Princess Mary (d. of 1st D. of Cambridge) and H.H. the D. of Teck. Both King George V and Queen Mary are direct descendants of George III, the King in the fourth generation, the Queen in the third.

(1775-83) Amer. colonies became independent; 1793-1815 war agst. Revol. France and Napoleon, victories of Nelson (Nile, Trafalgar), Wellington (Peninsula, Waterloo); parl. reform (Reform Acts, 1832, 1867, 1885.). In 19th cent. great indus. develop. and further colonial develop. Catholic emancipation, 1829; repeal of Corn Laws, 1846, Crimean War, 1854; Ind. Mutiny, 1857; 1st (Irish) Home Rule Bill introd. by Gladstone, 1886. S. Afr. War, 1899-1902; Alliance with Jap., 1902 and *Entente* (q.v.); World War (q.v.) 1914-1918; Representation of the People

Act (a further Reform Act), 1918; Irish Free State set up, 1922. First Labour Ministry under MacDonald 1924, second 1929. National Government formed with MacDonald Prime Minister, 1931. *See also UNITED KINGDOM.*

**Great burnet**, *Sanguisorba officinalis*, perennial herb, reddish-brown flowers; grows in meadows and moist places; also known as *garden B.*, *salad B.*; used in folk med. as a tonic.



Great Burnet

**Great Dane**, large, powerful dog, resembling a lightly built mastiff (*q.v.*), with longer muzzle and smooth coat, usu. brindle.



Harlequin Great Dane

**Great Fish River**, 1) or Back's Riv., riv. (550 m.), N.W. Territories, Canada, flowing N.E. from L. Aylmer through lakes Pelly, Garry, and McDougall to an inlet of Arctic Ocean; not navigable. On King William Isl. at mouth, relics of Sir John Franklin's party were discovered, 1859. 2) Riv. (230 m.), Cape Prov., S. Africa; from Sneeuwberg S.E. into Ind. Ocean.

**Great Gable**, mtn., Cumberland, Eng. lake dist.; 2,949 feet.

**Great hundred**, equals 120 pieces, used espec. in egg trade.

**Great Mogul** (*i.e.*, Mongol), 1) European name for the Tartar Emperors of Delhi, rulers of Ind., 1526-1857. 2) Celebrated diamond, of which Koh-i-noor is possibly part.

**Great Northern Railway** 1) (Ireland), principal rly., N. Ireland, with terminus at Dublin (I.F.S.); mileage, 562. 2) (U.S.A.), operates betw. the Great Lakes and the Pacific; 8,367 miles. 3) *See LONDON AND NORTH EASTERN RAILWAY.*

**Great Power**, State wh., by means of its spec. instruments of power (population, financial strength, army, etc.) is in a position to exert a decisive influence in world politics. Only Great Powers have right to permanent seat in Council of League of Nations.

**Great Russians**, princ. branch of *Russians* (*q.v.*) (53%); Slavic race; mainly in Gt. Russia and Siberia (for *Little Russians*; *see UKRAINIANS*).

**Great Salt Lake**, Utah, U.S.A., c. 1,500 sq. m., fluctuating accdg. to water-level, 4,200 ft. abv. sea-lvl., yields 19% common salt; 6 times as saline as ocean; no fish; affluents, Jordan, Bear, and Weber rivs., but no outlet.

**Great Schism**, 1378-1417, division dur-

ing which rival popes each claimed to be sole head of the Church; *see ANTIPOPE*.

**Great Seal**. Distinctive seals, to guarantee genuineness of docmnts., date from Rom. times and in illiterate Mid. Ages became general. Most countries still use spec. or great seal, deriving from that of med. Kgs., to



Great Seal

attest important acts of State. In Eng. new great seal is cut at beginning of each reign. A separate "Lord Keeper" has sometimes been apptd., but normally custodian is Ld. Chanc., a special commission of sev. members being apptd. in his place whenever he goes abroad.

**Great Slave Lake**, lake in Mackenzie distr., N.W. Territories, Canada (c. 9,500 sq. m.); *see MACKENZIE RIVER*. **Lesser S. L.** (c. 480 sq. m.), in Alberta, Canada.

**Great Smoky Mtns.**, part of Appalachian system (*q.v.*); form part of border betw. Tennessee and N. Carolina, U.S.A.; highest point Mt. Guyot, 6,635 feet.

**Great Southern Railways**, rly., S. Ireland; comprises all rly. companies in I.F.S.; mileage, 2,187.

**Great Wall of China**, 1,550 m. long, 13-52½ ft. high, 19½-26 ft. thick, with gates and towers; built across N. China in 3rd cent. B.C. as protection agst. invasion. Now in a state of decay.

**Great War**: *see WORLD WAR.*

**Great Western Railway**, rly., England; serves Birmingham, Bristol, Exeter, Plymouth, Cornwall, Cardiff, S. Wales (Ireland); mileage 3,804. "Cheltenham Flyer," fastest steam train in the world (Swindon to Paddington, 77.3 m. in 65 min., 71.3 m.p.h.).

**Grebe**, family of diving birds, short-winged, oceanic or fresh-water, distrib. world-wide.



Great Crested Grebe

**Greco**, El, Domenico Theotocopuli (c. 1547-1614), Span. painter b. in Crete: *The*

*Stripping of Christ before the Crucifixion*, Toledo Cathed.; *St. Dominic*.

**Greece, Hellas**, repub., S. extremity of Balkan Penins., bounded on N. by Albania, Yugoslavia, and Bulgaria, and on N.E. by Turkey. Comprises mainland, almost divided into two (Sterea Hellas and Peloponnesus) by Gulf of Corinth, and islands: Crete, Euboea, Ionian Isls., Cyclades, N. Sporades, etc. Area 49,028 sq.m.; pop., 6,204,700 (increased by  $1\frac{1}{2}$  mill. refugees from Asia Minor since 1923). Central and N. Greece comprise Macedonia, with Chalcidice penins., W. Thrace, Thessaly, Epirus, Acarnania and Aetolia, Phthiotis and Phocis, and Attica and Boeotia; Peloponnesus comprises Achaia and Elis, Corinthia and Argolis, Arcadia, Laconia and Messenia.

Coast-line deeply indented, with gulfs of Arta, Corinth, and Corone on W., and gulfs of Nauplia, Aegina, and Salonika, etc., on E. Surface generally mountainous, with ranges enclosing or separating fertile valleys. In Macedonia, Riv. Vardar flows into Gulf of Salonika and Riv. Struma into Gulf of Rendina. In centr. Greece, Pindus range runs N. to S., throwing off spurs E. and S.E.; on E. coast of Thessaly Olympus is separated by Vale of Tempe (Riv. Peneus) from Ossa, with Pelion to the S.; farther S., Spercheius vall. divides Othrys from Oeta, and near coast of Gulf of Corinth, Parnassus overlooks Delphi. Attic Plain (Athens) is surrounded by amphitheatre of mtns. (*Cithaeron*, *Parnes*, *Pentelicus*, *Hymettus*), the N. ranges of wh. separate Attica from Boeotia. Riv. Achelous flows into Ionian Sea. In Peloponnesus N.-to-S. tendency of mtns. continued by Taygetus, wh. separates fertile Messenian Plain from Eurotas vall. in Laconia (Sparta). Arcadia a high tableland surrounded by a ring of mountains. In W. is vall. of Alpheus (Olympia), leading to flat coast of Elis; in E. the Argolic Plain (Argos, Mycenae, Tiryns, Nauplia).

Climate, mediterranean. Oak and pine forests grow on mtn. slopes; cypress, olives, and myrtles on lower ground; currants in Peloponnesus; tobacco in N. Greece; resinated wine; oranges in Ionian Is.; marble quarries (partially exhausted) in Pentelicus and Hymettus. Cap. *Athens*; chf. ports Piraeus, Salonika, Patras, Volo, Alexandroupolis.

**HISTORY** (includes whole area of the Aegean Sea): Stone and Bronze Age civilisations in Crete (Minoan), Cyclades (Cycladic), Argolic Plain (Mycenaean), and Gr. mainland (Hellenic); excavations of Schliemann (1873-85) and Evans (1893- ). Achaean Age 14th-12th cents. B.C. Dorian invasion c. 1100. Development of city States down to 500.

Fifth cent. B.C. saw defensive war against invading Persians (*see* ATHENS) and golden age of Hellenic culture, followed by subjugation to Macedon (338). After fall of Corinth (146) S. Greece made Rom. prov. of Achaia. At the division of the Empire G. became part of the Eastern (Byz.) Empire. Invasion of Germanic and Slav settlers in 4th-8th cents. A.D. Under Turkey in 15th century. Abortive rising 1769; War of Independence 1821-30; kgdm. 1832. Terr. extended N. in 1881 and again after Balkan Wars (1912-13). In 1916 G. joined Allies in World War. Treaty of Sèvres (1920) greatly extended terr., subsequently reduced by Treaty of Lausanne (1923) after disastrous war with Turkey; compulsory exchange of Gr. and Turkish nationals. Repub. 1924.

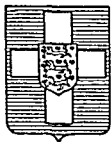
**Greek:** *see* LANGUAGE SURVEY, *Indo-Ger.* A group; the Greek alphabet, consisting of 24 letters, is probably based on the Phoenician alphabet. **G. art:** *see* ART, SURVEY OF. **G. fire**, inflammable material thrown in a burning condition as a war weapon; disc. by the Grks., c. 300 B.C.; improved on by the Turks. A mixture of sulphur, tow, resin, and petroleum, wh. also burnt on water (*scafire*). The principle, qualified by modern chemical science, was revived in the flame-throwers (*q.v.*) of the World War. **Greek key:** *see* KEY PATTERN.

**Greek Orthodox Church**, consists of all those Christians who acknowledge the primacy of the Patriarch of Constantinople, and are not in communion with the See of Rome. Rivalry had existed betwn. Bps. of Rome and Constantinople from mid. 4th cent., but the definite rupture did not occur until 729, when Gregory II excommunicated the Byz. Emp. Leo III. Var. attempts have been made to heal the schism, and there have been movements towards a rapprochement between the Gr. Ch. and the Ch. of England. Apart from the principal difference upon the question of Roman supremacy, the variations are mainly on points of ritual and discipline, e.g., the celibacy of the clergy.

**Greek wines**, produced chfly. on the Gr. Islands; strong, generally flavoured with resin and unpalatable to western taste.

**Greeley**, Horace (1811-72), Amer. journalist, politician, and author; fndd. New York Tribune, 1841; member of Congress, 1848-49; anti-slavery leader; unsuccessful candidate, repres. Lib.-Republican and Democratic parties, for Presidency, 1872; *The American Conflict*, 1864-66, etc.

**Green, John Richard** (1837-83), Eng. historian; *Short History of the English People* (1874), etc. **G., Thos. Hill** (1836-82), Brit. philos.; fellow of Balliol, Oxford, where he was most influential philosopher of his day.



**Greenaway**, Kate (1846-1901), Eng. water-colour artist; illustd. children's books with figures clothed in early 19th-cent. fashion.

**Greenbacks**, U.S. Treasury notes issued 1862, during the Civil War; they were inconvertible paper, and legal tender. Their value fell to 35 cents in the dollar. In 1879 specie payments were resumed and they became convertible.

**Greene**, Robert (1558-92), Eng. dramatist, novelist, and poet; *Friar Bacon and Friar Bungay*, etc.; *George-a-Greene, the Pinner of Wakefield*; *Pandosto* (romance, source of Shakespeare's *Winter's Tale*); *Groat's-worth of Wit* (pamphlet).

**Greenfinch**, common finch of gardens, lanes, and fields of Gt. Brit.; green and yellow plumage. Useful in destroying large quantities of insects during summer; collect in flocks on the stubble-fields in autumn. Widely distributed in Europe; winter visitor to N. Africa and Palestine.

**Green-fly**, a plant louse (*q.v.*), infesting many garden plants, esp. roses; exterminated by spraying with mixture of quassia and soft soap, or with paraffin.



winged Green-fly wingless

**Green-gage**, variety of plum with golden-green skin and delicate flavour. Orig. from France and called after Sir William Gage, who first imptd. it into Eng. (*c.* 1725). Known in Fr. as "Reine Claude."

**Green Howards** (Alexandra, Princess of Wales's Own Yorkshire Regiment), Brit. infantry regt.; old 19th Foot; raised 1688 (Sir Chas. Howard, col.); depot, Richmond (Yorks); record office, York: 24 battalions in World War. Name due to grass-green facings of (scarlet) uniform.

**Greenland**, Dan. isl., Arctic Ocean, 840,000 sq.m., (largest exc. Australia), of wh. only 34,000 sq.m., is ice-free coastland; pop., 16,600 (incl. 16,200 Eskimos). Many deep fiords; E. coast almost uninhabited; W. coast has milder climate, due to Gulf Stream. 12 settlements with majority of inhab.; Eskimos in N. and N.W. Exports kryolith, eiderdown, hides, and sealskins; ports: Godthaab and Godhavn. Claim of Norway to portion of East Greenland denied by Hague Tribunal 1932-33. Island discovered A.D. 900 by Icelandic sailors, who made first settlements; Danish colony 1721; interior explored since 1853.

**Green Mountain State**: see VERMONT.

**Green Mtns.**, Vermont, U.S.A.; part of Appalachian system (*q.v.*); highest peak, Mt. Mansfield, 4,393 feet.

**Greenock**, seapt. tn., Renfrewsh., Scot., on estuary Riv. Clyde; shipb.; manuf. sugar, machinery; second port Scot.; pop., 78,900.

**Greenore**, seapt., Co. Louth, I.F.S.; steamer service to Holyhead.

**Green River**, right trib. of Colorado Riv., Colorado and Utah, U.S.A., 650 miles.

**Green Room**, (theat.) dressing-room adjoining one side of stage.

**Greensand**, 1) (min.) glauconite, hydrated silicate of iron and sodium or potassium of varying composition; important base-exchange properties; (*see* ZEOLITES). 2) (Geol.) Upper and Lower G., two important strata in the cretaceous or highest division of the Mesozoic strata. *See* GEOLOGY.

**Greenwich**, met. bor. of London, on Riv. Thames, 5 m. below L. Bdg.; pop., 100,900. *Observatory*, through which passes the zero meridian of longitude accdg. to wh. *Standard* or *G. Time* is recorded. **G. Hospital**, bldg. on bank of Riv. Thames, on site of an ancient royal palace (*c.* 1440). Built, betw. 1664-1755, in 4 sections or *quarters*: King Charles's (*see* NAVAL MUSEUM); King William's (with Painted Hall designed by Wren); Queen Mary's (with chapel, destroyed by fire 1779, restored *c.* 1790); Queen Anne's, now used principally as Royal Naval College. **G. mean time**, mean *local time* (*q.v.*) of the meridian of Greenwich ascertained at G. Observatory, from movement of imaginary body; legal time of Gt. Brit. except during period of summer time (*q.v.*). Greenwich is 1st meridian of Zone Standard Time (*q.v.*). Internat. Astronom. Union, 1928, advised substitution for G.M.T. of term Greenwich Civil Time. **G. meridian**, the prime, or zero, M.; that from which longitude is reckoned.

**Greenwood**, Arthur (1880- ), Brit. Labour politician; lecturer on economics at Univ. of Leeds, etc.; Sec. to Ministry of Reconstruction, 1917-19; M.P. since 1922; Minister of Health, 1929-31; *Introd. to Study of Internat. Relations; The Education of the Citizen; The Labour Outlook*. **G., Fredk.** (1830-1909), Brit. journalist; joint ed. of *Cornhill*, 1862; ed. 1864-68; with Geo. Smith fndd. *Pall Mall Gazette*, 1865; ed. until 1880; ed. of *St. James's Gazette*, 1880-88; informed Brit. Govt. that the Khedive's shares in the Suez Canal were for sale, 1875; criticized severely the Gladstone administration, 1860-85.

**Gregorian Calendar**, revision of Julian Calendar (*q.v.*) introd. by Pope Gregory XIII in 1582; necessitated by accumulated discrepancy betw. calendar and tropical year due to mean Julian year being 11 min. 12 sec. too long, so that by 1582 the year was retarded by 10 days. This was remedied by reckoning the day after Oct. 4th in that year as Oct. 15th, and providing that leap year

(*q.v.*), instead of occurring every fourth year, should be omitted in those years that were divisible by 100 but not by 400; thus the year 1600 was a leap year, but 1700, 1800, 1900 were not. This calendar, now in almost universal use, was adopted by various countries at following dates: 1582, part of Italy, Spain, Portugal, France, Netherlands, Lorraine; 1584, Catholic Germany, Switzerland; 1586, Poland; 1587, Hungary; 1700, Protestant Germany, Denmark; 1700-40, Sweden; 1752, England; 1872, Japan; 1912, China; 1915, Bulgaria; 1917, Turkey, Russia; 1919, Yugoslavia, Rumania; 1923, Greece.

**Gregorian chant**, or *Plain-song*, official liturgical music of R.C.Ch. (named from its development by St. Gregory the Great (*q.v.*)), representing earlier type than secular music. Chief books: the *Graduale* (Mass music) and the *Antiphonarium* (music of the Divine Office); both recently revived by order of Pius XI. **G. Church**: see ARMENIAN CHURCH.

**Gregorovius**, Ferdinand (1821-91), Ger. histor.; *History of Mediæval Rome*.

**Gregory, St., of Nazianzus** (c. 329-c. 389), a father of the Eastern Ch., Metropolitan of Constantinople, surnamed "Theologus." **G. of Neocaesarea** (c. 213-c. 270), known as "Thaumaturgus" (the Miracle-Worker); Bp. of N. in Pontus. **G. of Nyssa** (c. 331-c. 396), a father of Eastern Ch.; Bp. of Nyssa. **G. of Tours** (538-594), Bp. of Tours; wrote *History of the Franks*. **G. the Illuminator** (c. 257-c. 337), reputed founder and patron saint of the Armenian Church.

**Gregory**, name of 16 popes and 2 anti-popes, of whom the most import., historically, are: **Gr. I**, St., the Great (594-604), last of 4 doctors of the Latin Church; sent St. Augustine, 596, and Mellitus (1st bp. of London), 601, to Eng. **G. VII** (1073-85), *Hildebrand*, excom. Emp. Hy. IV (*q.v.*); strong upholder of papal supremacy; estab. celibacy of clergy as regular practice in Cath. Christianity. **G. VIII** (1118-21), antip. **G. VIII** (1187). **G. IX** (1227-41), constant enemy of Emp. Fred. II; systematized Inquisition and entrusted it to the Dominicans. **G. XI** (1370-78), commanded investigation of Wycliffe's doctrines. **G. XIII** (1572-85), reformed the Calendar (*q.v.*).

**Gregory**, Isabella Augusta, Lady (1852-1932), Ir. playwright; dir. of Abbey Theatre, Dublin; short plays: *Spreading the News*, *The Workhouse Ward*.

**Greiffenhagen**, Maurice (1862-1931), Eng. painter; R.A. 1922; *The Idyll* in Walker Art Gallery, Liverpool; *The Judgment of Paris* in Sydney Nat. Gall.; *Women by a Lake and Dawn*, purchased by Chantry Trustees.

**Grenada**, Brit. isl., W. Indies, southernmost of Windward Isls., of which it is seat of

govt.; 133 sq.m.; pop., 66,300; cocoa, coffee, spices, rubber, cotton; cap., *St. George's*, on S.W. coast.

**Grenade, hand-g., bomb**, explosive missile, thrown by hand or catapult. Round, oval, or club-shaped. *Fuse* (*q.v.*) ignited bef. or at the moment of throwing (Mills G.); burns  $3\frac{1}{2}$  to 5 secs. bef. reaching *detonator*, wh. explodes the charge.

**Grenadier**, originally hand-grenade thrower. Traditional name of many famous regiments in Europe. **G. Guards**, 1st regt. of Brit. Foot Guards; originated as Royalist regt. in Flanders, c. 1660; recd. title of Grenadier in 1815, as reward for service at Waterloo.

**Grenadine**, syrup for cocktails, soft drinks, or cooking, made from pomegranates.

**Grenadines**, group Brit. islets (13 sq.m.), Windward Isls., betw. Grenada and St. Vincent; largest, Carriacou (pop., 7,100).

**Grenfell**, Sir Wilfred Thomason (1865-

), Brit. physician; med. missionary, Labrador, 1892; superintendent Internat. Grenfell Assoc. 1912; K.C.M.G., 1927.

**Grenoble**, chief tn., dépt. Isère, France; fortress; univ.; pop., 85,600.

**Grenville**: see BUCKINGHAM AND CHANDOS, DUKES OF.

**Grenville, Geo.** (1712-70), Eng. statesm., bro. of Richd. G., Earl Temple; M.P., 1741; Ld. of Admiralty, 1744; Ld. of Treasury, 1747-55; Naval Treasurer, 1756-62; Sec. of State for Northern Province, 1762; 1st Ld. of Admiralty, 1762; Pr. Min., 1763-65. **G., Sir Richd.** (c. 1541-1591), Brit. sailor; his ship "Revenge" fought 15 Span. ships (150 men against 5,000), 1591.

**Grenzmark, Posnanie**, Ger. frontier prov. betw. W. Prussia and Poland, formed 1919; area, 2,980 sq.m.; pop., 332,485; cap. *Schneidemühl*.

**Gresham**, Sir Thomas (1510-97), Brit. merchant; fndd. Roy. Exch., 1566; and Gresham Coll., 1575; formulated **G.'s Law**, i.e., that bad money tends to drive good money out of circulation; that metal coins wh. are under weight from abrasion, clipping, etc., remain in circulation while new full-weight coins will tend to be melted down for bullion or for use in the arts; that where coins of 2 metals (esp. gold and silver) have been in circulation side by side, the coins of the metal which are over-valued (i.e., having face-value higher than value of metal content in terms of the other metal) tend to remain in circulation, while the coins of the under-valued metal are melted down.



Sir Wilfred Grenfell



Sir Richard Grenville

**Gresham's School**, Holt, Norfolk; Eng. public sch. for boys; fndd. by Sir John Gresham 1555, and placed under management of Fishmongers' Company.

**Gretna Green**, vill., Dumfriessh., Scot., abt. 9 m. from Carlisle and close to Eng. and Scot. border (riv. Sark). From 1754, when Act was passed making clandestine marriages illegal in Eng., became notorious for celebration of runaway marriages, with (usu.) the local blacksmith or innkeeper officiating. In 1856, law was passed requiring one of parties to marriage to reside in Scot. for 21 days.



Gretna Green,  
The Smithy

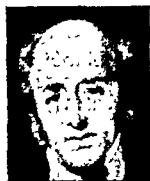
**Grétry**, André Ernest Modeste (1741-1813), Belg. operatic composer; *The Jealous Lover*, 1778; *Richard Cœur de lion*, 1784.

**Greuze**, Jean Baptiste (1725-1805), Fr. painter; *La Bonne Mère*; *Petite Fille au chien noir*.

**Greville**, Chas. Cavendish Fulke (1794-1865), Eng. diarist; sec. of Jamaica; clerk to Privy Council; *Memoirs*, 1817-60 (8 vols.), pubd. at intervals, 1875-87.

**Grévy**, Jules (1813-91), Fr. statesm.; Pres., 1879-87.

**Grey**, Chas. G., 2nd Earl (1764-1845), Eng. statesm.; 1st Ld. of Admiralty under Grenville, 1806; out of office 1807-30, when,



Earl Grey



Lady Jane Grey

with difficulty, he formed a ministry which passed Reform Bill, 1832; carried bill abolishing slavery throughout Brit. Empire, 1834; also, in same year, passed Poor Law Amendment Act and resigned office.

**Grey**, Lady Jane (1537-54), dau. of Duke of Suffolk; g-g-dau. of Henry VII; m. to Lord Guilford Dudley (son of Duke of Northumberland), May, 1553, and proclmd. Qn. on death of Ed. VI in July, in opp. to Mary, who had her and her husband arrested and exec. on Tower Hill.

**Grey of Fallodon**, Edward, 1st visct. (1862-1933), Eng. statesm.; For. Min., 1905-16; formed Triple Entente, with Fr. and Russia.



Lord Grey of  
Fallodon

**Grey Friars**: see FRANCISCANS.

**Greyhound**, lightly built dog with long limbs; swift runner; hunts by sight only; used for coursing (q.v.), and racing. **Italian g.**, small breed, used only as a pet. **G. racing**, races in wh. greyhounds pursue an electrically propelled "hare," on specially prepared tracks, either flat or with hurdles.

**Grey ointment**, (med.) ointment containing calomel, or mercurous chloride; used for the treatment of syphilitic sores.

**Greywacke**, kind of conglomerate sandstone, containing nodules of quartz, feldspar, slate, etc.

**Greywether**, block of sandstone or quartzite found on chalk downs in Dorset, Wilts, and Surrey.

**Grid**, 1) (radio) part of valve (q.v.). 2) (Elec. Engin.) System of widespread distribution of elec. power, area being covered by a connected high-tension network of grid-like plan, fed at various points (where cheap power available) by generating stations. **Time-synchronised g.**, alternating current grid in which periodicity is regulated so that a synchronous motor (q.v.) makes exact number of revolutions in given time. Hence any synchronous-motor-driven clock on G. keeps exact time. 3)

**G. in theatre**: see FLIES. **G.-iron**, bars of iron on wh. meat, birds, or fish are laid for grilling over a fire.

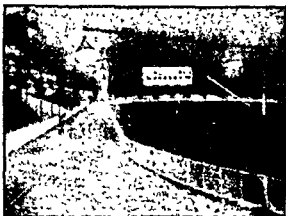
**Grieg**, Edvard (1843-1907), Norw. composer; *Peer Gynt*; *Norwegian Dances*.

**Griffes**, Charles Tomlinson (1884-1920), Amer. composer.

**Griffin**, fabulous animal in heraldry and architectural decoration with head and wings of an eagle and body and legs of a lion or bull.

**Griffith**, Arthur (1872-1922), Irish politician and journalist; with Rooney, estab. weekly paper *The United Irishman*, 1899; one of fndrs. of Sinn Féin movement; imprisoned 1916-17, 1918; vice-pres. of Irish republic, 1918; acted as leader during de Valera's absence; pres. of Irish rep., 1922; d. suddenly.

**Griffon bruxellois**, small rough-haired Belgian lap dog.



Greyhound Racing Track, Bristol

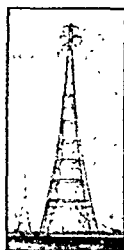


Photo Callender's  
Cable and Construction Co.

**Grid Scheme**—The highest electrical suspension towers in the world, crossing the Thames at Dartford



**Grignard**, Victor (1871– ), Fr. chem.; Nobel Prize (Chem.), 1910.

**Grillparzer**, Franz (1791–1872), Austr. poet and dramatist; trilogy, *The Golden Fleecce*, 1821.

**Grimaldi, Grottes de**, caves nr. Menton, Alpes-Maritimes, France, where skeletons of Upper (Later) Palaeolithic Period, with negroid characteristics, were found buried. Race distinct from the Cro-Magnon.

**Grime's Dyke, Graham's Dyke**, or **Wall of Antoninus**, turf entrenchment, Scot., from Firth of Clyde to Firth of Forth, raised by the Romans c. A.D. 140 (reign of Antoninus Pius).

**Grime's Graves**, prehist. flint quarries, 2½ m. N.E. of Brandon, Suffolk, Eng.; referred to Neolithic Period (*q.v.*).

**Grimm, Friedrich Melchior**, B. von (1723–1807), Ger. diplomat. **G., Jakob** (1785–1863), Ger. philol.; *Deutsche Grammatik*; Grimm's Law; *Grimm's Fairy Tales* in collab. with his bro.: **Wilhelm** (1786–1859), *German Heroic Legends*. His son: **Hermann** (1828–1901), art historian; *Michelangelo, Raffaele, Goethe*. **G.'s Law**, *First or Great Sound Shift*, relates to changes which Indo-Europ. explosives underwent in Primitive Germanic.

INDO-G. *Explosives*

Tenues

Mediae

Tenues aspiratæ

Mediae

*Labial*

p > f

b > p

ph > p

bh > b > b

*Dental*

t > p

d > t

th > t

dh > d > d

*Palatal*

k > ʒ (L)

q > k

kh > k

gh > ʒ > g

*Velar.*

q.qʷ > ʒ.ʒʷ

g.gʷ > kʷ

qʰ.qʷʰ > kʷ

99ʰ.9ʷʰ > zʷ > gʷ

The process of change was 1st formulated by Jakob Grimm (*q.v.*).

**Grimsby**, co. bor. and largest tn. in Lincs, Eng.; pop., 92,500; most important fishing port in world; docks; shipbuilding.

**Grimmel**, mountain pass, Bernese Alps, Switzerland (6,520 ft.), betw. Aar and Rhone valleys.

**Grindelwald**, vall., Bernese Oberland Switzerland (3,400 ft.); vill. and tourist resort (pop., 3,000).

**Grinding**, removal of surface of materials by rubbing with sharp, hard, granular material, either in form of block, or applied as powder. Natural *grindstones* numerous (emery, corundum, various grits, etc.) and used from earliest times to sharpen tools. G. now, when possible, superseding cutting tools in working all metals; very high-speed wheels of carborundum, corundum, alundum, etc., cut accurately and do not clog.

**Griquas**, half-breed race of Boers and Hottentots of E. and W. Griqualand, S. Africa. **Griqualand East**, terr., S.E. Cape Prov.; 6,600 sq.m.; pop. (white), 7,700; cap., *Kokstad*. **Griqualand West**, part of Cape Prov.; cap., *Kimberley*. See also KAFFRARIA.

**Grisaille**, representation of relief on a plane surface by gradation of black, white, and intermediate greys.

**Griselda**, character of romance renowned for her patience as wife and mother, under the cruelest trials; subject treated by Boccaccio (*q.v.*), Chaucer (*q.v.*), Dekker (*q.v.*).

**Grisson**, S. Amer. carnivore, of weasel tribe; flat-headed, almost plantigrade; bluish-grey above, dark brown beneath.

**Grisons, Graubünden**, canton, E. Switzerland; largest (2,750 sq.m.; pop., 123,450) but least densely populated; mountainous, with Bernina group in S. (*Piz Bernina*, 13,290 ft.); *Albula* in E.; *Adula* and *Medds* in S.W.; and *Tödi*, in N. Passes include Stelvio, Bernina, Splügen, San Bernardino, and Albula (rly. tunnel). Mtn. valls. highest in Europe, with health resorts (St. Moritz, Pontresina, Davos, Arosa, etc.). Contains headwaters of the Rhine (Vorder, Mittel, and Hinter Rhein) and of the Inn (Engadine). Many min. springs. Cattle-breeding in lower valls.; vineyards. Cap., Coire (*Chur*). Orig. part of Rom. prov. of Raetia; involved in struggles for independence, 15th–17th cents.; invaded by French during conflicts with Austria; joined Swiss Confederation, 1803.

**Grist**, 1) corn for grinding; 2) grain

roughly ground esp. malt for brewing. **G. mill**, machine for production of groats (*q.v.*) by crushing and breaking corn betw. grinding discs or rollers.

**Grizzly bear**, largest and fiercest of N. Amer. bears, ranging over the Rocky Mtns.; greyish-brown in colour.

**Groat**, 1) small silver coin current at Bremen and in the Low Countries in Mid. Ages, value varying from ½d. to rd. 2) Engl. silver coin, nominally worth 4d.; 1st issued by Edw. III, current till 1662, and now coined only for the Maundy Money (*q.v.*).

**Groats**, coarsely ground grain, esp. oats or wheat; used for cattle-fodder and in beer-brewing and corn-distillery.

**Grodno, Gardinas**, former Russ. govt. (14,900 sq.m.), now mostly incorporated in Polish prov. of Bialystock (*q.v.*); N. part claimed by Lithuania. Watered by Niemen, Bug, and Narev; surface mainly level; much forest. Cap., *Grodno*, on Riv. Niemen; pop., 35,150.

**Grog**, rum or arrack with hot water or tea and sugar.

**Groin**, 1) (anat.) junction in front of the body of the leg and the trunk; 2) (archit.) see VAULT.

**Groined vault**, (archit.) one formed by intersection of 2 barrel vaults (*q.v.*).

**Grolier**, Jean (1479-1565), Fr. bibliophile; collected library of c. 3,000 vols.; dispersed 1675; c. 350 books *ex libris* *Grolerii Lugdunensis et Amicorum* known to be extant. **G. Club**, New York, fndd. 1884 for the encouragement and promotion of the art of book production.

**Groningen**, 1) marit. prov., N. Holland, at mouth of Ems (Dollart); 883 sq.m.; pop. 392,200; much reclaimed fenland; agri., cattle-breeding, dairying, fisheries. 2) Cap. of prov., inland tn., on network of canals betw. the Dollart and Zuider Zee; univ. (1614); 15th-cent. churches; museum; industrial centre; textiles, furniture, books, tobacco; pop., 103,706.

**Grooves**: see RIFLING.

**Grosbeak**, bird of finch tribe, with large, thick beak. **Pine g.** frequents forests of pine and spruce of N. Eur. and Amer., feeding on seeds of trees. **Scarlet g.** breeds in E. Prussia, Russia, migrating in winter to India and China.

**Groschen**, 1) small silver coin, and money of account, formerly current in Ger.; sometimes 30th of a thaler (*q.v.*) but of varying value. 2) Ger. ten-pfennig piece. 3) Aust. small copper coin = 1/100 of schilling (*q.v.*).

**Gross**, 12 dozen; **great g.**, 12 gross.

**G. price**, price of an article before deduction of discount or commission (*qq.v.*). **Ant.**: *Net price*.

**G. receipts**, total takings without deduction of outgoings or discounts.

**G. registered tonnage** (G.R.T.), measurement of internal capacity of ship, including all permanently closed-in erections. 100 cub. ft. (in this case) = 1 ton; laws for tonnage measurements are extremely complicated and are based on rules many yrs. old. Comparisons of the size of ships can often be made by comparing their G.R.T. **G. weight**, wt. of an article, incl. packing; diff. betw. wt. of goods and wt. of packing is known as *tare*; see NET.

**Grosseteste**, Robert (c. 1175-1253), Eng. prelate, statesman and philos. Bp. of Lincoln, 1235; largely instrumental in introd. Aristotelian philos. to the West.

**Grossglockner**, highest peak, Austrian Alps (12,450 ft.).

**Grossgörschen**, Saxon vill. betw. Weissenfels and Leipzig. **Battle of G.**: see LÜTZEN.

**Grossmith**, family of Eng. entertainers;

**George** (1847-1912), appeared for many years in the Savoy operas; also noted for songs and recitations; wrote *The Reminiscences of a Society Clown*, 1888, and, with his bro., Weedon, *Diary of a Nobody*, 1894; his sons **George** and **Lawrence**, both actors, former famous for association with musical comedy at the Gaiety Theatre; **Weedon** (1853-1919), bro. of George, snr., manager of

Terry's Theatre, 1894; won great success in *The New Boy* and *The Misleading Lady*; pubd. autobiog., *From Studio to Stage*, 1913.

**Grosswardein**, **Oradea Mare**, tn., N.W. frontier, Rumania, at the W. edge of the Bihar range; pop., 93,500; bpric.; fruit and wine-growing, cattle-breeding; hot springs.

**Grote**, George (1794-1871), Eng. histor.; *History of Greece*, 1846-56.

**Grotesques**, fantastic figures based on perversion of human or animal forms, much used in decoration by Mediaeval miniaturists and sculptors (e.g., gargoyles) and often imitated by artists of Renaissance (Bosch, Brueghel, Callot) and modern times (Beardsley).

**Grotius** (de Groot), Hugo (1583-1645), Dut. schol. and jurist; fndd. princip. of internat. law; *De Jure Belli et Pacis*, 1625.

**Ground glass**: see GLASS.

**Ground ivy**, *Nepeta glechoma*, herbaceous labiate with creeping stem and bluish flowers, strong aromatic odour; leaves are sometimes used as tea.

**Ground-nut**: see EARTH-NUT.

**Ground-plan**, (archit.) drawing, to scale, of outline and parts of a building at level of ground, as seen from above; walls often shown in section to display their construction.

**Groundsel**, *Senecio vulgaris*, common weed with small yellow flowers and deeply toothed leaves; favourite food of small birds.

**Ground squirrel**, **chipmunk**, small rodent differing from true squirrel by having cheek-pouches for storage of food, and by distinct white or greyish-white longitudinal stripes on side of body. Ground-dweller excavating holes in the earth. Found in northern portions of both hemispheres.

**Ground water**, (phys.) water saturating the earth up to a greater or less distance from surface; G.W. level varies with season; generally in movement, sometimes so definitely as to constitute a stream. Wells must be sunk to below G.W. level.

**Grouse**, name of family of gallinaceous birds, esp. *Lagopus scotius* or Red G. indigenous to Gt. Brit. Related to ptarmigan, blackcock (*qq.v.*), etc. Sand G. (*q.v.*) belongs to a different family. **G. shoot-**

**ing**, takes place chiefly on Scot. and Yorks



Grotesque,  
after  
H. Bosch



Ground Squirrel



Grouse

moors; birds are driven to guns waiting in "butts." Season: Aug. 12th-Dec. 9th.

**Grozni**, chf. tn., auton. prov. of Chechen, U.S.S.R., on N.E. slope of *Caucasus Mtns.*, 1,250 m. from Moscow; pop., 70,900; naphtha wells; aerodrome.

**Grub**, general designation denoting a legless insect larva. **G. Street**, former name of street in London nr. Cripplegate, now Milton Street, applied satirically (orig. by Pope and Swift) to unsuccessful or disreputable journalists.

**Gruenberg**, Louis (1883- ), Amer. composer, born Russ.; fairy opera *Jack and the Beanstalk*, 1930; chamber music.

**Grün**, Anastasius (1806-76), pseudon. of Ct. Auersperg, Austr. poet: *The Last Knight*.

**Grundy**, Mrs., imaginary character typifying repressive propriety and conventionality; first referred to as a neighbour (not appearing in the play) of a character in Thomas Morton's *Speed the Plough*, 1798.

**Grus** ("The Crane"), constell.; see Pl., ASTRONOMY, S.C.H., A.

**Gruyère**, 1) dist. W. Switzerland, in S. of

**Guam**, chf. island of Mariana group, N. Pacific; U.S.A. possession; area 225 sq.m.; pop., 19,150 (1,702 Amer.); U.S.A. naval base; mountainous; connected by cable with Philippines; cap., *Agana* (pop., 9,200).

**Guanaco**, S. Amer. ungulate allied to camel of the Old World, but smaller and possessing no hump; lighter in build, with narrow feet. *Llama* and *alpaca* are domesticated varieties.

**Guano**, manure, contng. phosphates and ammonia, consistg. of birds' droppings; obtained mainly from isls. and coasts of Pacific.

**Guarani**, Ind. tribe in N. Argentina and Paraguay.

**Guarantee**, collateral engagement in writing by person called **guarantor** or **surety** to answer for debt, default, or miscarriage of another.

**Guaranty Trust Co.**, orig. N.Y. Guarantee and Indemnity Co.; U.S. bank, fndd. 1864; present name adopted, 1895. Deposits (31 Dec., 1932), \$1,018,967,670; liabilities, \$1,410,786,974.



Coldstream



Grenadier



Scotch



Welsh



Irish

## BADGES OF GUARDS REGIMENTS

canton of Fribourg; cheese, cattle; cap. *Bulle* (pop., 4,400). 2) Tn. in above; anc. cap.; pop., 1,700.

**Gryphius**, Andreas (1616-64), Ger. lyric poet and dramatist; Comedies: *Peter Squentz*; *Horribilicribrifax*.

**G.S.N.C.**, abbr. General Steam Navigation Company.

**G.S.O.**, abbr. General Staff Officer.

**Guacharo**, oil-bird, S. Amer. bird; chestnut-brown; nocturnal; resemb. nightjar.

**Guadalajara**, 1) cap., prov. same name (4,700 sq.m.; pop., 202,000), Spain; pop., 14,000. 2) Cap. State of Jalisco, Mexico; pop., 149,400; univ.; tech. schools; textiles, pottery.

**Guadalquivir**, riv. S. Spain, flowing into the Gulf of Cadiz; length 336 m., navigable to Seville.

**Guadeloupe**, largest of Leeward Isls., W. Indies; 580 sq.m.; pop., 243,200; div. by narrow channel into *Basse-Terre* on W. (volcanic, mountainous, well wooded), and *Grande-Terre* on E. (flat and almost waterless). Exports: sugar, rum, coffee. Fr. since 1635; cap., *Basse-Terre*.

**Guadiana**, riv. S. Spain and Portugal; forms Spanish-Portuguese frontier for parts of lower course; flows into the Gulf of Cadiz; 465 m. long; navigable to Mertola.

**Guardafui**, headland, Ital. Somaliland, E. extremity Africa, on Gulf of Aden.

**Guardian**, protector, esp. 1) G. of the poor, member of boards of guardians under English law—now abolished—in charge of poor relief; 2) in law, person having custody of property or person of infant, idiot, etc.

**Guards**, royal bodyguards, special troops. Life Guards and Royal Horse Guards, Household Cavalry. **Guards Brigade** (Brit.) the 5 regts. of H.M. Foot Guards, consisting of the Grenadier Guards (1st), Coldstream G. (2nd), Scots G. (3rd), Irish G. (4th), and Welsh G. (5th); depot Caterham. See HOUSEHOLD TROOPS. **G. corps**, up to 1918, German army corps garrisoned in or round Berlin. **White G.**: anti-revolnry. Russ. troops 1918-21. **Republican G.**, bodyguard of the Pres. of the Fr. Republic. **Red G.**: irregular revolnry. troops raised in Russia, afterwards organised into *Red Army*; hence, any armed Communist or Socialist body.

**Guarini**, Giovanni Battista (1537-1612), Ital. poet; pastoral drama: *The True Shepherd*, 1590.

**Guarnerius** or **Guarnieri**, Ital. fam. of violin-makers in Cremona (1626-1745), the greatest of whom was **Giuseppe** (1687-1745).

**Guatemala**, Centr. American republic, mountainous volcanic country; 42,570 sq.m.; pop., 2,005,000 (over half Indians); exports coffee; cap., *Guatemala* (pop., 125,000; univ.). Orig. inhabs. (Mayas) conquered 1525 by the Spaniards; independent, 1821. See *ANTIGUA*, 2).



**Guava**, small tree of myrtle order, native of tropical America; its fruit, wh. has very pungent characteristic flavour, is made into jelly and preserve.

**Guayaquil**, chief port of Ecuador, S. Amer., on *Gulf of G.*, at mouth Riv. Guayas; pop., 105,000; university.

**Gudgeon**, carp-like fish having the whole body invested with scales of moderate size, while the bones on the upper margin of the mouth are protrusile, and there are two barbels; frequent pebble beds of clear streams, and feed on aquatic insects, worms, etc.



Gudgeon

**Gudrun**, Song of, M.H.G. 13th-cent. heroic poem, connected with Nibelungen cycle (*q.v.*).

**Guelder rose**, *Viburnum opulus*, shrub with white flowers and red berries; the garden or cultivd. plant, with flowers collected into a globular form, is sometimes known as the snow-ball tree.



Guelder Rose

**Guelf**, **Guelfs** (from Ger., *Welf*), papal and pop. party of It. in Mid. Ages, opposed to Ghibellines (*q.v.*). A noble Ger. family with important possessions in It. (see *ESTE*), and—through intermarriage—dukes, at various times, of Bavaria, Saxony, Carinthia; fndd. princely house of Brunswick and Hanover, to wh. Brit. royal house belonged (1714-1901); Kgs. of Hanover (1814-66). **Guelf party**, former Ger. polit. group claiming Hanoverian independence of Prussia. **Guelfic Fund**, fortune of George V of Hanover, seized by Prussia (1866).

**Guenon**, the "grimacing monkey," found in Africa S. of Sahara; slender, with long tail and well-developed cheek pouches. About 30 species, of which *Diana*, *Green*, and *Mona* are most common.

**Guéret**, cap., dépt. Creuse, France; pop., 7,985.

**Guereza**, handsome African monkey; true G. (*Colobus guereza*) ranges from Somaliland to Mount Kilimanjaro, and has



Guenon

the hair on back developed into a long, silky mantle, much sought for manuf. of fashionable furs.

**Guerilla warfare**, irregular or desultory fighting carried on by bands acting more or less independently; so called from the *guerillas*, Span. bands of raiders against Napoleon, 1808.

**Guernsey**, westernmost and second-largest of Brit. Channel Is.; 30 sq.m.; pop., 42,600; two-thirds under cultivation (fruit, vegetables, flowers); cattle-breeding (Guernsey cows); granite quarries; cap., *St. Peter Port*. **G. cattle**: see CHANNEL ISLAND CATTLE.

**Guesclín**, Bertrand du (1320-80), Fr. soldier and constable of France (1369); assisted Chas. de Blois in struggle with Eng. for Brittany; deftd. Navarrese at b. of Cocherel, 1364; captured by Sir John Chandos at b. of Auray, 1364, and when serving agst. Pedro the Cruel in Spain by the Black Prince, 1367; recovered Poitou, Guienne, and Auvergne from Eng.; seized Brittany; subdued risings in Languedoc.

**Gueux** (Beggars), a league of nobles of Netherlands agst. oppression of their country by Philip II of Spain.

**Guiana**, region lying betw. rivs. Orinoco and Amazon, N. South America, on Atlantic; fertile alluvial coast-lands; interior a series of plateaux covered with dense forests (fine timber trees) and fringed by mtns. (*Mt. Roraima*, 8,740 ft.); innumerable rivs. (Riv. Potaro, trib. of Essequibo, has Kaieteur Fall; (*q.v.*); climate and vegetation tropical. W. part of G. belongs to Venezuela; E. part to Brazil; in centr. area are three European colonies. **British G.**, bordering on Venezuela; area, 89,500 sq.m.; pop., 312,500 (mainly Negroes and E. Indian immigrants); exports sugar, diamonds; cap., *Georgetown*. **French G.**, bordering on Brazil; area, 34,000 sq.m.; pop., 47,500 (incl. 4,000 convicts); chief penal settlements: St. Jean du Maroni, Îles de Salut (incl. Devil's Isl.); exports gold; cap., *Cayenne*. **Dutch G.**, or Surinam, betw. Brit. and Fr. G.; area, 54,300 sq.m.; pop., 152,000; exports bauxite, sugar, coffee, gold.

**Guido of Arezzo** (c. 995-1050), Ital. musician; systematised musical staff; named the notes, *ut, re, mi, fa, sol, la*, of the scale; introd. F clef.

**Guienne**, anc. prov. S.W. France, watered by Riv. Garonne; includes mod. dépts.: Gironde, Dordogne, Lot-et-Garonne, Lot, Aveyron; chf. tn., Bordeaux.

**Guilbert**, Yvette (1869,- ) Fr. music-hall artist.

**Guildford**, tn., Surrey, Eng., on Riv. Wey, at E. end Hog's Back; Norman Keep; pop., 30,800. Co. tn. till 1932, when superseded by Kingston-on-Thames.

**Guildhall**, 1) hall used for meetings of mediaeval guild. 2) City-hall or town-hall, esp. where the corporation was a guild; spec. the hall of Corpn. of City of London, dating from 1411; great hall, museum, library, and council chamber.



Guildhall, London

**Guild socialism**, school of socialistic thought, fndd. in Eng. in 1914-15, by G. D. H. Cole, A. R. Orage and others, as synthesis of Socialism and syndicalism (*qq.v.*), advocating indus. self-govt. thr. trade unions, on lines suggested by mediev. guilds (*q.v.*), and abolition of wage system.

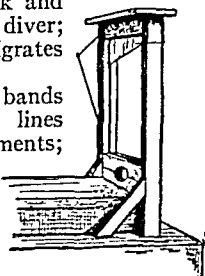
**Guilds, gilds**, associatns. formed in Mid. Ages to promote interests of their members. At first relig. in character, G. organizing feasts and processions, distributing alms, etc. **Merchant and craft G.** existed in Eng. in 12th cent.; they carried on and controlled the var. industries; formed subsidiary fraternities represtg. different crafts; endeavoured to maintain standard of workmanship, and attended to spiritual and social welfare of members. G. declined in 16th and 17th cents. with rise of individualism, developmt. of home industries; privileges of anc. *Craft G.* finally abolished in 1835. On Continent of Eur., G. survived in diminished strength until early 19th century.

**Guillaume**, Charles Edward (1861- ), Fr. physicist; invtd. alloy *invar* (*q.v.*); Dir. Internat. Bureau Weights and Measures; Nobel Prize (Phys.), 1920.

**Guillemot**, British sea-bird, member of auk family, breeding in immense numbers on the ledges of cliffs of Flamborough and the Farne Islands. Black and white plumage; expert diver; lays a single egg; migrates southward in winter.

**GUILLOCHE**, decorative bands of wavy, intertwined lines found on anc. Gr. monuments; now used in printing securities, as a protection against forgery.

**Guillotine**, 1) drop-axe used for decapitation, named after Fr. physician, Jos. Ign. Guillotin (1738-1814), who advoc. its use in the Fr. Revolution. 2) (Tech.) Machine for cutting paper in book-production (*q.v.*), etc.



Guillotine

**Guimauve**: see MARSHMALLOW.

**Guinea**, coastal region, Africa, betw. Riv. Senegal (N.) and Cape Negro (S.); divided into **Upper G.**, to N., and **Lower G.**, to E., of *Gulf of Guinea*. In gulf are isls. of Fernando Po and Annobon (Sp.) and Principe and São Thomé (Port.). See FRENCH, PORT., and SPAN. GUINEA. Brit. territories are Nigeria, Gold Coast, Sierra Leone, and Gambia.

**Guinea**, one pound sterling and one shilling; orig. gold coin of that value first struck from gold brought from coast of G. in 1663.

**G-fowl**, gallinaceous birds, allied to pheasant tribe; orig. native to Africa, but long been domesticated throughout Europe. Characterized by head bare of feathers and surmounted by "helmet"



Guinea-fowl

of horny growth; speckled black, grey, and white plumage.

**G-pig**, small short-legged rodent, native of S. America. Has no tail, small ears; in natural state, of uniform olive-brown colour, and more or less nocturnal habits; popular as a pet; numerous breeds; also (slang) Stk. Exch. term denoting one holding position of director of sev. cos. purely for fees received for attendance at board meetings.



Guinea-pig

**Guineas**, **The** (horse-racing); races (each 1 m.) held at Newmarket at the First Spring Meeting, for 3-year-old colts and fillies (the "2000") and for 3-year-old fillies (the "1000").

**Guipure**, variety of lace, with large pattern and no mesh ground; lace made with gimp.

**Guise**, 16th-cent. ducal family, branch of house of Lorraine; champions of R.C. Church.

1) **François** 2nd Duke of (1519-63), involved in massacre of Protestants at Vassy 1562, signal for Huguenot War. 2) His s. **Henri** (1550-88), Chief of Catholic League, led Massacre of St. Bartholomew, 1572.

**Guitar**, 6-stringed instr. played by plucking the strings; see LUTE.

**Guityr, Lucien Germain** (1860-1925), Fr. actor, noted for the economy of gesture with which he gained his effects; frequently acted in plays of his son, **Sacha G.** (1885- ), author of *The Scandal of Monte Carlo*, 1908; *The Night Watchman*, 1911.



Guitar

**Guizot**, François Pierre Guillaume (1787-1874), Fr. historian and statesm.; leader of opposition to Chas. X; member Chamber of

Deputies, 1830; Min. of Interior and of Public Instruction at accession of Louis-Philippe; very unpopular as Pr. Min., precipitating revolution of 1848; retired after downfall of Louis-Philippe. *Histoire générale de la civilisation en Europe; Histoire de la révolution d'Angleterre*, etc.; translations of Shakespeare.

**Gujarat**, 1) region, Brit. India, in N. of Bombay, including native States of W. India in Cutch and Kathiawar peninsulas. 2) Dist., Bombay, round Gulf of Cambay; 13,600 sq.m.; pop., 3,700,000. **Gujarati**, one of the chf. languages of Bombay Presidency.

**Gujrat**, tn. and dist.; cap., Punjab, India; on Riv. Chenab; pop., 22,000. At battle of Gujrat (1849), the British overthrew the Sikhs, after which the Punjab was annexed.

**Guldinus's theorem**, (math.) discovered by Pappus of Alexandria (c. A.D. 300), but made generally known by Guldinus (c. 1640); determines the content of rotary surfaces and bodies, the volume being equal to the area of a cross section through the axis multiplied by the distance the centroid has travelled.

**Gulf Stream**, warm ocean current from Gulf of Mexico; flows towards coasts of N.W. Europe, keeping its seas free from ice.

**Gulfweed**, variety of seaweed, wh. floats on sea in large masses, wh. sometimes impede shipping; in Atlantic Ocean covers large area of the Sargasso Sea (q.v.).

**Gull**, order of coastal birds, comprising terns, true gulls, kittiwakes, and skuas; plumage gen. pure grey and white, gregarious, cosmopolitan; 3 front toes completely webbed.

**Gullet**, *oesophagus*, muscular tube leading from back of the throat to the stomach.

**Gulliver's Travels**, social and political prose satire, by Swift (q.v.) (1726).

**Gullstrand**, Allvar (1862- ), Swed. physician; Nobel Prize (Med.), 1911.

**Gum-bichromate**, photo. printing process: consists of coating paper with gum and pigment sensitized with potassium bichromate solution. After development print is soaked in solution of potash alum to remove bichromate stain. Poitevin process, 1855.

**Gums**, substances, mostly derived from plants, which form viscous solutions in water, or take it up to form viscous mass, but do not

dissolve; contain only carbon, hydrogen, and oxygen, and are not crystallizable. *Gum arabic* or *acacia* exudes from acacia in Africa, India, and Australia; most comes from Sudan. *Gum tragacanth* is insoluble; comes from S.W. Europe. *Gum resins*, mixtures of gum and resin exuded by plants; commonest are myrrh, gamboge, asafoetida, frankincense. *British gum*, or dextrin (q.v.), made by action of heat on starch.

**Gun**, 1) ordnance (q.v.) with a flat trajectory, for direct fire. 2) (Fam.) Any firearm. **Sporting g.**, smooth-bore, breech-loading shotgun, usu. double-barrelled, for game-shooting, wild-fowling, etc. **G.-carrriage**, carries the barrel of ordnance when in action, gen. also in transport. Rear end called the *trail*. **G.-cotton**, nitrate of cellulose (q.v.), prepared by treating pure cellulose (cotton) with a mixture of strong sulphuric and nitric acids; a very powerful but safe explosive; dissolved in a mixture of ether and alcohol forms collodium; with camphor: celluloid. Combined with nitroglycerine and a small quantity of oil, it forms *cordite*, the main propellant in Brit. Army and Navy. **G. metal**, alloy of abt. 85% copper with remainder mainly zinc and tin; formerly used for making cannon; now used for other purposes, e.g., fancy goods. **G. powder** (black powder), mixture of charcoal, sulphur, and saltpetre (nitrate of potassium); made into grains of var. sizes, coated with graphite. Now superseded as general explosive by smokeless powders (q.v.). Mixtures similar to black powder were in use in China bef. the Christian era; announced as a new inven. by the Ger. monk, Berthold Schwarz, c. 1300.

**Gunaris**, Demetrius (1867-1922), Gr. statesm.; Pr. Min., 1921-22; exec. on charge of high treason.

**Gundicar**, (d. A.D. 437), Burgundian Kg. Huns killed him and destroyed kingdom.

**Gunpowder Plot** (1605), an unsuccessful Cath. conspiracy to destroy James I of Eng. when opening Parliament; still commem. in Eng. by fireworks and "guys" on 5 Nov. See FAWKES, GUY.

**Gupta** (Ind. hist.), name given to the empire fndd. in N. and Cent. Ind. (with cap. first at Patna and later at Oudh) by Chandragupta I c. 320 A.D., covering 5 reigns till its overthrow by Hunnish invaders, 480. Hindu chronology for long used the *G. Era* (26 Feb. 320), and the whole period is regarded as the "Golden Age" of Ind. art and literature.

**Gurkha**, Nepalese tribesmen (orthodox Hindus) enlisted to serve in Ang.-Ind. army.

**Gurla-Mandatta**, snow-covered peak Himalayas, India; height, 25,362 feet.



Gulls



Gurkha

**Gurnard**, bony fish, with elongated finger-like pectoral rays which are used as feelers and for crawling when the fish moves over the sea-floor in search of food. All the members of the family have large bony heads and are brilliantly coloured in scarlets, blues, and greens. The nearly allied *flying-gs.*, with expanded pectoral fins (*Dactylopterus*), rival the true flying-fish in their power of skimming over the surface of the sea.



Gurnard

**Gusset**, triangular piece of cloth inserted in a garment to strengthen or widen it. In armour, chain mail inserted at junction under the arms.

**Gustavus**, Kgs. of Sweden: **G. I., Eriks-son** (1496-1560), Kg., 1523; freed Swed. from Dan. rule, 1526; establd. Protest. Church. His grandson, **G. II, Adolphus** (1594-1632), Kg., 1611; extended kg-dom. along Baltic coast; took part in Thirty Years' War (*q.v.*); killed at Lützen (*q.v.*). **G. III** (1746-92), Kg., 1771; suppressed power of nobles. **G. IV** (1778-1837), Kg., 1792; opposed Napoleon; abdicated following a conspiracy of the nobles. **G. V** (1858- ), Kg., 1907, preserved Scandinavian neutrality during World War.



Gustavus Adolphus

**Gut**, intestine of animals, used for manuf. of violin strings, fishing tackle, sausage skins, etc. See CATGUT.

**Gutenberg**, Joh. (c. 1400-68), Ger. printer, inv. printing with cast, movable letters; conducted press with Fust and Schöffer; 42-line *Gutenberg Bible*, 1453-56.

**Guthrie**, Sir James (1859-1930), Scot. painter of the Glasgow School (*q.v.*); P.R.S.A., 1902; knighted, 1903; chfily. noted for his portraits, e.g., that of his mother. **G., Thos. Anstey** (1856- ), Eng. hum. writer under the pseudonym, "F. Anstey": *Vice Versa; The Brass Bottle*.

**Guthrie**, tn., Oklahoma, U.S.A.; pop., 9,600; market for agric. produce.

**Gutta-percha**, rubber-like, plastic, but inelastic substance, from sap of tropical *G.-percha* trees; used for insul. cables, for tubes, bandages; by dentists for taking moulds of mouth, etc.

**Guy**, Thos. (c. 1645-1724), Eng. book-seller and philanthropist; M.P. for Tamworth, 1695-1707; gave 3 wards of St. Thomas's Hospital, 1707; bilt. and endowed Guy's Hospital, London.

**Guyot**, Yves (1843-1928), Fr. politician and economist; deputy, 1885-93; Min. of Public Works, 1889-92; pub. *La Science*

*Économique*, 1881; *La Démocratie indid. dualiste*, 1907; etc.

**Gwalior**, 1) largest native State, centr. India, Mahratta principality, many detached portions; area, 26,400 sq.m.; pop., 3,523,100 (mainly Hindus). 2) Anc. cap. of State, strongly fortified, adjoined by new cap., *Lashkar*; pop., 80,400.

**G.W.R.**, abbr. Great Western Railway.

**Gwyn**, Nell (1650-87), Eng. comic actress; mistress of Chas. II; 1st appeared on stage, 1665, as Cydaria in Dryden's *Indian Emperor*; bore Chas. 2 sons, of whom only the elder, the Duke of St. Albans (*q.v.*), survived childhood.



Nell Gwyn

**Gyangtse**, tn. Tibet, alt. 13,000 ft., 150 m. S.W. of Lhasa; Lamaist temple.

**Gyges**, Kg. of Lydia (686-56 B.C.), acc. to legend, owner of a ring conferring invisibility.

**Gymkhana**, display of miscel. sports, usu. mounted.

**Gymnasium**, building with appliances for practice of gymnastics (*q.v.*).

**Gymnastics**, physical exercises, with or without apparatus, for recreation, muscular develop., or correction of bodily defects, etc.

**Gymnosophists**, name given by Greeks to an anc. group of Hindu ascetics who wore little or no clothing; members of the sect said to have come to Europe in 3rd cent. B.C.

**Gymnosperms**, (bot.) class of plants with naked, unenclosed seeds, e.g., the conifers and cycads.

**Gynaecology**, science and study of women's ailments, esp., those connected with the reproductive organs.

**Győr**, Raab, city, Hungary, cap. co. same name (895 sq.m.; pop., 144,200), at confluence rivs. G. and Danube; pop., 50,040; two cathed.; machinery, oil.

**Gypsum**, hydrous sulphate of calcium found in various forms, including alabaster (*q.v.*); that found near Paris is used in preparation of plaster of Paris.

**Gypsy**, nomadic people, origin. prob., from N.W. India. Scattered throughout Europe, esp. Balkans, N. Africa, and Amer.; proverb. known for occult practices and musical abilities. Language: Romany.

**Gyro compass**, heavy wheel (*gyrostat*) driven at high speed (20,000 revs. p. min.) in casing, by compr. air or electr., susp. so that the earth's motion causes it to turn (precess) until pointing truly N. and S. Much more reliable than magnetic compass.

**Gyroscope**, **gyrostat**, heavy wheel rotating at high speed in suitable casing. When force is applied at rt. angles to axis, G.

moves (precesses) in direction at rt. angles to both axis and force. Used for G. compass (*q.v.*), for controlling aeroplanes, as toy (common top), etc.

**Gyroscopic stabiliser**, applied by Schlick to lessen rolling of ships in rough sea. Bren-

nan applied G. to enable car or train to run on single rail.

**Gyrowheel**, gymnastic apparatus made of two parallel steel hoops joined together, betw. wh. the athlete is strapped and carries out phys. exercises.

### GYMNASTIC EXERCISES



Breathing exercises while seated tailor-fashion



Return from position of outstretched arms

Stretching upwards



Walking on the toes

Exercises for ankles and deportment



Stretching back muscles

Abdominal exercise

Hardening leg muscles



Exercise for stomach muscles

Start of swing back

Leg-stretching while seated

Daily gymnastic exercises, lasting 8-10 minutes each morning, will suffice to give the muscles and nervous system the energy to withstand the strain of the coming day.

Correct breathing is the basis of all body-training; systematic and regular breathing-exercises empty the lungs of used-up air and inculcate habits of deep-breathing, thus ensuring calmness and concentration of mind for the day.

The full powers of the body must be awakened by rendering it supple, so that the blood and other juices may circulate freely. Morning exercises must include stretching, shaking, and slapping; the suppleness and vitality thus acquired increase powers of endurance and enable the body to bear prolonged standing, sitting, stooping, or walking during working hours.

Other exercises are necessary for strengthening of abdominal organs and stomach muscles and to give the body the correct deportment in standing and walking, by means of arm, leg, and foot movements.



# H

**H**, (chem.) symbol of hydrogen (*q.v.*).  
**H.**, abbr. 1) horizontal force of earth's magnetism; 2) total energy.

**Haakon**, Kgs. of Norw.: **H. I**, the "Good" (d. 961), son of Harold Haarfager; fostered by Aethelstan of Eng. **H. IV**, the "Old" (1204-63), annexed Greenland and Iceland. **H. VII** (1872- ), Pr. Charles of Denmark; selected as Kg. by Norwegians on separation of Norway and Sweden, 1905.

**Haarlem**, tn., cap. N. Holland; pop., 120,000; historic buildings; horticulture; cotton, dyeing, printing; first charter granted 1256. **H. Lake** (*Haarlemmer Meer*), dist. S. of Haarlem, formerly a lake, now drained; area, 7 sq.m.; pop., 17,000; ploughland and meadows.

**Habakkuk**, (O.T.) prophet (c. 600 B.C.): **Bk. of H.**, dramatic poem in form of dialogue with God.

**Habberton**, John (1842-1921), Amer. writer: *Helen's Babies*, 1876.

**Hab. corp.**, abbr. *habeas corpus* (Lat.), you may have the body (writ of hab. corp.).

**Haber**, Fritz (1868- ), Ger. chem., princ. field, electrochem.; invtd. **H. process** for synthesis of ammonia; see NITROGEN. Nobel Prize (Chem.), 1918.

**Haberlandt**, Gottlieb (1854- ), Austr. botanist; director of plant-physiology department of Berlin Univ., 1910-23; pub. *Sinnesorgane im Pflanzenreich zur Perception mechanischer Reize*, 1906.

**Habit**, dress designed for spec. use, e.g., woman's riding H., monk's H.

**Habitué** (Fr.), regular frequenter.

**Habsburg**, Ger. dyn., named after a castle on Riv. Aar; Ger. Kgs. since **Rudolph I** (1218-91), elected Kg., 1273. Divided into Ger. and Span. lines, 1556; male line of Ger. Habsburgs extinct 1740; **Maria Theresa** m. Francis I of Lorraine (1736), ancestors of Habsburg-Lorraine imperial house (down to 1918).

**H.A.C.**, abbr. Honourable Artillery Company.

**Hachette**, Louis Christophe (1800-64), Fr. publisher, esp. of books of gen. culture, classics, educational manuals, scientific libraries, etc.

**Hachures**, lines drawn on maps to indicate slopes; closeness and length vary with steepness of slope represented.

**Hacienda** (Span.), estate, farm, ranch, factory; esp. in Latin America.

**Hackling**, (tech.) process of combing and separating bast fibres such as flax, hemp, jute.

**Hackney**, met. bor., E. London, Eng., N. of Riv. Thames; pop., 215,400; once fashionable; Hackney Downs; Hackney Marshes.

**Hackney**, or **hack**, horse for ordinary riding; hired horse. **H. carriage**, passenger conveyance licensed to ply for hire.

**Haddington**, co. tn., East Lothian; pop., 4,400; birthplace John Knox; abb. ch., "Lamp of the Lothians." **Haddingtonshire**: see EAST Lothian.

**Haddock**, fish of the cod family, distinguished by the very short barbel on chin,

small size, absence of small spots, a black blotch on the shoulder, and a black lateral line. Abundant in English Channel in certain years; range from Arctic Ocean to Bay of Biscay on E. shores of Atlantic, to Cape Hatteras on the West.



Haddock

**Haddon Hall**, seat (Duke of Rutland), Derbysh., Eng., 14th-16th cents.; associated with Dorothy Vernon.

**Hades**, (Gr. myth.) 1) god of the Underworld; called by euphemism Pluto (god of Wealth); Rom. equivalents Dis, Orcus, Tartarus. 2) The Underworld.

**Hadith**, body of traditions regarding Mohammed; see SUNNA.

**Hadley**, Henry (1871- ), Amer. composer; symphon., tone-poems (*Salome*), overtures, chamber music.

**Hadramaut**, dist., S. coast Arabia; area, 85,500 sq.m.; pop., c. 120,000 (independent Arab tribes); exports wheat, rice, sugar; cap., Mukalla.



Hadrian

**Hadrian**, Publ. Aelius (76-138), Rom. Emp. 117; **Hadrian's Wall**, Bowness to Wallsend, blt. by his order, 122-126. See AGRICOLA'S WALL.

**Haeckel**, Ernst (1834-1919), Ger. biologist; Darwin's 1st supporter in Germany; *The Riddle of the Universe*.

**Haematemesis**, (med.) vomiting of blood from the stomach; often occurs in cases of gastric ulcer or cancer.

**Hæmatite**, mineral ferric oxide ( $\text{Fe}_2\text{O}_3$ ), red oxide of iron. Usu. contains 0.1% phosphorus.

**Hæmaturia**, (med.) the passage of blood in urine; occurs in kidney and bladder disease and blackwater fever (*q.v.*).

**Hæmoglobin**, colouring matter of the red corpuscles of blood (*q.v.*); contains iron; has great affinity for oxygen.

**Hæmophilia**, disease characterized by abnormal tendency to hæmorrhage or bleeding; is hereditary and occurs in males, though transmitted through females.

**Hæmoptysis**, spitting of blood from lungs (*q.v.*). **Hæmorrhoids** (*piles*), enlarged varicose veins in the lower portion of rectum.

**Hæmorrhage**, (med.) bleeding, loss of blood; may be due to disease or injury; occurs normally in menstruation (*q.v.*). **Intestinal h.**, blood passed by rectum; occurs in duodenal ulcer, typhoid, dysentery, cancer of intestine, and piles.

**Hæmostasis**, the arrest of bleeding effected by: 1) constriction of the blood vessels by means of tight band; 2) ligation of vessels; 3) coagulation of the blood.

**Haff**, (Ger.) fresh-water lake separated from the sea (as on the Baltic coasts) by a narrow tongue of land.

**Hafiz**, pen-name of Shams-ud-din Mohammed (c. 1300-88), Pers. lyric poet; *The Divan*.

**Hafnium**, (chem.) sym. Hf; at. wt. 178.6; rare metallic element, found in very minute quantities in assoc. with zirconium (*q.v.*).

**Hagar**, (O.T.) concubine of Abraham; mother of Ishmael (Gen. xvi).

**Hagedorn**, Friedrich von (1708-54), Ger. lyric poet.

**Hagen**, *Hagen of Tronje*, character in Song of the Nibelungs (*q.v.*); kills Siegfried; slain by Krimhild.

**Hagen**, Walter, (1893- ), Amer. prof. golfer; won U.S.A. open championship, 1914, 1919, and Brit., 1922, 1924, 1928, 1929.

**Hagen**, tn., Westphalia, Prussia; pop., 147,500; iron and steel works.

**Hagenbeck**, Carl (1844-1913), dealer in wild animals; fndd. Hamburg Zoo with animals in natural surroundings and apparently free.

**Haggadah** (Hebr., narrative), 1) parables in the Talmud (*q.v.*) dealing with hist. themes and legends from an ethical point of view. 2) Prayer-book (based on the story of the Exodus) used at the Passover Festival ceremony.



Haeckel

Hafiz  
Persian Miniature

**Haggai**, (O.T.) minor prophet (c. 520 B.C.); **Bk. of H.**, addresses exhorting and encouraging the people.

**Haggard**, Sir Henry Rider (1856-1925), Brit. novelist and authority on agrarian subjects; *King Solomon's Mines*; *Rural England*.

**Haggis**, Scot. dish: sheep's paunch, or stomach, into wh. are sewn up finely chopped liver, heart, and lights, together with oatmeal, suet, onions, lemon juice, nutmeg, gravy and condiments.

**Hagiology**, study of lives of saints.

**Hague**, *The* (Dut., *'s Gravenhage*; French, *La Haye*), cap. of Holland; pop., 443,000; buildings include Palace of Peace; headquarters of H. Tribunal (completed 1913), govt. offices, picture gallery (the Mauritshuis), and royal palace. **H. Peace Conference**, the first held (1899) at instance of Czar; the second, 1907; on both occasions compulsory arbitration in international questions was rejected. **H. Tribunal**, internat. court of arbitration, est. 1899, and reorganised 1920 by League of Nations as a permanent court of internat. justice. Sphere of action: interpretation of treaties and of disputed points in international law, fixing compensation. There are 11 judges, 4 substitutes appointed for 9 years each by the League of Nations.

**Hahnemann**, Samuel (1755-1843), Ger. physician; fndd. homeopathy (*q.v.*).

**Haiderabad**: see HYDERABAD.

**Haider-Pasha**, port, Turkey, on E. coast Sea of Marmora; pop., 35,800; starting-point of Anatolian railway.

**Haifa**, port, N. Palestine; pop., 35,600; exports grain and oil.

**Haig of Bemersyde**, **Douglas Haig**, 1st E. (1861-1928),

Brit. gen.; commd. I Army Corps, 1914 (Mons, Marne, Aisne, 1st battle of Ypres); I Army, 1915 (Neuve Chapelle, Festubert, Loos); c-in-c. 1915; fndd., 1921, Brit. Legion of ex-service men, of wh. he was 1st president.

**Haiju**, **Pjongjang**, industrial tn., cap. of prov. of Hwanghai, N.W. Korea; pop., 119,730. Ironworks, coal-mining.

**Haik**, cloth worn by Arabs over head and body.

**Hail**, small lumps of ice (sometimes as large as small hen's egg) falling like rain from sky.

**Haileybury College**, Eng. public school for boys; fndd. nr. Hertford, 1862; occupies college formerly belonging to Hon. East India Company.

**Hainan**, **K'ung-chow-fu**, isl., S. China. betw. Gulf of Tongking and S. China Sea, prov. Kwang-tung; area, c. 1,400 sq.m.;



Haig

pop.; 2,580,500; forests; in S. trop. climate, mountainous in interior; earthquakes; exports metals timber; cap., K'ung-chow-fu (pop., 59,500).

**Hainault Forest**, anc. forest (805 ac.), Essex, lying E. of Riv. Roding and of Epping Forest, betw. Chigwell and Barking; disafforested 1851. In S. was Fairlop Oak (45 ft. round), destroyed 1820.

**Hainaut**, prov., Belgium; area, 14,000 sq.m.; pop., 1,300,000; watered by rivs. Scheldt and Sambre; fertile soil; coal and iron mines; cap., *Mons*.

**Hainisch**, Michael (1855- ), Austr. statesm.; 1st Pres. of Austr., 1920-28.

**Haiphong**, port, Tongking, French Indo-China, pop., 97,600; exports rice, rubber, and coal.

**Hair**, fine, thread-like out-growth from skin of mammals, including fur on animals; corresponding growth on human head and other parts of body; bristles of pig, spines of porcupine, whiskers of cat, etc. Also, in plants, fine filaments growing from surface of leaf or stalk, wh. help to diminish evaporation, collect nourishment, and act as suckers in climbing plants. In most mammals, H. covers the hide, retaining body-heat and sometimes acting as organ of sense (touch). In man, the nat. and quant. of hair on head and body vary accdg. to race: 1) short and tightly-curved hair, almost invariably black, peculiar to negroid races; 2) straight, long, coarse hair, also black, of Mongols and N. Amer. Indians; 3) smooth, silky, or wavy hair, varying from golden or auburn to brown and black, of Europeans. **Loss of h.**, resulting in baldness (*alopecia*), usu. progresses from forehead to back of head; may also be caused by *Alopecia areata*, a skin disease in wh. the hair falls off in round patches, or by malnutrition following severe illness. **Grey h.** is caused by disappearance of colouring matter, usu. with advancing age; rarely in youth. **Pubic h.**, hair that first appears upon the body at puberty, esp. that in the lower central hypogastric region (the pubes).

**Hairbell**, *Campanula rotundifolia*, has light-blue bell-shaped flowers on very thin wiry stalk. Not to be confused with blue-bell or hyacinth (*q.v.*).

**Haiti, Hayti**, 1) second largest island, W. Indies, betw. Cuba (W.) and Puerto Rico (E.); one of Greater Antilles; area, 29,820 sq.m.; surface mountainous; Loma Tina (10,300 ft.) highest peak in W. Indies; dense forests; climate, flora, and fauna tropical. Divided into two Negro republics: Santo Domingo (*see DOMINICAN REPUB.*) in E. and

Haiti in W. 2) Republic, W. third of island area, 10,204 sq.m.; pop., 2,550,000 (Negroes; only 3,000 whites); coffee, cotton, sugar, cocoa; cap., *Port-au-Prince*. Discovered in 1492 by Columbus; Spaniards extirpated native Caribs, replacing them with Negro slaves; in 1697 W. half of island acquired by France; Negro rebellion, 1791 (*see TOUSSAINT L'OUVREURE*); independence declared, 1804; virtually a protectorate of U.S.A. since 1915.

**Hajdu, Hajduken**, dist. (925 sq.m.), Theiss plain, East Hungary; population 168,320; agriculture; cattle-breeding; cap., *Debreczin*.

**Hajj, The**, pilgrimage to Mecca undertaken by devout Moslems.

**Hake**, edible fish of cod family, 2 to 3 ft



Hair (Transverse Section)

long, found in N. Atlantic and S. American and New Zealand waters.

**Hakluyt**, Richd. (c. 1552-1616), Eng. geographer and historian; Archdeacon of Westminster, 1603; published *Principal Navigations, Voyages, Traffiques and Discoveries of the English Nation* 1599; etc.

**Hakodate**, port, S. Yezo Isl., Japan, on Tsugaru Strait; pop., 197,300; harbour; exports: beans, furs, timber.

**Halation**, (photog.) blurring of the image caused by reflection from the back of the plate, when brilliantly lighted windows appear in a photograph, or dark objects are photographed against a strong light; "backed" plates are obtainable, which reduce H. to a minimum.

**Halberd**, anc. chopping and thrusting weapon, used by foot-soldiers; a pike with an axe and hook at the head.

**Halberstadt**, tn., Saxony, Ger., on Riv. Holzeme; pop., 48,184; Gothic cathed.; many old houses and churches; manuf.: sugar, chemicals, machinery.

**Haldane**, Richard Burdon H., 1st visct. (1856-1928), Brit. statesm., lawyer, and philos.; Sec. for War, 1905; re-organized army—created Territorial Force, 1907, Officers' Training Corps, 1909; judicial com. Privy Council, 1911; Ld. Chanc. 1912,



1924; chm. Com. Imp. Defence; auth. of several philos. works.

**Hale**, Sir Matthew (1609-76), Eng. lawyer; Ld. Chf. Jus., 1671.

**Halesowen**, urb. dist., Worcs, Eng., 9 m. S. W. of Birmingham; 13th cent. abbey; iron and steel works; pop., 31,100.

**Halévi**, Jehuda ben Samuel (1085-1140), Span. Jew; physician and poet; *The Song of Zion*.

**Halévy, Jacques Fromental** (1799-1862), Fr. operatic composer: *The Jewess*.  
**H., Ludovic** (1834-1908), with Meilhac wrote librettos of Offenbach's operettas.

**Half-binding**, paper or cloth book-binding with leather back and corners.

**Half brothers and sisters**, brothers and sisters having only one parent in common.

**Half-stuff, first-stuff**, in paper-making, the washed and broken pulp after it has been bleached and drained and before it is beaten. See PAPER.

**Half-timbered**, (archit.) style characteristic of Tudor period in Eng.; framework of bldg. is of timber, usu. oak, left visible from without, the interstices being filled in with brickwork, masonry, etc., sometimes plastered and colourwashed.

**Half-time**, interval, usu. 5 min., between the 2 periods in football, hockey, etc.

**Half-tones**, prints from photo-engraved plates on wh. the lights and shades of the orig. photo., painting, or wash-drawing are reproduced by means of

dots wh., standing in relief, form the printing surface; these dots, wh. are of various sizes (many invisible to the naked eye), are

capable of rendering not only the high lights and shades of the original, but all the gradations between them; the original is photographed through a screen (placed behind the lens of the camera) composed of 2 sheets of glass ruled with parallel lines and placed together so that the intersecting lines make empty squares; negative thus obtained then printed on a sensitized plate (usu. copper) wh. is etched to leave the dots in relief; plate then mounted to make it correct height for printing. For half-tones on coated papers, screens of 133-200, and for newsprint about 85, dots to the inch are used.

**Half-way Covenant**, concession granted by Congregational churches of New England (1657-62) to baptized persons of moral life,

allowing them certain privileges of the Church without full enrolment and admission to communion of the Lord's Supper.

**Halibut**, largest of the flat edible fishes, dusky brown and white; eyes on right side; found N. Europe, California, Kamchatka.

**Halicarnassus**, (anc. geogr.) Gr. city, S.W. Asia Minor, fndd. by Dorians from N.E. Peloponnesus; fl. 4th. cent. B.C., under Mausolus (see MAUSOLEUM); birthplace Herodotus and Dionysius of H. (qq.v.). Site now occupied by tn. of *Budrum*.

**Halicz**, tn., Galicia, Poland, on Riv. Dniester, pop., 6,750; brine-springs, potash-works.

**Hallifax**, 1) co. bor. and manuf. tn., W. Riding, Yorks; pop., 98,000; woollens, worsteds, carpets, cotton, iron. 2) Cap. of Nova Scotia, Canada; pop., 64,000; large export and import trade; fine harbour always ice-free; naval sta.; university.

**Hall**, Asaph (1829-1907), Amer. astron.; disc. the two satellites of Mars, 1877.

**Hall**, (archit.) 1) main room of a castle, manor-house, college, or inn of court; 2) large room for public assembly, entertainment, etc.; 3) vestibule or entrance-room of a private house. The H. of the med. castle was gen. planned with high vaulted or timbered roof having a dais at one end for accommodation at meals of lord of the manor and his family, retainers being seated at long tables in main portion of room. Famous Eng. examples of the H. are to be seen at Westminster, the Middle Temple, and at the older universities.

**Hallam**, Henry (1777-1859), Eng. histor.; abolitionist; pub. *Constitutional History of England*, 1827.

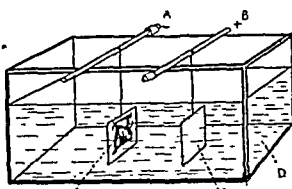
**Hallamshire**, name of an indefinite dist. of W. Riding, Yorks, Eng. (anc. manor); chf. tn., *Sheffield*.

**Halland**, prov., S.W. coast Sweden, on Cattegat; 1,900 sq.m.; pop., 150,000; salmon fisheries, agric., and dairy-farming.

**Hallé**, Sir Charles (1819-95), Ger. musicn.; settled in Eng., 1848; fndd. Hallé Concerts, 1857.

**Halle**, tn., Saxony, Ger., on Riv. Saale; pop., 203,900; salt springs; important trading centre; exports: machinery, sugar, petroleum; univ. united with Wittenberg in 1817.

**Halley**, Edmund (1656-1742), Eng. astronomer; F.R.S., 1678; studied terrestrial magnetism and variations of compass in S. Atlantic, 1698-1700; demonstrated identity of comets of 1456, 1531, 1607, and 1682 (since called *Halley's Comet*), and estab. fact of comet's periodic return; accurately predicted its reappearance in 1758, 1835, and 1910; astronomer royal, 1721; pub. *Catalogus Stellarum Australium*, 1678, etc., and bore cost of printing Newton's *Principia*, 1687.



Making of a Half-tone Block  
A) Cathode. B) Anode. C) Copper plate. D) Copper bath. E) Half-tone block.

**Hall-mark**, device stamped on gold and silver of certain standards of fineness at assay offices in Grt. Brit. Marks indicate standard of quality, date, and place of stamping and maker. The *crown* is stamped on gold articles only; the *lion* "passant" for silver has been used since 1544; date is shown by a *letter* on a *shield*, type of letter and shape of shield being changed at periods of 20-25 yrs.



Hall-marks (London Assay Office)

(London 20 yrs.); the maker's mark (in use since 1366) usu. consists of *initials*; assay offices each has its distinguishing mark (London, *leopard's head*). The head of the reigning sovereign was stamped on dutiable plate from 1784-1890, when duty was removed.

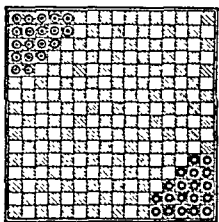
**Hallow-e'en**, night (Oct. 31st) before All Saints' Day, connected with numerous Eng. and Scot. popular customs and superstitions (poem by Rob. Burns).

**Hallstatt**, mkt. tn., Upper Austria, on Hallstatt Lake; pop., 2,000; salt mine; Celtic burial grounds yielded objects of early Iron Age, given name of *H. Period*.



Hallstatt Pottery

**Hallucination**, subjective image in the mind, without foundation in the outer world, 1) of noises; voices heard; 2) of ocular impressions; figures seen; 3) of sensations of smell, taste, and others; freq. sign of serious mental disease.



Halma

**Halma**, game for 2 or 4, played on board of 256 squares, with 19 men a side (13 for 4 players), arr. in opposite corners; object being to get all the men into opponent's corner.

**Halmaheira, Jilolo**, isl., Dut. E. Indies, largest of Molucca Isls., 6,600 sq.m.; pop., 125,600; N. mtn. range, volcanic; forests; exports: rice, coconuts.

**Halo**, 1) (astron.) luminous circle round moon or sun, caused by refraction of light through clouds of ice crystals floating in atmosphere at great elevation; cf. RAINBOW; see also PARHELION; PARASELENE. 2) (Relig.) In Christian art, a ring of light or a radiance about the figure of Christ or a Saint; *nimbus*, round the head; *aureole*, round the entire body.

**Halogens** (chem.), group of chem. elements consisting of bromine, chlorine, fluorine, and iodine; so-called bec. they form compounds with metals sim. to common salt. (Greek *αλως* = salt.)

**Halometer**, instrument for measuring salt-content of liquid; form of areometer (*q.v.*).

**Halophytes**, plants that grow in salt ground.

**Hals**, Frans (c. 1580-1666), Dut. portrait painter; *Laughing Cavalier*.

**Halsbury**, Hardinge Stanley Giffard, 1st E. of, Visct. Tiverton (1823-1921), Eng. lawyer; Ld. Chanc., 1885, 1886-92, 1895-1905.



Frans Hals

**Halva**, oriental sweetmeat.

**Halyard**, (naut.) rope passing through eye or block near or at top of mast; for hauling up and lowering sails, yards, gaffs, etc.

**Halys**, anc. name of Riv. Kizil-Irmak (*q.v.*), scene of victory of Cyrus over Croesus of Lydia in 541 B.C.

**Ham**, (O.T.) son of Noah (Gen ix); tradit. ancestor of African (black) races.

**Hama**, tn., Syria; pop., 55,200; wool and cattle; Hittite inscriptions; in classical times known as Epiphania.

**Hamadan**, tn., cap. of prov. same name, Persia; at base of Mt. Alvand, alt. 6,200 ft.; pop., 30,000; trade in leather, shellac, rugs; tanneries; prob. the anc. Ecbatana.

**Hamadryads**, (Gr. myth.) nymphs (*q.v.*) of the trees.

**Hambledon**, vill., S.E. Hants, 12 m. N. Portsmouth; cricket was played on Windmill and Broad Halfpenny Downs by *H. Cricket Club*, 1750-90.

**Hamborn**, indust. tn., dist. Düsseldorf, Prussia; coal mines, iron, zinc, and lead foundries; united to Duisburg (*q.v.*), joint pop., 441,200.

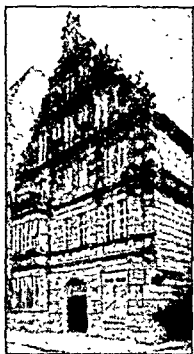
**Hamburg**, 1) State, Ger., on Riv. Elbe; 160 sq.m.; pop., 1,300,000. 2) Cap. of



Hamburg, the Harbour

State, on Lower Elbe and Alster, 60 m. from North Sea; pop., 1,146,200. Adjoined on W. by Altona (*q.v.*). Largest port in Germany and next to Antwerp, largest on the

Continent (area of free port 5.97 sq.m.). Old town (E. of the Alster) honeycombed with narrow canals fringed by warehouses. Riv. Alster dammed to form a lake, divided by rly. bridge into Binnen Alster (enclosed by fine promenades) and Aussen Alster (outside old line of fortifications). Many squares and gardens, modern churches, and public bldgs.: univ. (1919). Shipb., iron foundries, motorcars, bicycles. Hammburg Castle built by Charlemagne; bpric. fndd., 831; defensive alliance with Lübeck, 1241, laid foundations of Hanseatic League; free imperial city, 1510; free city in Ger. Confederation, 1815; state of Ger. Empire, 1871. Important trade with America dates from end of 18th century.



Hameln: the Rat-catcher's House

**Hameln**, tn., Hanover, Prussia, on Riv. Weser; pop., 25,650; mediaeval bldgs. include the Rattenfängerhaus (rat-catcher's house); legend of Piper prob. based on plague of rats in 1284.

**Hamheung**, walled tn., cap. of S. Kankjo, Korea; pop., 32,250; paper industry.

**Hamilcar Barca** (c. 270-228 B.C.), Carthaginian gen., father of Hannibal; conq. Spain, 237-229.

**Hamilton, Alexander** (1757-1804), Amer. statesm.; gen., orator, and financier; killed in duel by Aaron Burr. **H., Lady Emma** (1765-1815), Eng. beauty; m. Sir W. Hamilton; loved by Nelson. **H., Sir Ian Standish Monteith** (1853- ), Brit. soldier; Chf. of Staff to Lord Kitchener, S. Afr. War, 1901-02; G.O.C. in C., southern command, 1905-09; commdd. Mediterr. Exped. Force, 1915; Lieut. of Tower of London, 1918-20; Lord Rector of Edinburgh Univ., 1932; has written: *A Staff Officer's Scrap-Book*, 1906; *The Millennium?*, 1918; *Gallipoli Diary*, 1920, and other works. **H., Patrick** (c. 1504-28), first Scot. Protestant martyr. **H., Sir William** (1788-1856), Scot. philos. and logician; expounded "quantification of the predicate."

**Hamilton**, 1) parl. burgh, cap. Middle Ward, Lanarksh., Scot., 10 m. S.E. Glasgow, in coal and iron dist.; pop., 37,900. 2) Cap. Bermuda; pop., 2,600. 3) City, Ohio, U.S.A.; pop., 52,200. 4) City and port, Ontario, Canada; manuf.: cottons, woollens; pop. 159,900. 5) Tn., N. Zealand; pop., 17,000. 6) Tn., Victoria, Australia; pop., 5,200.

**Hamitic Languages:** see LANGUAGE

**SURVEY. H. peoples**, in N. Africa, mostly crosses between Negroes and Semites; Berbers, Somalis, Nubians, Gallas; brown people, of slender build, aquiline nose, thin lips.

**Hamlet**, mythol. or semi-hist. Danish pr.; hero of Shakespeare's tragedy; type of idealistic procrastinator.

**Ham**, tn., Westphalia, Prussia, on Riv. Lippe; pop., 53,600; railway centre for Ruhr dist.; iron and machine indust.; thermal baths.

**Hammer**, 1) tool for knocking in nails, consisting of head and haft; heavy or **Smith's H.**; lighter type, the **Fore-h. Pneumatic h.**, worked by compressed air; see also STEAM HAMMER. 2) One of the ear-bones (q.v.). 3) (Sport) See THROWING HAMMER. **H. Clavier:** see PIANOFORTE.

**H.-shark**, shark with a head somewhat resembling a hammer in shape, the eyes being placed at each end of the two lateral lobes. Voracious fish, denizens of tropical and subtropical seas, one species being a rare visitor to British coasts; attain 15 or 16 ft. in length.

**H.-throwing**, (athletics) the hammer (now a 16-lb. weight on flexible handle) is whirled round the head and thrown from a 7-ft. circle. Record distance 189 ft. 6 in., by P. Ryan (N.Y.), 1913.

**Hammered**, said of a member of the London Stk. Exch. when officially declared a defaulter; announcement is made by the "Head Waiter," who attracts attention by striking his desk with a hammer.

**Hammerfest**, tn. on Kvalø Isl., co. Finnmarken, Norway; northernmost tn. in Eur. (lat. 70°N.); pop., 36,100; harbour, fisheries.

**Hammer-Purgstall**, Joseph F. von (1774-1856), Austr. orientalist; *Geschichte des osmanischen Reiches*, 1827-35.

**Hammersmith**, met. bor., W. London, Eng., on N. bank of Thames; pop., 135,500.

**Hammond**, Richard (1896- ), Amer. composer.

**Hammurabi**, Kg. of Babylon, c. 2067 B.C.; publ. laws for whole empire, "Code of Hammurabi," insc. in cuneiform char. on 21 columns.

**Hampden**, John (1594-1643), Eng. statesm.; resisted revival of ship money; commd. regmt. for Parliament; slain at Chalgrove Field.

**Hampshire** (*Hants*, or County of Southampton), mari. co., S.W. Eng.; area, 1,621 sq.m.; pop., 1,102,515 (incl. Isle of Wight, sep. admin. county). Portsmouth Harbour and Southampton Water on coast; inland New Forest; fertile valls.; crossed by North Downs; agric., sheep- and cattle-breeding, fishing, shipb. Contains Southampton (co. tn.), Winchester, Portsmouth, Aldershot, Bournemouth.

**Hampstead**, met. bor. in N.W. London; pop., 88,920; mainly residential; artistic and

lit. associations. **H. Heath** (with *Parliament Hill and Golders Hill*, 600 ac.), open public space.

**Hampton Roads**, channel by which James Riv. empties into Chesapeake Bay, Virginia, U.S.A.

**Hampton**, urb. dist. of Middx., part of Greater London, on Riv. Thames. **H. Court Palace**, by Thames, nr.

London, built by Card. Wolsey (1515), given by him to Henry VIII (1525), who added Great Hall; E. wing designed by Wren; paintings and tapestries; private residences of disting. servants of Crown.



Hamster

**Hamster**, burrowing rodent found in Eur. and Asia; short tail, fine coat; large cheek-pouches, in which grain is collected in autumn and carried down to be stored in its burrow.

**Hamsun**, Knut (1859- ), Norw. writer; Nobel Prize (Lit.), 1920; *Hunger; Growth of the Soil; The Woman at the Well*.

**Hamun**, salt swamps, on Iraq plateau (Perso-Afghan frontier district).

**Hand**, 1) extremity of the fore-limb, adapted for grasping; consisting of 3 sections, carpus (wrist), metacarpus, phalanges (fingers and thumb); hand of higher apes sim. to man's, but thumb shorter.

2) Brit. and U. S. linear measure,  $1\frac{1}{2}$  palm or 4 in.; used only in measuring horses.

**H.-ball**, contest betw. two teams of 11 a side; develop-  
mnt. of foot-  
ball, 1919.



Hand-ball

The ball (inflated, c. 1 lb.; dia., c. 2 ft.) may only be touched and played with the hand and arm. Number of goals scored decides game. Play usu. lasts 2 halves of 30 min. each for men, and of 20 min. each for women.

**Händel**, George Frederick (1685-1759), Ger. composer and conduct.; operas; oratorios: *The Messiah, Judas Maccabaeus*; orchestral, chamber, organ, and harpsichord music; came to England, 1710; naturalized 1726.



Händel

**Handicap**, advantage in distance, weight, strokes, etc., to equalize competitors' chances in sporting contests, horse-races, etc.

**Hansel**, 1) earnest-money, paid

on signing a contract; 2) gift, esp. bridegroom's gift to bride; hence, vb., to have first use of; to break in.

**Hangar**, shed for aircraft.

**Hangchow**, port, Chekiang prov., S.W. China; pop., 426,900; silk weaving. Treaty port.

**Hanging Gardens**, terraced gardens of Nebuchadnezzar, Kg. of Babylon; one of the Wonders of the World (q.v.).

**Hangnail**, partly detached piece of skin near nail.

**Hank**, Brit. linear meas., 7 skeins or 840 yds.; used of cotton and silk. II. of worsted, 7 wraps or 70 yds.

**Hanka**, Václav (1791-1861), Czech poet and philologist; see KÖNIGINHOF MANUSCRIPT.

**Hankow**, city, Hupch prov., Centr. China, on Riv. Yangtze-kiang, 700 m. from mouth; pop., 680,700. Treaty port.

**Hanley**, one of the "Five Towns" of the Potteries; see STROKE-ON-TRENT.

**Hannibal** (246-182 B.C.), Carthag. gen., crossed Pyrenees and Alps (218-202 B.C.) in 2nd Punic War; deft. Romans at Cannae, 216; deft. by Scipio at Zama, 202.

**Hannibal**, tn., Missouri, U.S.A., on Mississippi Riv.; pop., 22,750; lumber, tobacco; Mark Twain's home during boyhood, and scene of *Huckleberry Finn*, *Tom Sawyer*, etc.

**Hannington**, James (1847-85), Eng. missionary; bp. of Eastern Equatorial Africa, 1884; headed expedn. to open route to Victoria Nyanza; captured by natives; murdered.

**Hanno**, 1) Carthag. navig.; made voyage to West Africa and wrote *Periplus*. 2) **H. or Anno**, St. (c. 1010-75), Abp. of Cologne; twice Regent of the Empire, 1062-63 and 1072; Chanc. to Emp. Hy. III.

**Hanoi**, cap. of Tongking, and of Fr. Indo-China, on Riv. Song-koi; pop., 123,200; free port; indust.: cotton, tobacco; seat of govt. of French Indo-China.

**Hanover**, 1) Prussian prov.; 14,896 sq.m.; pop., 3,190,000. Coast-line (interrupted by State of Oldenburg) contained betw. mouths of rivs. Ems and Elbe, which, with Riv. Weser, are chf. rivers. Prov. encloses free State of Bremen and adjoins State of Hamburg. Surface generally level (N. Ger. Plain), with Lüneburger Heide and other extensive heaths; hilly in detached S. portion (Harz Mts.). Pine forests in N.E. Agric. (rye, flax, etc.), cattle-breeding, dairy-farming, geese; potash (Leine dist.), coal (Deister dist.; S.W. of Hanover), petroleum (Aller dist.), silver, lead, and copper in Harz Mountains. Chf. tns.: *Hanover* (cap.), Göttingen, Osnabrück; ports, Wilhelmshaven, Cuxhaven. Orig. prov. of Brunswick. Duke of H. appointed Elector, 1692. Personal union with Gt. Brit., 1714 (George I). In-

dept. kgdm., 1814; joined Ger. Confederation, 1815; separated from Great Britain, 1837, on accession of Qn. Victoria. Annexed to Prussia after siding with Austria, 1866. 2) Cap. of prov., on Riv. Leine; pop., 445,200; medieval tn. hall; tomb of Leibnitz (d. 1716); birth-place of Herschel (1738); Herrenhausen, former palace of kgs. of Hanover. City an impt. manuf., trading, and rly. centre.

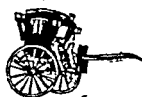
**Hansard**, name of publisher first authorized to print debates of House of Commons, now tradit. attached to official verbatim reports of Hse. of Com. and (loosely) of Hse. of Lords.

**Hanseatic League**, union of towns in N. Ger. and on Baltic for trading purposes. From 13th to 17th cents., under leadership of Lübeck and Hamburg exercised great power, polit. as well as mercantile, wh. they grad. lost with develop. of territorial sovereignty. Many towns (at one time numbered about 40) left the league; but Hamburg, Lübeck, and Bremen have remained centres of independent States within Ger. Emp. and are still known as Hanse towns.

**Hänsel and Gretel**, opera by Humperdinck (q.v.) (1894).

**Hansom cab**, two-wheeled, one-horse carriage, two-seater, with high dickey for driver; named after its designer, J. A. Hansom (1803-82), an Engl. architect.

**Hanson**, Howard (1896-), Amer. composer and conductor.



Hansom

**Hants**, abbr. Hampshire.

**Hanukkah**, 8-day Jew. Feast of Dedication, commemorating re-dedication of the Temple on 25 Kislew, 165 B.C., by Judas Maccabeus, 3 yrs. after its profanation by Antiochus Epiphanes. Called the "Feast of Lights," from custom of lighting lamps on the 8 days, and (by Christians) the "Feast of Dedication" (John x, 22).

**Hanumān**: see LANGUR.

**Hanwell**, urb. dist., Middx., 10 m. W. London; pop., 22,000; mental hospital.

**Han-Yang**, tn., Hupeh, China, at the confluence of rivs. Hankiang and Yangtze-kiang; pop., 110,500; fishing; textile industry.

**Hapag**, abbr. Hamburg-America Line (steamships).

**Haparanda**, tn., Norbotten, Sweden, on est. of Riv. Torne, Gulf of Bothnia; pop., 2,750; meteorol. station; shipb. yards.

**Hapsburg**: see HABSBURG.

**Hara-kiri**, method of honourable suicide practised by Japanese *samurai* (q.v.); properly styled *seppuku*, "belly-ripping."

**Harbin**, city, centr. Manchuria, on Riv. Sungari; pop., 230,400; junc. of Trans-Siberia and S. Manchuria Rlys.; exports beans, wheat, dyes, tobacco.

**Harbourer**, (stag-hunting) person em-

ployed to inform the master of the whereabouts of a "warrantable stag."

**Harbour Grace**, port, Newfoundland, on Conception Bay, Avalon Penins., pop., 4,000; exports furs, fish, cod-liver oil. Starting-point of several transatlantic flights.

**Harcourt**, Sir William Vernon (1827-1904), Brit. Lib. statesm.; M.P. from 1868; Chanc. of Excheq., 1886, '92, '94; leader of the Hse. of Com., 1894, and of Liberal Party, 1895-98; denounced Boer War; upheld Free Trade.

**Hardanger**, dist., prov. Bergenhus, S. Norway. **H. Fjeld**, plateau (alt., 6,725 ft.), S.W. Norway. **H. Fjord** (75 m. long), inlet of sea, S.W. coast, Norway.

**Harden**, Maximilian (1861-1927), real name *Wilkowski*, Ger. political writer; fndd. and edit. periodical *Die Zukunft*, 1892.

**Hardenberg**, Karl August von (1750-1822), Pruss. statesm.; Chanc., 1810, assisted in restor. of Prussia. **H., Friedrich von**: see NOVALIS.

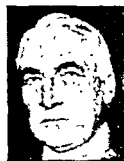
**Hardening**, (tech.) process of making specially hard, as in manufact. of steel by rapid cooling from a white heat (see CASE-HARDENING), excessive hardness of wh. is reduced by tempering (q.v.). Oily fats are hardened by combining them with hydrogen, nickel being used as catalyst (q.v.); inferior fats, such as train-oil, can thus be made edible.

**Hardicanute** (c. 1019-1040-1042), Kg. of Eng.; son of Kg. Canute; introd. oppressive taxation; punished revolt at Worcester by burning the city.

**Hardie**, Jas. Keir (1856-1915), Brit. politic.; co-fnder. Lab. Party; 1st chmn. Ind. Lab. Party, 1893.

**Harding**, Warren Gamaliel (1865-1923), 29th Pres. of U.S.A., 1920-23; convened Washington Confer., 1921; alleged to have died of poisoning while in office.

**Hardinge**, Henry H., 1st visct. (1785-1856), Brit. field marshal; deputy qr.-mr.-gen., Portuguese Army, in Peninsular War; commissioner at Pruss. hdqrs., 1815; M.P., 1820; Sec. for War, 1828; Chf. Sec. for Ireland, 1830, 1834-35; Gov.-gen. of India, 1844-48; visct., 1846; C.-in-C., 1852-56. **H. of Penshurst**, Charles Hardinge (1858-), 1st Baron (cr. 1910), K.G., G.C.B., etc., bro. of 3rd Visc. H.; entered diplomatic service, 1880; Brit. Ambassador, Petrograd, 1898-1903; Viceroy of India, 1910-16; Ambassador in Paris, 1920-22.



Harding

**Hardness**, (phys.) resistance offered by a body to permanent change in form of its surface. *Brinnell's test* consists in measuring size of pit prod. in surface by a hard steel ball driven in by pressure. **H. of minerals**



is measured on a conventional scale; one min. said to be harder than anoth. if 1st will scratch 2nd but not vice versa; talc is softest, diamond hardest min. **H. of water** depends on amt. of calcium or magnesium carbonates; these are deposited as *scale* or "fur" on vessel in wh. water is boiled; hard water reqs. much more soap to form a lather than soft water. Removed by treatment with soda, lime, or zeolites. 1 Eng. deg. of H. = 1 grain CaO per gal.

**Hard rubber**, name given to vulcanite or ebonite; compound of india-rubber and sulphur, gen. with mineral filler.

**Hard solder**, copper zinc alloy used for brazing (*q.v.*).

**Hardwick Hall**, Elizabethan mansion, nr. Bakewell, Derbysh., Eng. (Duke of Devonshire).

**Hardy**, Thomas (1840-1928), Eng. novel. and poet; wrote esp. of Wessex (Dorset); *Tess of the D'Urbervilles*; *The Dynasts*.

**Hare**, long-eared, short-tailed rodent, with cleft upper lip; soft, thick, grey-brown fur; head and body long and compressed; hind legs very long. Nocturnal in habit, sleeping by day in its "form," a slight depression in the ground well screened by grass, etc. Males very pugnacious. About four litters annually.

**Harebell**: see HAIRBELL.

**Harelip**, congenital cleft in the upper lip.

**Harem**, part of Mohammedan house where women are segregated; the women so secluded.

**Harewood**, Hy. Geo. Chas. Lascelles, 6th Earl (1882- ), marr. (as Visct. Lascelles), Princess Mary (Princess Royal), only dau. of King George V, 1922; steward of Jockey Club.

**Hargreaves**, Jas. (d. 1778), Eng. inventor; patented the spinning-jenny, 1770.

**Hariri** (1054-1122), Arab. poet; *Maqamas*.

**Hari-Rud, Heri-Rud**, riv., Asia, flowing from Afghan Mtns. into Tejend oasis in Turkestan; for part of its course forms frontier betw. Persia and Afghanistan.

**Harju**, most densely pop. dist. in Estonia; 2,196 sq.m.; pop., 219,655; indus. and agric.; cap., Tallinn (*Reval*) (pop., 132,000).

**Harlech**, anc. coastal tn., Merionethsh., N. Wales; 15th cent. castle (ruins); pop., 1,100.

**Harlem**, Negro quarter of New York City, U.S.A., in bor. of Manhattan; pop., 152,200 (half total Negro pop. of New York).



Thomas Hardy



Hare

**Harlequin**, conventional clown in *Commedia dell'arte*; servant of Pantaloon, in love with Columbine.

**Harlequins**, a leading Eng. Rugby football club; fndd. 1871 at Wandsworth Common; headquarters at Twickenham since 1908.

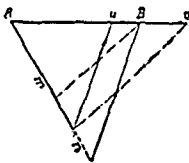
**Harley**, Robert, 1st E. of Oxford (1661-1724), Eng. statesm.; unsuccessfully impeached for high treason (1717); his collect. of MSS., *The Harleian*, now in Brit. Museum.

**Harley Street**, Marylebone, London; centre of Eng. med. profession.

**Harmattan**, a very dry, cool, sand-laden wind blowing fr. Sahara to Atlantic coast during Dec., Jan., and February.

**Harmonic analysis**, branch of mathematics the object of wh. is to find the simple component curves wh. together make up an irregular periodic curve.

**Harmonic division**, (math.) division of a straight line in the same proportion at an interior and an exterior point; the line AB is harmonically divided at *u* and *v*:  $Au : uB = Av : Bv$ ; the length AB is the Harmonic mean between *Au* and *Av*.



Harmonic Division

**Harmonic progression**: see PROGRESSIONS.

**Harmonics**, (mus.) upper partials, produced on stringed instr. by lightly touching an open string whilst bowing.

**Harmonium**, organ without pedals; about size of a piano; the player's feet tread the bellows.

**Harmony**, (mus.) agreement of several notes sounded together. **Theory of h.**, theory of relations of notes sounded together and of chord progression. **H. of the spheres**, according to Pythagoras, the musical notes, inaudible to human ears, produced by the orderly revolution of the heavenly bodies.

**Harmsworth**: see NORTHCLIFFE; ROTHERMERE.

**Harnack**, Adolf von (1851-1930), Ger. theolog.; *History of Dogma*; *What Is Christianity?*

**Harney Peak**, highest point of Black Hills, S. Dakota, U.S.A.; 7,242 feet.

**Härnösand**, port, Västernorrland, Sweden; pop., 11,770; important trading centre for N. Sweden; shipb.; first European town to be lit by electricity (1885).

**Harold**, Kgs. of Eng.: **H. I** (Harefoot) (d. 1040), illeg. son of Canute. **H. II** (c. 1022-66), son of Earl Godwin; chosen to succeed Ed. the Confessor (Jan. 1066); [deftd. and slain at B. of Hastings.

**Haroun al Raschid** (763-809), 5th Abbasid caliph of Bagdad; hero of the *Thousand and One Nights*.

**Harp**, anc. stringed musical instrument, played by plucking with the fingers; has developed chiefly in N. Europe. Modern H. has range of  $6\frac{1}{2}$  octaves, with separate notes for naturals, sharps, and flats, and a pedal mechanism for changing key; it has an important place in orchestral music. **Welsh h.** has three rows of strings, and, as with all Celtic harps, the left hand plays the treble and the right the bass.

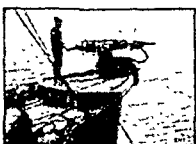


Harp,  
18th  
Century

**Harpenden**, urb. dist., Herts, 25 m. N. of London; pop., 8,400; *Rothamsted Experimental Station*, for agr. and bot. research.

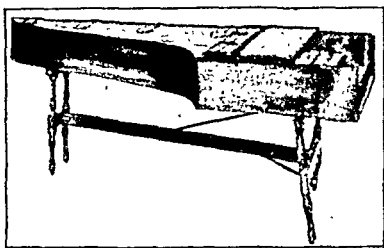
**Harpignies**, Henri Joseph (1819-1916), Fr. landscape painter; represntd. in Luxembourg and Tate Gall., and at Douai, Lille, etc.

**Harpoon**, javelin with barbs and a long line, formerly thrown by hand (by the **harpooner**), now shot from a gun, for whaling.



Harpooner

**Harpisichord**, keyboard instrument allied to virginal and spinet, having several strings to each note, which are plucked by quill



Harpsichord

when key is struck. One of the precursors of the piano and similar in shape to a modern grand piano.

**Harpy** (Gr. "Snatcher"), name given to three fabulous creatures of Gr. mythol., gen. represented as woman-faced birds of loathsome character. **H. eagle**, bird of the Order *Accipitres*, native of S. and Centr. Amer.; one of the most powerful and magnificent of the birds of prey.

**Harrier**, 1) smaller breed of foxhound (q.v.), used for hare-hunting. 2) Name of sev. species of hawk, with imperfect disk of feathers round eyes; distrib. almost universal; ground-nesting. **H. eagle**, sev. species of eagle, mostly African, but 1 European; brown; resemble buzzard.

**Harris**, Geo. H., 4th bn. (1837-1932), Brit. politician and cricketer; Gov. of Bombay, 1890-95; capt. of Kent County C.C.; wrote *A Few Short Runs*, 1921.

**Harris**, Joel Chandler (1848-1908), Amer. writer; many stories illustrating Negro life and beast-lore, incldg. *Uncle Remus*, *His Songs and Sayings*, 1880; *Nights with Uncle Remus*, 1883, etc.

**Harris**; (isl.) **Harris Tweeds**: see LEWIS-WITH-HARRIS.

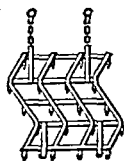
**Harrisburg**, cap., Pennsylvania, U.S.A., on Susquehanna Riv.; pop., 100,000; iron and steel works; coal mines; tobacco and cigars.

**Harrison**, Benjamin (1833-1901), 23rd Pres. of U.S.A., 1889-93. **H., Frederick** (1831-1923), Eng. jurist, author, and Positivist philos. **H., Mary St. Leger**: see MALET, LUCAS. **H., William Henry** (1773-1841), 9th Pres. of U.S.A., 1841.

**Harrodsburg Dam**, Dix Riv., Kentucky, U.S.A., 275 ft. high, storage capacity: 100,000 mill. gals. (1925).

**Harrogate**, co. bor., W. Riding, Yorks, Eng., fashionable spa; chalybeate, saline, and sulphur springs; pop., 39,800.

**Harrow**, agric. implement for breaking down and levelling ground before sowing and for covering seeds with earth after planting; consists of frame or network with spikes or teeth, wh. are dragged over ground; e.g., **Zig-zag h.**; **chain harrow**.



Harrow,

**Harrow-on-the-Hill**, urb. dist., Middx., Eng., resid. suburb London; pop., 26,400; public school for boys, fndd. by John Lyon, 1571, has abt. 650 boys.

**Harte**, Francis Bret (1839-92), Amer. novelist and poet; *The Luck of Roaring Camp*; *The Heathen Chinee*.

**Hartebeest**, African antelope, about size of a stag; characterized by great height of withers, length of head, and lyre-shaped or recurved horns.

**Hartford**, cap., Connecticut, U.S.A., on Connecticut Riv.; pop., 164,100; State Capitol; Trinity Coll. (1823); R.C. cathed.; aeroplanes, small arms, typewriters, silver-plate, elec. appl.; airport.

**Hartington**, Marquess of; second title of the Dukes of Devonshire, borne during father's lifetime by eldest son.



Old Schools, Harrow



Hartlepool

**Hartland Point**, headland (370 ft.), N.W. Devon, opp. (12 m.) Lundy Island.

**Hartlepool**, seapt., and munic. bor., Durham; 1 m. N. *West H.*; Saxon convent c. 650; 12th cent. ch.; pop., 20,500.

**Hartmann**, Eduard von (1842-1906), German philos.; *Philosophy of the Unconscious*, 1869.

**Hartmannsweilerkopf**, **Hartmannsweilerkopf**, spur of S. Vosges Mtns. in Alsace, 3,120 ft.; scene of fierce fighting in World War.

**Hartshorn**, **Spirit of**, old name for liquid ammonia, wh. was formerly produced from bones and horns.

**Hart's-tongue** (bot.) *Scolopendrium vulgare*, common fern, so-called because of shape of fronds.

**Harunobu**, Suzuki (18th cent.), Jap. painter.

**Harvard**, John (1607-38), Eng. Puritan divine; graduated at Cambridge; emigrated to Massachusetts; by bequest endowed a school at Cambridge, Mass., thus becoming a principal founder of **Harvard University**, oldest and one of princ. universities of U.S.A., in Cambridge, Mass., named (1639) after its chief fndr. (see above). Administration based on charter of 1650; orig. eccles. in character, conflict betw. Puritanism and Anglicanism of early 18th cent. caused secularization of controlling body and led to fndtn. of Yale Univ. (q.v.). Bldgs. include Lawrence scientific school, Graduate school, Arnold Arboretum, library, Agassiz museum, Radcliffe college (for women), etc. Medical and dental schools are at Boston.

**Harvestman**, a spider-like mite, with a small, round body and long legs; preys on small insects, etc.

**Harvey**, **Sir John Martin** (1867- ), Brit. actor-manager; 1st appearance, Court Theatre, 1881; with Irving, 1882-96; management of Lyceum, 1898; produced *The Only Way*, 1899; knighted, 1921. **H., William** (1578-1657) Eng. anatomist; disc. circulation of blood (q.v.).

**Harwich**, tn. and seapt., Essex; fortified harbour; pop., 12,700; port of call for steamers to Continent. Oyster fisheries.

**Harzburg**, tn., Brunswick, Ger.; pop., 6,500; mineral springs.

**Harz Mountains**, range running S.E. to N.W. in central Ger., betw. rivs. Elbe and Weser. Slate plateau surmounted by granite mass of Brocken, 3,744 ft. *Upper Harz* in W.,

alt. 1,975 ft.; *Lower Harz* in E., alt. 1,330 ft.; forests on lower slopes; mines and mineral springs.

**Hasa**, Arabian dist.: see EL HASA.

**Hasdrubal**, name of several Carthag. generals, of whom the most import. are: 1) son-in-law of Hamilcar Barca, whom he succeeded in command; extended Carthage Emp.; fndd. Cartagena, Sp.; assassinated 221 B.C. 2) Younger son of H.B., and brother of Hannibal; left in command in Spain during 2nd Punic War; deftd. and killed, nr. Riv. Metaurus, 207 B.C.

**Hash**, cold, cooked meat cut up, covered with gravy, bread-crumbs, a little brown sauce, and baked in oven.

**Hashish**, narcotic preparation made from dried flowering tops of the *Indian hemp*; used as a drug of addiction in E.; consumption restricted or forbidden in most Western countries. See DRUGS OF ADDICTION.

**Haskovo**, **Khaskovo**, 1) dept., S. Bulgaria, 1,918 sq.m.; pop., 245,355; 2) tn., cap. of dept.; pop., 26,260; coal mines, tobacco.

**Haslemere**, mkt. tn., Surrey, in vall. betw. Blackdown (918 ft.) and Hindhead (895 ft.); pop., 3,900. Tennyson died at Aldworth on Blackdown.

**Hasp of linen**, 6 bears, or 3,600 yds.

**Hassidim** (Hebr., Pietists), Jew. sect., fndd. in S. Poland, c. 1740, by Israel b. Eliezer Baal-Shem-Tob (called by his followers, Besht), and still existing in S.E. Europe. Orig. a movement towards democratization and intensification of religious fervour, it attracted numerous followers from the masses, and developed into a mystic form of religion guided by "Zaddikim" (Righteous Men) who frequently exploited its adherents.

**Hastings**, Warren (1732-1818), Eng. statesm.; 1st Gov.-Gen. of Brit. India (1773-85); impeached for "high crimes and misdemeanours," 1786, tried 1788, acquitted 1795.

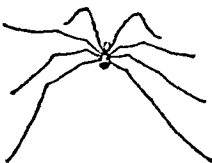
**Hastings**, co. bor. and seaside resort, Sussex, on Eng. Channel, one of Cinque Ports; pop. (with *St. Leonards*) 65,200. **Battle of H.**

(1066) was fought at *Battle* or *Senlac*, 7 m. N.W.; defeat of Eng., under Harold, by William, Duke of Normandy, who bec. K. of Eng. as William I (William the Conqueror).

**Hata**, Sahachiro (1873- ), Jap. doctor; with Paul Ehrlich disc. salvarsan (q.v.).

**Hatchment** (i.e., achievement), panel of armorial bearings displayed at funerals and often hung over tombs in churches.

**Hatchway**, rectangular opening in deck of vessel or floor of building, closed, when required, by a hatch or covering.



Harvestman



Warren Hastings



William Harvey

**Hatfield, Bishop's Hatfield**, mkt. tn., Herts, on Riv. Lea, 18 m. N. of London; pop., 5,800. *H. House* (M. of Salisbury), built 1611, on site of 12th cent. palace of bps. of Ely; res. of Qn. Eliz. (before accession) and of James I.

**Hathaway**, Anne (1556-1623), marr. William Shakespeare, 1582; identified with Agnes, dau. of Richard H. (d. 1581), of Shottery, a hamlet of Stratford-upon-Avon; his house, now known as Anne Hathaway's cottage, bought for nation, 1892.

**Hatto I** (891-913), Abp. of Mainz, regent for Louis IV, "the Child," Kg. of Germany.

**Hatton, Sir Christopher** (1540-91), Eng. statesman and courtier; favourite of Qn. Eliz.; vice-chamberlain of roy. household, and privy councillor, 1578; M.P. for Higham Ferrers, 1571; Lord Chancellor, 1587. **H. Garden**, London (hdqtrs. of the jewellery trade), is named after him. **H., John Liptrot** (1809-86), Eng. composer; mainly songs; *To Anthea*, etc., conductor, Drury Lane, 1842.

**Hauberik**, chain-mail shirt of the Mid. Ages, with *camail*, covering the neck.

**Hauenstein**, two passes over Swiss Jura Mtns., betw. Basle and Solothurn, leading from Liestal; that towards Olten has a rly. tunnel 5 m. in length.

**Hauff**, Wilhelm (1802-27), Ger. poet and novelist *Lichtenstein*; fairy-tales.

**Hauksbök**, collection of MSS. of early Icel. prose and verse, made by Hauk Erlendsson (d. 1334); contains, partic., *Landnámna*, the history of colonization of Iceland.

**Haunch**, the part of the body that lies between the ribs and thigh.

**Hauptmann**, Gerhart, (1862- ), Ger. dramat., novel., and poet; Nobel Prize (Lit.), 1912; *Die Weber*; *Und Piffa Tanzt*; *Der Weisse Heiland*; *Atlantis*.

**Hausas**, mixed race, combining Hamitic and Sudanese Negro; industrial and trading people of N.W. Africa; Mohammedan. See also LANGUAGE SURVEY, Sudanese.



Gerh. Hauptmann

**Hausmann**, Georges Eugène, Bn. (1809-91), Fr. financier; prefect of Seine, 1853; carried out rebuilding of Paris.

**Hautbois**: see OBOE.

**Haute École**, elaborate system of horse-manship practised chiefly in France and Italy.

**Haute-Garonne**, dépt. S. France; 2,457 sq. m.; pop., 441,799, watered by Riv. Garonne; agric., wine, poultry; manganese, min. springs; weaving; cap., *Toulouse*.

**Haute-Loire**, dépt., France; 1,930 sq. m.; pop., 251,600; cap., *Le Puy*.

**Haute-Marne**: see MARNE.

**Haute-Saône**, dépt., E. France; 2,074 sq. m.; pop., 219,257; agric., iron and salt mines, quarries; distilleries, cotton-mills, chem. products; cap., *Vesoul*.

**Haute-Savoie**, dépt. E. France; 1,777 sq. m.; pop., 252,800; mountainous (*Mont Blanc* in S.E.); drained by tribs. of the Rhone; contains L. of Annecy and reaches to L. of Geneva; cattle-breeding, dairy farming (Gruyère cheese); mineral springs at Evian; cap., *Annecy*; tourist centre, Chamonix.

**Haute-Vienne**, dépt., France; 2,147 sq. m.; pop., 335,900; cap., *Limoges*.

**Haut goût** (Fr.), high flavour, esp. of game.

**Havana, La Habana**, cap., Cuba, on N. coast; pop., 582,000; chf. port in the Antilles; exports: sugar, tobacco.

**Havelock**, Sir H. (1795-1857), Eng. gen.; d. after relieving Lucknow (Indian Mutiny).

**Haverhill**, tn., Massachusetts, U.S.A., on Merrimac Riv.; pop., 48,700; commerc. centre; shoes, bricks, woollens. Birthplace, J. G. Whittier.

**Havre, Le**, second Fr. port, dépt. Seine-Inférieure, on est. Riv. Seine; pop., 158,000; shipb., machinery, textiles.

**Hawaii**, most sthn. and largest isl. of Hawaiian group; 4,250 sq. m.; pop., 66,800; extinct and active volcanoes (Mauna Kea, 13,806 ft.; Mauna Loa, 13,675 ft., with lava lake, Kilauea); port and cap., *Hilo*; pop., 10,430. **H. National Park**, Hawaiian Isls. (1916), includes three volcanoes (two active); 245 sq. miles.

**Hawaiian Islands, Sandwich Isls.**, group in Pacific, on tropic of Cancer; four larger (Hawaii, Maui, Oahu, Kauai); 23 smaller (includ. Molokai, the lepers' isl.), 6,450 sq. m.; pop., 368,340 (Jap. 137,400; Filipinos 63,900; Kanakas [natives] and mixed races 47,765; Chin. 25,200; Portug. 29,720; other Europ. 38,100); sugar-cane, rice, pine-apples, bananas, coffee; cap., *Honolulu*. Discovered by Spaniards, 1527; annexed by U.S.A., 1898.

**Hawarden**, mkt. tn., Flint, N. Wales, 6 m. W. of Chester; pop., 8,000; at *H. Castle* (1752), adjoining ruined 13th cent. castle, W. E. Gladstone died in 1898.

**Hawes Water**, lake, Westmorland, Eng. Lake Dist.; 2½ by 1½ m.; being enlarged as reservoir, Manchester waterworks.

**Hawfinch**, shy, heavy-beaked bird of finch family, found throughout Europe, Siberia, India; plumage, brown and blue-black.

**Hawk**, common name including many species of raptorial birds allied to the falcons; e.g., sparrow-hawk, goshawk.

**Hawker**, person who cries or sells goods in the streets (in Gt. Brit. subject to license);

itinerant vendor, legally distinguished from pedlar (*q.v.*) by use of an animal or other means of carrying wares.

**Hawkewood**, Sir John (d. 1394), Eng. soldier and adventurer; served in France with the Black Prince; formed the White Company, a force he employed in var. campaigns in Italy, 1360; apptd. c.-in-c. of Florentine army, against the Milanese, 1390.

**Hawking**: see FALCONRY.

**Hawkins**, Sir A. H.: see HOPE, ANTHONY.

**H., Sir Henry**: see BRAMPTON. **H., Sir John** (1532-95), Eng. sailor; carried on slave trade betw. Afr. and Span. Amer.; Ld. Treas. of Navy, 1573; rear-adm. agst. Armada, 1588; sailed with Drake to W. Indies; d. at sea, near Puerto Rico. **H., Sir John** (1719-89), mus. historian; *General History of the Science and Practice of Music*; 5 vols., 1776.

**Hawk-moths**, narrow-winged, strong-flying species, with long proboscis; suck nectar from flowers while hovering.

**Haworth**, urb. dist., W. Riding, Yorks, 10 m. N.W. Bradford; pop., 6,000; *H. Parsonage* (now Brontë Museum) was home of the Brontës, Charlotte and Emily being buried in the church.

**Hawse**, (naut.) situation of cables before a ship's stem, when moored with 2 anchors, one on either bow; distance ahead to wh. cables usu. extend.

**Hawser**, small cable of rope or steel wire, or both, of varying lengths and tensile strength; used for mooring, warping, towing, etc.

**Hawthorn**, may, white-thorn, *Crataegus oxyacantha*; prickly bush with white or pink fragrant blooms and small red berries called "haws."

**Hawthornden**, glen and mansion, Midlothian, Scotland, on the N. Esk, 10 m. S. of Edinburgh; house rebuilt by the Scots poet Wm. Drummond (*q.v.*). **H. Prize**, for literature (£100), fndd. and endowed 1919, by Miss Alice Warrender, and awarded yearly for an imaginative work by an author under 41. Siegfried Sassoon (*Memoirs of a Fox-hunting Man*) and Kate O'Brien (*Without My Cloak*) are among recent winners.

**Hawthorne**, Nathaniel (1804-64), Amer. novelist; *The Scarlet Letter*; *The House of the Seven Gables*.

**Hay, Ian**: see BEITH, JOHN HAY. **H., John** (1838-1905), Amer. diplom. and auth.; *Castilian Days*.

**Haydn**, Joseph (1732-1809), Austr. composer; symphonies; oratorios: *The Creation*; *The Seasons*; masses, quartets, piano sonatas.

**Hayes and Harlington**, urb. dist., Middx.; pop., 23,700; W. suburb Greater London.

**Hay fever**, state of irritation of nasal mucous membrane and conjunctiva of the eye, caused in early summer by contact with grass pollens. In severe cases **H. asthma** develops.

**Haymarket**, The, street nr. Piccadilly Circus, London; actual market abol. 1830. Haymarket and His Majesty's Theatres.

**Hazara**, mountainous dist., Himalayas, N.W.F.P., India, bounded N. and E. by Kashmir, S. by Punjab, W. by Riv. Indus; 3,300 sq.m.; pop., 622,300.

**Hazard**, (1) gambling game with dice. 2) (Billiards) Stroke by wh. player's ball either forces object ball into pocket (*winning H.*), or enters pocket after striking object ball (*losing H.*).

**Hazebrouck**, tn., N. France, dépt. Nord, 25 m. S. of Dunkirk, on main rly. line, thence to Amiens; pop., 11,700. Threatened by Germans in battle of the Lys (April 9-30, 1918).

**Hazel**, (bot.) *Corylus avellana*, common hazel; has coarse rounded, serrated leaves. Nuts are edible, sometimes known as *filberts* or *cobs*.

**H.-wort**, wild nard, *Asarum Europaeum*, herb used in folk med. as an emetic. **H.-witch**, see WITCH-HAZEL.

**H.-hen**, species of grouse ranging from northern Europe to Kamchatka, and from Spain to N. China; essentially forest birds, with two extreme phases of plumage—a rufous passing to a grey.

**Hazlitt**, William (1778-1830), Eng. auth. and critic. *Characters of Shakespear's Plays*; *Table Talk*.

**Hazzan** (Hebr.), the precentor in the synagogue and leader in service of prayer; orig. an overseer, or custodian of synagogue utensils.

**H.B.C.**, abbr. Hudson's Bay Company.

**H.B.M.**, abbr. His (Her) Britannic Majesty.

**H.c.f.**, abbr. highest common factor.

**Hdqrs.**, abbr. headquarters.

**He**, (chem.) symbol of helium.

**Head**, (phys.) of water or other liquid; height of water which may produce excess pressure of the water over atmospheric pressure. **H. of navigation**, highest navigable point of a river.

**Head-hunters**, prim. tribes (Farther India, S. Seas, W. Afr., and S. Amer.), esp. Dyaks of Borneo, who practise man-hunting, in superstitious belief that powers of dead victims pass to themselves; partly linked with



Hawthorn



Haydn



Hazel

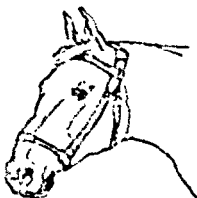
cannibalism; head-hunter may not marry until he has produced head as trophy.

**Headmasters' Conference**, annual conf. of headmasters of public schools for discussion of educat. subjects; Indd., 1869, by Rev. E. Thring, Uppingham; incorp., 1909.

**Headphone**, double telephone-receiver, the two earpieces being joined by spring metal bow, which rests on the head.

**Headstall**, light leather or webbing harness, without a bit, passed over head of horse; furnished with rings for leading rope or halter.

**Healds**, (text.) cords with rings or loops wh. are attached to each warp thread on a loom; used to "shed" the warp so as to allow the shuttle to pass. **H. shafts**, horizontal wooden bars to wh. H. are attached.



Headstall

**Health Insurance**, system originated in Ger., adopted in Gt. Brit. in 1911, of compulsory insurance of working pop. against sickness, financed by employers, employed, and State contrib. Contribs. paid weekly by stamping cards, and proceeds handed to co. or soc. ("approved society") guaranteeing benefits. See UNEMPLOYMENT INSURANCE.

**Health, Minister of**, member of Brit. Govt. charged with duties of former Local Government Board (q.v.) and supervision of State system of health insurance.

**Healy**, Timothy Michael (1855-1931), Ir. statesm.; 1st Gov.-Gen. of I. F. S., 1922-28; represented Irish constituencies in H.C. of Com. as a Nationalist, 1889-1918; wrote: *Stolen Waters; The Great Fraud of Ulster; Leaders and Leaders of My Day*.

**Hear of linen**, 2 cwt., or 600 yds.

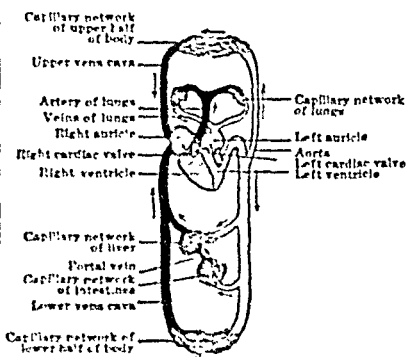
**Hearing**, sense by wh. sound vibrations impinging on the ear (q.v.) are interpreted by the brain.

**Hearn**, Lafcadio (1850-1904), Brit. auth.; settled in Japan, 1891, where he became naturalized under name of Yakumo Koizumi; wrote *A Japanese Miscellany; Japan, an Attempt at Interpretation*.

**Hearst**, William Randolph (1863- ). Amer. publ. and newspaper proprietor, pioneer of the sensational ("yellow") press; *N.Y. American; Cosmopolitan Magazine*; etc.

**Heart**, hollow, muscular organ, wh. propels the blood through the blood vessels; maintains circulation of blood (q.v.). Divided in the middle into two halves by a *septum*. Each half has an *auricle* and a *ventricle* connected by a *valve*. Every minute there are abt. 70 contractions or beats alternating with dilatations. From the left ventricle issues the *aorta*, the main artery, from the right the *pulmonary artery*; the right auricle receives the two large *vena cava*, which return the

blood to H. after it has circulated through the body. H. is protected by a membrane called *pericardium*, inflammation of which is known as *pericarditis*. Calcification of the coronary arteries, which supply the heart, results in *angina pectoris* (q.v.). Valvular incompetence, wh. results in *cardiac dilatation* and finally leads to heart failure, is



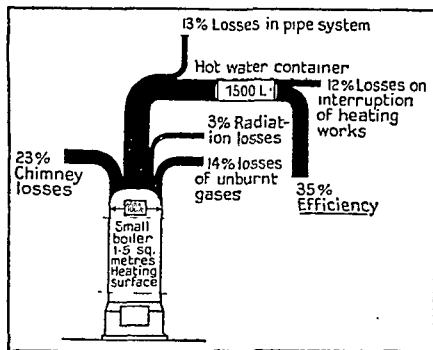
Heart Showing Circulation of the Blood

caused by inflammation of the heart, frequently of rheumatic origin. Violent and rapid heart-beats are called *palpitation*. The *apex* of the heart, in the region of the 5th intercostal space and the left nipple, beats against the chest-wall at every pulsation (*apex beat*). At every contraction (*systole*) and dilatation (*diastole*) of the H., *heart sounds* occur which are audible when the ear is placed against the heart, but are clearer when listened to through a stethoscope; in valvular incompetence *cardiac murmurs* are heard in addition to or replacing heart sounds. In cases of obesity, *fatty degeneration* is likely to occur, layers of fat forming below pericardium and fat replacing the muscular tissue. **H.burn**, burning sensation in oesophagus, caused by excessive formation of acid in stomach.

**Heartsease**, common wild pansy (q.v.), a preparation from which was believed to cure the pangs of love.

**Heat**, name given to two forms of energy, 1) radiant h., electro-magnetic radiation of wave-length just greater than that of visible red light (q.v.); upper limit of wave-length indefinite, but fraction of millimetre. 2) Sensible heat, the vibratory or irregular motion of the atoms and molecules of bodies. The *absolute temperature* of a body is proportionate to the mean kinetic energy of motion of particles; total heat energy contained in body is greater than sum of kinetic energy, energy being stored in separating particles against cohesive force. See SPECIFIC H. Heat flows by *conduction* from body at higher

to one at lower temp. when in contact; all bodies emit radiant heat, hence temp. of bodies in heat-insulated enclosure becomes same whether bodies in contact or not. **H.** causes change of state from solid to liquid (fusion), and liquid to gas (evaporation). See **INSULATION**; **LATENT HEAT**; **KINETIC THEORY OF GASES**; **THERMO-DYNAMICS**; **CALORIMETER**.



Sankey Diagram

forest bird; species of black-grouse; breeds on the ground (March to May).

**Heavens**, (astron.) that part of the celestial sphere visible from a given pt. upon earth's surface; divided for observational purposes into 4 equal quarters or segments, N., S., E., and W.



Heath-cock

**Heavyside layer**: see **WIRELESS TELEGRAPHY**.

**Heavy oils**, name given to components of mineral oil (petroleum) with flash-point exceeding 75° F, and of specific gravity 0.78 to 1.0. Used as fuel for Diesel engines. **H.-O. engine**, internal-combustion engine (q.v.) consuming heavy oils; see **DIESEL ENGINE**.

**Heavy spar**, barium sulphate, a white crystalline mineral.

**Hebbel**, Fried. (1813-63), Ger. poet and dramatist. *Die Nibelungen* (trilogy); *Dr Rubin*.

**Hebe**, (Gr. myth.) goddess of Youth; portrayed as cup-bearer to the gods, with drinking cup.

**Heber**, Reginald (1783-1826) Eng. bp. and hymn-writer; "From Greenland's Icy Mountains"; "Brightest and Best of the Sons of the Morning."

**Hébert**, Jacques René (1757-94), Fr. revolution., published paper *Père Duchesne*; extreme terrorist. Guillotined under Robespierre.

**Hebräus**, Leo (c. 1462-c. 1521), pseudon. of Jehuda Leone, Jewish auth.; *Dialoghi di amore*.

**Hebrew**, a Semitic language allied to Phoenician, Assyrian, Arabic, etc.; the best known of anc. Asiatic languages through being medium by wh. O. T. writings were preserved. For long classed as a dead language (though in world-wide use by Jews for literary purposes), it is now spoken in Palestine, where it is recognized by the govt. and is the medium of instruction in Univ. of Jerusalem, and in Jewish schools; also in Lithuania and parts of Poland. See **LANGUAGE SURVEY**, *West Semitic*.

**H. literature**, nat. lit. of Jews: 1) *Ancient*, comprising poems contained in extant O.T. songs; e.g., *The Song of Deborah* (Judg. v.); Psalms, Song of Solomon, parables (Judg. ix; II Sam. xii); didactic songs and gnomic poetry (Prov., Eccles.); some only preserved in Gr. translation (Jes. Sirach); language formerly simple and pictorial, later rich in allegory; chief literary form is the Parallelism of the verses; 2) *Medieval*, from 12th to 15th cents. in Spain and S. France (Jehuda Halevi, Ibn Gabirol, etc.) some philosoph. and some yearning for Zion; language rich in metaphor; final rhymes; 3) *Modern Hebrew*, from middle of 19th

**H. accumulator**: see **STEAM ACCUMULATOR**, **RUTH'S**. **H. of fusion**, of a body is the quantity of heat reqd. to convert 1 gramme from solid to liquid state. Heating is effected electrically by passing current thr. resistance, gen. nichrome or similar wire. Elec. radiators have red-hot heating elements and reflectors to direct radiation. **H. economy**, or *efficiency*, proportion of H. utilized to total H. generated, e.g., in boiler installation, as, for example, on Sankey Diagram of heat valence. **H. engines**, machines by wh. H. is transformed into mechan. power; see **STEAM ENGINES**; **INTERNAL COMBUSTION E.**; **HOT-AIRE**. **H., equivalents of**, a) *mechanical*; number of mech. units of energy (see **ERG**) corresp. to one unit of H. (see **CALORIE**);  $4.189.10^7$  ergs = 1 calorie. b) *Electrical*; number of calories corresp. to one elec. unit of energy (see **JOULE**; **WATT**);  $0.239$  cal. = 1 Joule. **H. exchange apparatus** effects the flow of heat from one fluid to another on the counter-current principle. The two fluids pass in opp. directions on either side of a thin wall, through which heat passes. See also **REGENERATOR**; **ECONOMIZER**; and (for efficiency of H.) **HOT-WATER SUPPLY**.

**Heath**, *heather*, name given to shrubby plants inhabiting moors and sandy places. Common heather, bell heather, is *Erica cinerea*, with purple bell-shaped flowers. Cross-leaved heath (*E. tetralix*) has large rose-coloured flowers. Ling, also known as heather, is *Calluna vulgaris*; flowers purple or occas. white (supposed to be lucky). Tree heath (white blossom) is *E. arborea*, found on Medit. coast; from its roots "briar" pipes are made (Fr., *bruyère*). **H.-cock**,



Heath

cent. *Ahad Ha'am*, philosopher and essayist; *Eliezer b. Jehuda*, lexicographer (*Thesaurus solius Hebraitalis*); *Nachman Bialik*, national poet; *Tchernikowski*, poet of nature; novels, plays; sev. daily papers and a large periodical lit. in and outside Palestine. **H. script**, letters, orig. same as the Phoenician and Carthaginian, but prob. after Captivity (c. 537 B.C.) Aramaic square form adopted by Ezra, except by Samaritan Jews, who still use the anc. form. Writing scripts are, 1) *cursive*, used by the Ashkenazi; and 2) that of the Sephardic Jews, a script similar to that used in mediaeval commentaries.

**Hebrews, Epistle to the**, (N.T.) written before A.D. 96 to the Heb. Christians in Palestine; most scholars reject its ascription to Paul.

**Hebrides, Western Islands**, group of over 500 islands off W. coast Scot. (c. 120 isls. inhabited; Gaelic-speaking); area, 3,000 sq.m., div. into **Outer Hebrides**, sep. by *Minch* from mainland (*Levis-Harris, North Uist, Benbecula, South Uist, Eriskay, Barra, St. Kilda*, etc.) and **Inner Hebrides**, div. by *Little Minch* from Outer H. (*Skyc, Rum, Eigg, Coll, Tirce, Mull, Staffa, Jura, Islay*, etc.).

**Hebron, El-Khalil**, tn., Palestine, S. of Jerusalem, pop., 16,575; manuf.: glass, leather, and cotton goods. Mosque supposed to contain tombs of O.T. patriarchs.

**Hecate**, goddess of the Gr. Underworld, presiding over magic and incantations, but also dispensing benefits.

**Hecker, Fried.** (1811-81), Ger. democrat; com. republ. revolt, Baden, 1848, and Ger. regiment in Amer. Civil War.

**Hectare**, (metric system) 10,000 sq. metres (2.471 ac.).

**Hectic flush**, bright red patches on cheeks; present in some ailments, esp. tuberculosis.

**Hecto-**, (metric system) prefix indicating 100 times; e.g., 1 hectolitre = 100 litres.

**Hectograph**, apparatus for duplicating MSS., drawings, etc., from a slab of gelatine, to which the drawing or writing (in aniline ink) is transferred; yields abt. 100 copies.

**Hector**, Trojan hero in Homer's *Iliad*; son of Priam, Kg. of Troy.

**Hecuba**, in Homer; wife of Priam, Kg. of Troy, and mother of Hector.

**H.E.D.**, abbr. Historical English Dictionary.

**Hedgehog**, medium-sized insectivore, with coat of spines and bristles covering upper surface and sides of body, so that when the animal rolls itself into a ball it is well protected against attack. Nocturnal, feedg. on insects, snails,



Hedgehog

eggs, fruit, and roots. Hibernates in nest made of leaves and grass.

**Hedge-mustard**, *Sisymbrium officinale*, small yellow flower used in folk med. for chest troubles. **H. sparrow**, small, brownish, linnet-like bird with a short, sweet song, belonging to the sub-family *Acceptor*; common in Gt. Brit. and widely spread over Europe.

**Hedin, Sven** (1865- ), Swed. explor., esp. in Asia; disc. Hedin Mtns., (q.v.); *Through Asia's Deserts*; *The Riddle of the Gobi*.

**Hedin Mountains**, Trans-Himalayan range, Tibet, explored by Sven Hedin (q.v.); *Targo Gangri*, 24,600 feet.

**Hedmark**, province in W. Norway; 10,620 sq. m.; pop., 166,625. Forestry, agric.; cap., *Hamar*; pop., 5,920.

**Hedonism**, ethical theory originated by Aristippus (c. 400 B.C.), wh. considered pleasure to be the ultimate good.

**Hedwig** (1370-99), Qn. of Pol.; m. Jagellon, unitd. Lithuania and Poland.

**Heer, Jak. Chr.** (1859-1925), Swiss novelist: *The King of the Berninas*.

**Hegel, Georg Wilh. Friedr.** (1770-1831), Ger. philos.; fndd. Hegelian school; *Phenomenology of Spirit*, 1807; *Philosophy of Right*, 1821.

**Heidelberg, tn.**, Baden, Germany; on Riv. Neckar; pop., 73,100. Univ. (est. 1386, oldest in Ger.); many scientific institutions; manuf. medical instruments; in 15th and 16th cents. centre of Calvinism



Hegel

(**H. Catechism**, compiled in 1563 to settle doctrinal disputes between Lutherans and Calvinists). *Heidelberg Castle*, 14th-17th cents., destroyed by Fr. at end of 17th century. **H. Man**, see HOMO HEIDELBERGENSIS.

**Heidenstam, Werner af** (1859- ), Swed. poet; Nobel Prize (Lit.). 1916; *Hans Alienus*; *Nya Dikter*; *The Charles Men*.

**Heilbronn, tn.**, Württemberg, Germany, on Riv. Neckar; pop., 45,550; silverware, chemicals.

**Heilung Kiang**, prov. (203,000 sq.m.), E. Manchuria, China; pop., 2,500,000; cap., Tsitsihar (pop., 30,000).

**Heimdall**, one of the Aesir (Scand. gods); guardian of the heavens.

**Heimskringla**, history of Norse kgs. from early mythological times to battle of Re (1177), by Snorri Sturluson; important for subject-matter and prose style.



**Heine, Heinr.** (1797-1856), Ger. lyric poet and satirist; *Der Salon; Buch der Lieder; Romanzero*.

**Hejaz**, Arab. kgdm. (incorporated with Nejd in Saudi Arabia; (q.v.) on N.E. coast of Red Sea; abt. 160,000 sq.m.; pop., 970,000 (Sunnite Arabs). Exports: Skins, hides, wool, fat, rubber, mother-of-pearl, spices, henna. Annual number of pilgrims abt. 108,000. Cap., *Mecca*. **H. Railway**, Damascus-Medina, 809 miles. Not completed; projected to Mecca (1,118 miles).



Heinrich Heine

**Hejira**, flight of Mohammed from Mecca to Medina A.D. 622, by wh. Mohammedan year has been reckoned since 637.

**Hekla**, active volcano (5,108 ft.), nr. S. coast of Iceland.

**Hel**, (Norse myth.) goddess of the lower world.

**Helder**, seapt., N. Holland; pop., 28,800; naval station. Terminus of N. Holland Canal from Amsterdam.

**Helen**, (Gr. myth.) dau. of Leda and Zeus; wife of Menelaus; most beautiful woman of antiquity; her abduction by Paris caused the Trojan War.



Rape of Helen

**Helena**, St., empress (c. 248-328), became Christian, 312; made pilgrimage to Jerusalem to expiate sins of her son, Constantine the Great, 325; legend credits her with finding the true Cross; commem., Aug. 18th.

**Helena** (alt., 3,955 ft.), cap., Montana, U.S.A.; pop., 11,800; Mt. St. Charles Coll. (R.C.; fndd. 1909); dist. rich in gold, silver, lead, and copper; agric.; airport.

**Hefferich**, Karl (1872-1924), Ger. statesm. and econ.; dir. of Deutsche Bank; introduced Rentenmark, 1923.

**Heliand**, O. Sax. 9th-cent. alliterative poem on the Saviour.

**Helicon**, mt. on N.W. coast of Gulf of Corinth in Boeotia; 5,737 ft. high. Reputed home of the Muses.

**Helicopter**, (aeronaut.) flying-machine designed to rise vertically from ground; operated by horizontal airscrews. See AUTO-GIRO.

**Heligoland**, Ger. isl. in N. Sea; 0.11 sq.m.; pop., 2,600. Red sandstone rocks, artific. protected against erosions. "Oberland" rocky, "Unterland" with foreshore and harbour; popular resort. Formerly owned by

the Dukes of Schleswig-Holstein; acquired by Eng., 1807; 1890, ceded to Ger. in exchange for Zanzibar.

**Heliodorus**, (fl. 3rd cent. A.D.), Gr. auth.; *Aethiopica*.

**Heliothalus** (c. 205-22), Rom. Emp., 218; notorious for licentious life; relinquished govt. to mother and grandmother; killed in praetorian mutiny.

**Heliograph**, instrument for flashing signals by directing rays of sun on opposite station by means of revolving mirror.

**Heliogravure**, method of reproduction in which stereo. plates are produced by photography and etching. **Heliometer**, delicate astron. instr. for measuring distance between two stars.

**Heliopolis**, ancient Egypt. city on delta of Nile, with temple to sun-god.

**Helios**, sun-god of Gr. mythology.

**Helioscope**, apparatus to reduce light when taking observations of sun. **Heliostat**, appar. compensating movement of earth and maintaining telescope or mirror pointed towards some heavenly body (sun, stars). **Heliotherapy**, treatment by means of rays of sun; 1st applied by the Swiss Rikli (1855), then by the Dane Finsen, more recently by Bernhard and Rollier in Switzerland, esp. for treatment of tuberculosis.

**Heliotrope**, 1) garden plant with purple, vanilla-scented flowers; indig. to Peru; 2) semi-precious stone of type of chalcidony (q.v.); green, with blood-red streaks. **Heliotropism**, response to sunlight; faculty of plants to turn their leaves or flowers to sun or other light.



Heliotrope

**Helium**, (chem.) element; sym., He; at. wt. 4.002; present in air in small quants. and found in wells of nat. gas in certain parts of Amer. Prod. of decay of radio-active elements (q.v.). Incapable of chem. combination; next to hydrogen is the lightest gas known; used in balloons and airships. Age of minerals contng. radio-active substances determined by amount of He contained in them.

**Helix**, (archit.) curve described on surface of a cylinder by a point revolving round it in an upward direction. Principle applied in construction of spiral staircases; term also used to denote volutes of Corinthian capitals (see COLUMN).

**Hell**, place (or condition) of punishment and torture reserved for devils and the souls of the eternally damned; belief in existence of H. is esp. strong in Judaism, Christianity, and Islam; cf. HADES, ORCUS, SHEOL.

**Helladic**, gen. term for mainland divn. of

egean Civilization (*q.v.*); includes Mycenaean. See MYCENAE.

**Hellas**, class. name for Greece (*q.v.*).

**Hellebore**, genus of plants of nat. order *Ranunculaceae*; green *H. (Helleborus viridis)* has light green flowers; black *H. (H. niger)*, the Christmas rose, is used in med.; white, or false, *H.* is a species of *Veratrum*. Powdered *H.* (white and green) is used as an insecticide.

**Hellen**, legend. ancestor of the Hellenes (Grks.), son of Deucalion (*q.v.*).

**Hellenistic**, term applied to art produced under Gr. influence in Alexandria and Asia Minor from 3rd cent. B.C.

**Helles, Cape**, S. extremity of Gallipoli Penins.; one of the first landing-places of the Brit. Dardanelles Expedit. Force (25 April, 1915).

**Hellespont**, anc. name for Dardanelles (*q.v.*).

**Helppach**, Willy (1877- ), Ger. psychol.; Min. of Educ. in Baden, 1922-25; Pres. of Baden, 1924-25.

**Helmand**, princ. riv. in Afghanistan, abt. 550 m. long, rises in Paghman Mtns. and flows to the Mamun-i-Helmand.

**Helmet**, (milit.) covering for the head; see also HERALDRY.



Types of Helmet

1) Norman (Bayeux Tapestry). 2) Black Prince's Helmet. 3) Modern Life Guards. 4) Roman Guards

**Helmholtz**, Herman L. F. von (1821-94), Germ. scientist; surgeon to Pruss. Army, 1843; prof. of physiology, Königsberg; *Physiological Optics*, 1856-66; *Sensations of Tone*, 1862.

**Helminthiasis**, a diseased condition caused by intestinal or other worms.

**Héloïse** (c. 1101-64): see ABÉLARD.

**Helots**, slaves of the Spartan State.

**Helouan, Helwan**, health-resort (alt., 150 ft.), Upper Egy., 2 m. above r. bank of the

Nile, 14 m. S. of Cairo; sulphur and salt springs. On l. bank of the Nile are ruins of Memphis and the Pyramids of Sakkara.

**Helsingborg**, port, S. Swed., on the Sound, opp. (3 m.) Helsingör (Denmark); pop., 55,300; manuf., copper, rubber.

**Helsingfors** (Fin., **Helsinki**), seapt., cap. Finland and of prov. of Nyland, on Gulf of Finland; pop., 234,000; senate, univ.; largest commercial tn. and seapt. of Finland; engineering; confectionery, tobacco. Built by Gustavus Vasa, 1550; cap. of principality of Finland, 1812; cap. independent Finland, 1918.

**Helsingör, Elsinore**, port, Denmark, on N.E. coast of Zealand, at narrowest part of the Sound (ferry), opp. (3 m.) Helsingborg (Sweden); pop., 15,120; fortress of Kronborg in N.E. of tn. Elsinore was scene of Shakespeare's *Hamlet*.

**Helvellyn**, mtn., Westmor. and Cumb., Lake Dist., Eng., rising above Thirlmere; alt. 3,118 feet.

**Helvetia**, classical name of Switzerland, derived from the *Helvetii* (anc. Celtic inhabitants).

**Helvetic Confessions**, name of 2 expressions of faith of reformed churches of Switzerland; 1) "2nd Confession of Basel," 1536; 2) 1562-64, adopted by reformed churches of Switzerland, Scotland, Hungary, France, Poland. **H. Republic**, Swiss Fedrtn. est. by Fr. 1798-1803.

**Helvétius**, Claude Adrien (1715-71), Fr. philosopher; *Le Bonheur*.

**Hemans**, Mrs. Felicia (1793-1835), Eng. minor poet, and writer of drawing-room songs.

**Hematin**, (physiol.) brown substance containing iron, formed by decomposition of haemoglobin (*q.v.*); sometimes administered for anaemia.

**Hemicrania**, pain in one side of the head; migraine.

**Hemimorphite**, or calamine (mineral.), ore contg. 54% zinc; found in Eng., Belgium, and Siberia; white to yellowish-brown.

**Hemingway**, Ernest (1898- ), Amer. author: *A Farewell to Arms*; *Death in the Afternoon*.

**Hemiplegia**, (med.) paralysis on one side of the body, usu. caused by a stroke.

**Hemiptera**, order of insects having mouth-parts adapted for sucking juices of plants and animals; Hemipterous Fly bugs, cicadas, froghoppers, aphids, etc.

**Hemisphere**, half of a sphere, e.g., of the earth, or of the cerebrum (*q.v.*).

**Hemistich**, half-verse, half-line, incomplete line; epodic line or refrain.



Hemipterous Fly bugs, cicadas, froghoppers, aphids, etc.

**Hemlock**, *Conium maculatum*, umbelliferous, poisonous herb widely distribtd. in Eur.; white flowers, smooth, red-spotted stem; contains the alkaloids *conine*, *coniine*, and *conhydrine*; used in medicine, internally, as a sedative and antispasmodic and, externally, as a soothing ointment. **Water h.**, or cowbane (*Cicuta virosa*), is of same family and is also poisonous. **H. spruce**, *Tsuga Canadensis*, N. American fir; bark yields tanning material.



Hemlock

**Hemp**, name for various plants from wh. fibre is obtd. for commercial purposes. *Cannabis sativa*, subtop. plant native to Centr. Asia and Himalayas, is true H.; fibres obtd. from both leaf and stem. After cutting, stalks are steeped (or *retted*) for abt. 10 days, then dried and fibres separated by hand or machine. Used in making rope, twine, etc., and as bast (*q.v.*). *Tow*, residue after fibres have been separated, used as packing, etc. A drug (*Cannabis indica*) is obtd. from H.; used in med., and in making of hypnotic preparations taken by Orientals, such as bhang (*q.v.*). See also SISAL. **H. agrimony**, *Eupatorium cannabinum*, grows near streams, tall with reddish and violet flowers and reddish stem. **H. nettle**, *Galeopsis*, wild flower with labiated blossoms.



Hemp

**Hems, Homs** (anc. *Emesa*), tn., Syria, pop., 51,500; textiles, oil-wells.

**Hemstitch**, decorative edge made by drawing out threads of material and fastening remaining threads into groups.

**Henbane**, *Hyoscyamus niger*, poisonous cream-coloured flowers with purple veins; grows by roadsides and rubbish heaps. Leaves contain the alkaloid hyoscyamine tog. with atropine and scopolamine; very poisonous; used in med. as a cerebral and spinal sedative. **Henbit**: see DEAD NETTLE.



Henbane

**Henderson**, Arthur (1863- ), Brit. politician and trade union leader; M. P. 1903-31, 1933; mem. of War Cabinet, 1915-18; Home Sec., 1924; For. Sec., 1929-31; chf. whip Labour Party, 1914, 1921-24, 1925-27.

**Hendon**, mun. bor., Middx., Eng., part Greater London; air centre; pop., 123,000; includes Edgware (*q.v.*).

**Hengist and Horsa**, brother leaders of Saxon invaders of Eng., c. 450; invited by Brit. kg. Vortigern to fight against the Picts; were given Isl. of Thanet, but seized all



Arthur Henderson

Kent, Horsa being killed in battle with Brit. 455; *Anglo-Saxon Chron.* states Hengist d. 484 succ. as Kg. of Kent by his son, Aesc (d. 512).

**Henley**, Wm. Ern. (1849-1903), Eng. poet and critic; *Hawthorn and Lavender*; *Hospital Sketches*; *London Voluntaries*.

**Henley-on-Thames**, riverside resort and mkt. tn., Oxon., Eng., on Riv. Thames; annual rowing regatta; pop., 6,600. **Royal Regatta**, Eng. meeting for rowing contests, 1st held 1839; chief events: "Grand Challenge Cup" for eights; "Stewards' C.C." for fours; "Silver Goblets" for pairs, and "Diamond Skulls" for single scullers; also Ladies' Challenge Plate for eights, and Vintors' C.C. for fours from schools and colleges; and Thames and Wyfold C.C.s. for crews wh. have never won the Grand or Stewards' Course, 1 m. 550 yds.

**Henna**, thorny shrub, grows in Africa, S. Asia, Australia; leaves yield a red chestnut dye wh. is used as a hair-dye, sometimes known as Egypt. privet.

**Hennebique**, system of reinforcing concrete (*q.v.*) by steel rods; main bars set parallel to lower or tension face of concrete beam; flat stirrups hooked at intervals over lower bars and carried upwards.

**Henrietta Maria** (1609-1666), qn. of Charles I of Eng.; dau. of Henry IV of Fr.; actively supptd. her husb. agst. Parliament; left Eng. 1644; d. at Colombes, nr. Paris.

**Henry** (c. 1174-1205-16), Emp. of Eastern Empire, Ct. of Hainault.

**Henry**, Emperors of the Holy Roman Empire: 1) **Hy. I, the Saint or the Lamb** (973-1014-24), Emp., Hy. II, Kg. of Germany (succ. 1002); 1st to use title Kg. of the Romans. 2) **Hy. II, the Black** (1017-39-50), Emp., Hy. III, Kg. of Germany (succ. 1020); deposed 3 popes; promoted reforms at Cluny, 1046. 3) **H. III, the Great** (1050-84-1106), Emp., Hy. IV, Kg. of Germany (succ. 1053); attempted to depose Pope Gregory VII (1076); excomm.; absolved at Canossa (1077); relied on increasing power of tns. to balance that of Ger. princes. 4) **Hy. IV** (1081-1111-1125), s. of Hy. III, Emp., Hy. V, Kg. of Germany (succ. 1102); ended struggle with papacy over lay Investiture by Concordat of Worms (*q.v.*) (1122). 5) **Hy. V** (1165-90-97), s. of Emp. Fred. I, Emp., Hy. VI, Kg. of Ger. (succ. 1169); made Sicily centre of empire. 6) **Hy. VI** (1269-1312-13) Emp., Hy. VII, Kg. of Ger. (succ. 1308); Count of Luxemburg; gave Bohemia to his son, John; immortalized by Dante in *Paradiso*.

**Henry**, kings: 1) *Castile*: **Hy. I** (c. 1207-14-17), grandson of Hy. II of Engl. **Hy. I** (1333-69-79), Count of Trastámara; illeg. s. of Alfonso XI. **Hy. III, the Sufferer** (1379-90-1406). **Hy. IV, the Impotent** (1425-53-74). 2) *England*: **Hy. I, Beaufort** (1068-1100-35), s. of Will. I.; reorgan. judic. system

**ly. II** (1133-54-89), g.-s. of Hy. I.; acq. large territ. in Fr.; conquered Ireland, limited powers of clergy; publ. Constitutions of Clarendon, 1164. **Hy. III** (1207-27-72), s. of Kg. John; influenced by favourites; forced to relinquish Govt. to feudal oligarchy by provisions of Oxford (1258).

**Hy. IV** (1367-99-1413), s. of John of Gaunt; usurped throne from Rich. II (1399).

**Hy. V** (1387-1413-22), s. of Hy. IV; defeated Fr. at Agincourt (1415); regent of France (1420).

**Hy. VI** (1421-22-27), defeated in Wars of Roses; only Eng. Kg. crowned Kg. of Fr. (1431); added Eton Coll. (1440), and Kg.'s Coll., Camb. (1441). **Hy. VII** (1457-85-1509), s.-s. of Owen Tudor and of John of Gaunt; regent of House of Tudor.

**Hy. VIII** (1491-1509-47), s. of Hy. VII, abol. papal authority in Eng. (1534); made sovereign head of Ch. in Eng. by Act of Supremacy (1535); de-veloped Brit. Navy. 3)

**France: Hy. II** (1518-47-59), m. Catherine de' Medici (1533); regained Boulogne (1552), Calais (1558) from Eng.; gained Metz, Toul, Verdun, Cambrai from Habsburg Charles V.

**Hy. III** (1551-74-89), s. of Hy. II; contin. persecution of Huguenots; helped organize Massacre of St. Bartholomew (1572).

**Hy. IV** (1553-89-1610), Hy. III of Navarre; became Cath.; granted relig. freedom by Edict of Nantes, 1st Fr. Colony fndd. in Canada, 1608. 4) **Germany: Hy. I**, the Fowler (876-919-36), Duke of Saxony (acc. 912); attacked Hung. (933).

**Hy. II: see EMP. HY. I. Hy. III: see EMP. HY. II. Hy. IV: see EMP. HY. III. Hy. V: see EMP. HY. IV. Hy. VI: see EMP. HY. V. Hy. VII: see EMP. HY. VI. Hy. (VII)** (1211-20-42), s. of Emp. Fred. II; titular Kg. of the Romans.

**Hy. Raspe** (c. 1202-46-47); Landgrave of Thuringia, Kg. of the Romans. 5) **Navarre: Hy. I, le Gros** (c. 1210-70-74); Ct. of Champagne. **Hy. II** (1503-17-55), titular kg. through mother,

Catherine de Foix; taken prisoner by Span. at batt. of Pavia. **Hy. III** ("H. of Navarre"): see HY. IV OF FRANCE. **Henry Stuart**, cardinal: see YORK.

**Henry: 1) Hy. the Lion** (1129-39-95), s. of H. the Proud, Duke of Saxony and Bavaria; fndd. Lübeck and Munich; colonized East; rejected Fredr. Barbarossa's help in Italy, outlawed (1180); pardoned (1181); retained only Brunswick and Lüneburg. 2) **Hy. the Navigator**, Prince of Port. (1394-1460); discovered Madeira (1419), Cape Blanco (1441), Azores (1447), C. Verde Isls. (1455), and Senegambia. 3) **Hy. the Proud**, Guelph (1108-26-30), Duke of Saxony and Bavaria; conquered Saxony (1137).

**Henry, Jos.** (1797-1878), Amer. physicist; weather-charts; elec. co-efficient of self-induction; unit called after him *H. unit*.

**H., O.** (1862-1910), pseudon. of William Sydney Porter, Amer. short-story writer; *Cabbages and Kings*. **H., William** (1774-1836) Eng. chem.; estbd. *Henry's Law of Solubility of Cases*.

**Henschel**, Sir George (1850- ), Ger. composer (nat. Eng., 1890), fndd. London Symphony Concerts, 1886; 1st conductor of Boston Symphony Concerts, 1881.

**Henson**, Herb. Hensley (1862- ), Eng. divine and author, Bp. of Hereford, 1918, and of Durham, 1920; published works incl. *Thoughts on the Crisis in the Church*, 1900; *The Education Act and After*, 1903; *Christian Marriage*, 1907; *Puritanism in England*, 1912; *Anglicanism*, 1921; *Disestablishment*, 1929.

**Hentschel**, Carl (1864-1930), inventor of Hentschel Colourtype process for newspapers and periodicals; fndd. O.P. Club, and was its president 1902-03 and 1914-16.

**Hephaestus**, Gr. god of fire, husband of Aphrodite; lame, worked at his anvil under Mt. Etna. (In Rom. myth., *Vulcan*.)

**Hepplewhite**, Geo. (d. 1786), Eng. cabinet-maker, noted for light and graceful style.

**Heptameron**, collect. of stories attributed to Margaret of Angoulême, appearg. posthum. 1558; modelled on *Decameron*; the tales were supposed to have bn. related during 7 days.

**Heparchy**, a term inaccurately appl. to kingdoms of Saxon Eng. under hegemony of Wessex.

**Hera**, (Gr. myth.) consort of Zeus, Lat. *Juno* (q.v.).

**Heracleia**, anc. tn. in S. Italy; scene of Pyrrhus' victory over Romans in 280 B.C.

**Heracles**, Gr. hero: see **HERCULES**.

**Heraclidae**, (Gr. myth.) sons and descendants of Heracles.



Henry IV of England



Henry V of England



Henry VI of England



Henry VII of England



**Herac lion, Irak lion, 1)** largest prov. in Crete; 994 sq.m.; pop., 138,570. 2) See CANDIA.

**Herac litus** (c. 540-475 B.C.), Gr. philosopher, "the Naturalist"; taught that fire is the principle of all things and contentment the chief good.

**Herac lius** (575-641), Emp. of the East; recovered True Cross from Persians, 629.

**Herald**, official whose functions originally included ordering of State ceremonies, tournaments, trials by combat, etc., and now making royal proclamations, granting arms, regulating their use, and authenticating pedigrees. Incorporated in England in 1484 as the Heralds' College, or College of Arms, they consist, under the Earl Marshal (q.v.), of 3 Kgs.-of-arms: Garter, Clarenceux, Norroy; 6 Heralds: Chester, Lancaster, York, Somerset, Richmond, Windsor; 4 Pursuivants: Rouge Croix, Blue Mantle, Rouge Dragon, Portcullis. In Scotland the officers are Lyon King-of-Arms, and Albany, Ross, and Rothesay Heralds; in Ireland, Ulster King-of-Arms, and Cork and Dublin Heralds.



Herald

**Heraldry**, science of armorial bearings, their history, use, and description (*blazonry*). Derived from early use of distinguishing devices, for wh. the shield furnished an obvious ground. Use of coats of arms became systematised and heredit. c. 12th cent.; till c. 14th cent. their assumption was unregulated, but exclusive right to a coat became estab. by usage. Branches of a family often bore similar coat with differing charge or colour, e.g., an added border; special marks of *cadency*, for younger sons, being later introduced. Rules of blazonry orig. simple; the elaborations of 16th cent. and later writers without warrant. The English heraldic tinctures are: 1) metals: *or* (gold), *argent* (silver); 2) colours: *gules* (red), *azure* (blue), *sable* (black), *vert* (green), *purpure* (purple). Metal is never placed on metal, nor colour on colour. There were also two furs (later more), *ermine* and *vair*. A charge in its natural colours is called *proper*. The field may be divided by horizontal, vertical, or other lines, from wh. developed the charges called *ordinaries*, i.e., *pale*, *fesse*, *cross*, *bend*, *saltire*, *chevron*, *chief*; while the lines may be straight, wavy, indented, engrailed, etc. Other charges include beasts (natural or fabulous), birds, fishes, flowers, etc. (usually conventionalised), and such conventional forms as roundels, lozenges, crescents, etc.; the charge may be a pun on bearer's name, e.g., the cocks of Cockfield, the swallows (*hirondelles*) of Arundel. A husband may bear his wife's arms side by side (*impaled*) with his own; and be she an heiress, the issue may quarter

them. Accumulated quarterings are usu. displayed in England. *Augmentations* are charges granted for special service, often placed on an *escutcheon of pretence*. Outside the shield, forming with it the achievement, are the *crest*, orig. borne on the helmet and displayed; *mantling* (lambrequin), descending from the helmet and usu. showing the principal colour of the coat; *supporters*, now commonly used only by peers; and *motto*, a word or sentence (sometimes punning) forming an essential part of the bearing. The badge used by certain families, orig. the distinguishing mark of retainers, is distinct from the crest.

**Herat**, frontier tn., N.W. Afghanistan, on Riv. Hari-Rud; pop., 20,500. Starting-point of caravan route Herat-Kandahar-Kabul-Peshawar.

**Hérault**, dépt., S. France, 2,402 sq.m.; pop., 514,819; wine, fruit, sheep; copper, iron, and lead mines; silk and woollens; cap., *Montpellier*.

**Herb 1)** plant with no persistent stem above ground, may be annual or with an annual stem produced by a perennial root; 2) top or flowering part of a plant used as med.; 3) culinary, savoury or sweet-tasting plant used mainly for flavouring purposes, e.g., thyme, marjoram, parsley, mint, etc.

**Herbarium**, collection of dried plants, properly identified, arranged in their natural orders and catalogued with particulars of habitat, etc.

**Herbart**, Joh. Friedr. (1776-1841), philos. and educationist; fndd. a metaphysical system; *Application of Psychology to the Science of Education*, 1828. His educational system, divided into lectures on government, training, and teaching, inculcates independence of the individual as its chief aim.

**Herbert of Cherbury**, Edward Herbert, 1st bn. (1583-1648), Eng. soldier, author, and philos.; *De veritate prout distinguitur a revelatione, a verisimili, a possibili, et a falso*, 1624.

**Herbert, George** (1593-1633), Eng. divine and poet; public orator, Cambridge, 1619; rector of Bemerton, Wilts, 1630; most of his Eng. poems are in the posthumous *The Temple; Sacred Poems and Private Ejaculations*, 1633. **H., Sidney**, 1st Bn. II. of Lea (1810-61), Eng. statesm.; Sec. for War, 1842-46, 1852-55, 1859-60; social worker, and largely responsible for med. reforms in the army; Royal Herbert Milit. Hosp. at Woolwich named after him. **H., Victor** (1859-1924), Amer. composer; opera *Natoma*; several light operas, etc.; music for film *The Birth of a Nation*.

**Herbesthal**, Belg. frontier station N.W. of Eupen; Prussian until 1921.

**Herbivora**, mammals feeding mainly upon grass and vegetable food; opp. to *carnivora*, meat-eating animals.

**Hercegovina**, see BOSNIA AND HERCEGOVINA.

**Herculaneum**, anc. city, Campania, Italy, near Naples; destroyed by eruption of Vesuvius A.D. 79. Partly excavated.

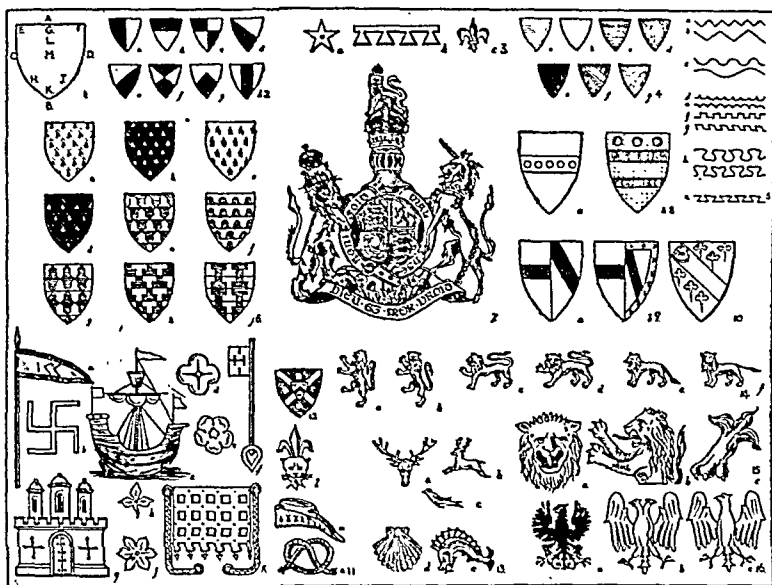
**Hercules** (Gr., **Herakles**), personification of physical strength in Gr. and Rom. myth.; son of Zeus and Alcmena; performed 12 "labours": 1) killed Nemean lion; 2) killed Lernean hydra; 3) captured Arcadian hind; 4) captured Erymanthian boar; 5) cleansed Augean stables; 6) shot Stymphalian birds; 7) captured Cretan bull; 8) captured man-eating mares of Diomedes; 9) seized girdle of Hippolyta, Qn. of Amazons; 10) brt. oxen

of Geryones fr. Far West; 11) brt. golden apples fr. Hesperides; 12) brt. Cerberus from Hades to upper world; killed Centaur Nessus, and died after wearing shirt poisoned by Nessus's blood; raised to rank of god and wedded Hebe (Youth). (Astron.) Constell. containing a remarkable star-cluster (see PL., ASTRONOMY, N.C.H., F.); within it lies the apex of the sun (g.v.). **H.-beetle**, large trop. beetle attg. length of 5 inches.

**Herder**, Joh. Gottfr. von (1744-1803),



Hercules



HERALDRY

1. Shield
  - a) The chief. b) The base. c) Dexter side. d) Sinister side. e) Dexter chief. f) Sinister chief. g) Middle chief. h) Dexter base. i) Sinister base. k) Middle base. l) Honour point. m) Fesse point.
2. Divisions of Shield
  - a) Per pale, or party per pale. b) Per fesse, or parted per fesse. c) Per cross, or quarterly. d) Per bend. e) Per bend sinister. f) Per saltire. g) Per chevron. h) Tierced in pale.
3. Marks of Cadency
  - a) Mullet (pierced). b) Label. c) Fleur-de-lys.
4. Tinctures
  - a) Gold: Or. b) Silver: Argent. c) Blue: Azure. d) Red: Gules. e) Black: Sable. f) Green: Vert. g) Purple: Purpure.
5. Dividing and Border Lines
  - a) Indented. b) Dancetté. c) Wavy, or Undée (two varieties). d) Engrailed. e) Invected. f) Embattled. g) Reguly. h) Nebuly (two varieties). i) Dovetailed.
6. Nine Furs
  - a) Ermine. b) Ermines. c) Erminois.
7. Royal Coat of Arms, showing Supporters.
  8. Simple Charges.
  9. Impalement.
  10. Augmentation.
  11. a) Pennon. b) Swastika. c) Lymphad. d) Quatrefoil. e) Heraldic (Tudor) rose. f) Key. g) Castle. h) Trefoil (slipped). i) Six-foil. k) Portcullis. l) Jessant de lys. m) Cap of maintenance. n) Stafford knot.
  12. Escutcheon of Pretence.
  13. Miscellaneous Charges.
    - a) Stag's head cabossed. b) Stag at speed. c) Martlet. d) Escallop. e) Dolphin.
  14. Lion
    - a) Rampant. b) Rampant guardant. c) Passant. d) Passant guardant. e) Statant. f) Statant guardant.
  15. a) Lion's face. b) Demi-lion rampant. c) Lion's jambe.
  16. Eagle
    - a) Eagle displayed with wings erect. b) Imperial eagle. c) Royal eagle.

Ger. poet and philos.; pioneer of *Sturm und Drang* movement; influenced Goethe in his youth.

**Hérédia**, José Maria de (1842-1905), Fr. poet; esp. sonnet form; *Les Trophées*.

**Hereditary succession**, dynastic: 1) according to Salic Law (*q.v.*), only in male line; 2) **Cognate s.**, right to throne falls, lacking male descendants of senior line, on male next-of-kin; 3) **Mixed or Castilian s.**, descent in male or female line, with precedence to male.

**Heredity**, transmission by living organisms of their characteristics to their offspring. Transmission is by *H. factors*, which are contained like beads on a string in the chromosomes (*q.v.*) of the germ-cell nucleus. Mendel's Laws (*q.v.*) state how combinations of factors appear in offspring. In mixed races, germ-cells are mixed in character of factors, hence offspring of same parents differ according to the accident of the particular factors which they receive. Acquired characteristics are never transmitted by heredity, germ-cells not being affected by the bodily fate of the individual. Heredity factors may change with production of new characteristics; this is known as *mutation*, and may be produced artificially, *e.g.*, by X-rays. Study of human heredity of great importance in Eugenics, race hygiene, disease, etc. See ATAVISM; LAMARCKISM; MENDEL'S LAWS.

**Herefordshire**, inland border co. W. Eng.; area, 842 sq.m.; pop., 111,800. Surface undulating (*Black Mt.*, 2,310 ft., in W.); watered by Riv. Wye; apple and pear orchards (cider and perry), H. cattle, hops, wheat, and barley.

**Hereford**, co. tn., on Riv. Wye; pop., 24,100; cathedral.

**H. cattle**, reared in Eng. since 18th cent.; red coat, white face and chest; introduced in U.S.A. c. 1820; in Canada, 1860.

**Hereros**, Bantu (*q.v.*) race living under Brit. protection in S.W. Africa (*q.v.*). **Herero War**, revolt of Hereros in Jan., 1904; though defeated by the Germans at Waterberg in Aug., 1904, they kept up guerrilla warfare until 1908, when Ger. protectorate was finally pacified. See LANGUAGE SURVEY.

**Heresy**, (Gr.) originally a choice, or principle, hence an eccentric and erroneous belief, esp. one denounced by the Catholic Church.

**Hereward the Wake**, historical novel by Chas. Kingsley (*q.v.*), 1866, fndd. on legendary deeds of Hereward, Anglo-Saxon patriot and outlaw, slain c. 1071.

**Hergeshelmer**, Joseph (1880- ), Amer. novelist; *Java Head*; *Quiet Cities*.

**Hering**, Ewald (1834-1918), Ger. physiol.; *Theory of Colour*.

**Heriot**, George (1563-1624), Scot. philanthropist; goldsmith to Qn. Anne, wife of James VI, 1597, and jeweller to the kg., 1601; founded by bequest *Heriot's Hospital* for educn. of sons of freemen of Edinburgh.

**Herkomer**, Sir Hubert von, R.A. (1849-1914), Eng. artist; fndd. H. School at Bushey; *Our Village*; *Chapel of the Charterhouse*.

**Hermæ**, quadrang. pillars terminating in bust, usu. of Hermes; frequently used as sign-posts or boundaries in class. times.

**Hermadad** (Span. Brotherhood), polit.-milit. assoc. of Span. towns, formed in 13th cent., extended in 15th, extinct in 16th. Name subseq. given to body of milit. police.

**Hermaphroditus**, son of Hermes and Aphrodite; at request of the nymph of a fountain, united with her, the two forming one bi-sexual person; hence *hermaphrodite*, properly a person possessing the full sexual attributes of both sexes. It is questionable whether a full human hermaphrodite has ever existed.

**Hermas**, one of the Apostolic Fathers (*q.v.*); **Shepherd of H.**, discourse (c. A.D. 145), exhorting Christians of Rome to greater piety.

**Hermeneutics**, science of the principles of interpretation, esp. of the Bible. The application of H. is known as exegesis.

**Hermes**, (Gr. myth.; Rom. Mercury) son of Zeus and Maia; messenger of the gods; god of Commerce; conducted departed spirits to Hades.

**Hermite**, 1) an Anchorite (*q.v.*); 2) (zool.) one of several humming-birds inhabiting recesses of forests. **H.-crab**, kind of crab with long soft body, inhabiting abandoned shells of gastropod molluscs.

**Hermitage**, 1) picture-gallery and museum, Leningrad; palace built by Catherine II of Russia, c. 1780, and rebuilt on larger scale as museum, 19th cent.; collection of Gr. jewellery, anc. sculpture, priceless textile fabrics, gold, silver, and ivory works of art, from Cimrea, Caucasus, Scythia. 2) Famous but now rare vine from hill outside Tain on the Rhône in Fr.; grown from vines alleged to come from Shiraz, Persia.

**Hermon**, **Jebel esh-Sheikh**, mtn., Syria, highest of Anti-Lebanon range, snow-covered; highest peak, 9,500 feet.

**Hermoupolis**, port and cap. of Syra,



Photo G. W. R.  
Hereford Cathedral



Hermæ



Hermit-crab

Cyclades, Greece; pop., 21,175; shipb., market gardening.

**Herne Bay**, tn. and seaside resort, Kent, Eng.; pop., 11,000.

**Hernia**, the passage of a loop of intestine or of mesentery (*q.v.*) through a canal wh. is normally closed; common varieties are inguinal, umbilical, and femoral. If, as a result, the blood supply of the intestines is interfered with, so that the intestinal wall becomes inflamed or gangrenous, the subject is said to suffer from *strangulated hernia*, and only prompt surgical action can save his life. **Inguinal h.** or *rupture* is caused by rupt. of ligament underneath the skin in groin, so that a portion of intestine can pass through the inguinal canal into the scrotum in the male, or into the labium in the female; remedied by wearing of a truss or by operation. *Swelling or inflammation* of inguinal gland occurs esp. in disease of the sexual organs.

**Hero**, Gr. half-god; heroic man with god-like qualities.

**Hero of Sestus** (Gr. myth.), priestess of Aphrodite; beloved of Leander, who swam the Hellespont every night to meet her clandestinely.

**Herod**: 1) **H. the Great**, Kg. of Judea (40-4 B.C.); restored temple; Christ born in his reign. 2) **H. Antipas**, son of above, tetrarch of Galilee and Peraea (4 B.C.-A.D. 39); m. Herodias; exctd. John the Baptist; fndd. Tiberias; Christ crucified in his reign. 3) **H. Philip**, son of H. the Gt., tetrarch of Iturea (4 B.C.-A.D. 34); m. Herodias, who deserted him for his half-brother H. Antipas. **H. Agrippa I**, Kg. of Judaea (c. A.D. 41-44), grandson of H. the Great. **H. Agrippa II**, son of above, tetrarch of Chalcis and other provs. (A.D. 48-100), before whom Paul pleaded at Caesarea (Acts xxvi).

**Herodians**, (N.T.) dependents of Herod dynasty, partisans of Rome; assoctd. with Pharisees in hostility to Jesus.

**Herodias**, wife of Herod Philip and 2nd wife of Herod Antipas; see SALOME.

**Herodotus** (c. 484-425 B.C.), Gr. histor., the "Father of History."

**Heroic couplet**, in class. prosody, dactylic hexameters (*q.v.*), usual medium of epic poetry; in Eng. decasyllabic verse, rhymed or unrhymed.

**Herold**, Louis Jos. Ferdinand (1791-1833), Fr. operatic composer; *Zampa*.

**Heron**, long-necked, long-legged wading bird of the genus *Ardea*. Common or **European h.** is the largest bird frequenting Gt. Brit., abt. 3 ft. in length; distribtd. over Eur.; grey and black plumage with crest of long, dark feathers. **Purple h.**, so-called on acct. of purplish-black feathers of its head, is fnd. in centr. and S. Eur. **Goliath h.**, a native of Africa, is the largest of its kind, measuring abt. 5 ft.; striking plumage of

chestnut, grey, and white. H. feed on fish and small aquatic animals, such as frogs, snakes, water-rats, etc. See also BITTERN; EGRET.

**Heron of Alexandria**, Gr. mathematic. and physicist, c. 120 B.C.; disc. in mechanics, hydrostatics; formula for area of a triangle.

**Herondas**, Gr. poet, 3rd cent. B.C. *Mimes*.

**Herostratus**, 356 B.C., destr. by fire the temple of Diana at Ephesus, to gain notoriety.

**Héroult furnace**, apparatus for manufacture of aluminium by electrolysis of alumina dissolved in fused cryolite (sodium aluminium fluoride).

**Herpes**, an eruption of skin around mouth or on lips, commonly seen in persons suffering from severe colds; another form known as *Shingles* (*q.v.*) is nervous in origin; has no relation to colds and occurs in many parts of the body.

**Herrera**, Fernando de (c. 1534-97), Span. poet; known as "The Divine"; friend of Cervantes.

**Herrick**, Myron T. (1854-1929), Amer. diplomat; Governor of Ohio, 1903-06; Ambassador to France, 1912, and, at outbreak of World War, in charge of German, Austrian, Turkish, and other embassies; Legion of Honour, 1914; again Ambassador to France 1921-29. **H., Robt.** (1591-1674), Eng. poet of the country-side; *Hesperides*; *Noble Numbers*, 1648, etc., and many songs.

**Herring**, a clupeoid fish of the N. Atlantic, found from the White Sea to the Bay of Biscay, also on the American side of N. Atlantic. Abundant all round British and Irish coasts, particularly in N. Sea and along E. coast of Scotland. The H. is an important article of food and basis of a large fishing industry.



Herring

**Herriot**, Édouard (1872- ), Fr. statesm.; Pr. Min. and For. Min., 1924-25; chief of Radical-Soc. Party.

**Herschel**, Sir William (1738-1822), Brit. astron.; disc. planet Uranus (1781), its satellites, 2 satellites of Saturn, and motion of solar system.

**Herschell**, Farrer H., 1st bn. (1837-99), Brit. lawyer and statesm.; Lord Chancellor, 1886, 1892-95; reprstd. Gt. Brit. on Venezuela; Boundary Comm., 1897, and was chairman of Comm. on Questions on Canadian and U.S.A. Boundaries, 1898.

**Herstal**, tn., Belgium, on Riv. Meuse, nr. Liège; pop., 24,000; coal mines; iron and steel works.

**Hertford College**, Oxford; fndd. 1285 by Elias de Hertford. **H. House**: see WALLACE COLLECTION.



Herriot



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**Herts**, co. in England; includes part of *See* *undulating* and *See* *wheat, watercress, brick-making; con-* *St. Albans, Watford, Letch-* **Hertford**, co. tn., on *11-400; brewing, glove-* *Cell, 2 m. south-east.*

**Hertogenbosch**: *see* 'S HERTOGENBOSCH.

**Hertfordshire**.

**Hertz, Gustav** (1857- ), Ger. physi- *Nobel Prize (phys.), with J. Franck.*

**Hertz, Heinrich** (1857-94), Ger. physicist, *elec. waves; number of oscillations (frequency) is stated in Hertz as unit.*

**Joseph Herman** (1872- ), chf. rabbi *of the United Heb. Congregations of E. Emp.; rabbi at Johannesburg, 1898-*

**Hertzog, James Barry Munnick** (1866- ), *S. African polit.; nationalist; opposed Botha and Smuts; Pr. Minister, 1924; formed coal. govt. with Smuts, 1933.*

**Hervé, Gustav** (1871- ), Fr. socialist, *advocated desertion and insurrection in case of war; on outbreak of Europn. war became strong patriot.*

**Herzegovina, or Hercegovina**: *see* BOSNIA AND HERCEGOVINA.

**Herzen, Alexander** (1812-70), Russ. revol. *auth.; periodical Kolokol (The Bell), Memoirs.*

**Herzl, Theodor** (1860-1904), fndd. Zionist *movement (q.v.); The Jewish State, 1896.*

**Heseltine, Philip Arnold** (1894-1930), *Eng. composer; chfy. songs (over 100 in number) publ. under name of Peter Warlock; also edited Elizabethan music.*

**Hesiod** (fl. 859-824 B.C.), Gr. poet; *Theogony; Works and Days.*

**Hesperides**, (Gr. myth.) daughters of *Atlas, guardians of golden apples of Hera.*

**Hesperus**, 1) (Gr. myth.) son—or brother —of Atlas. 2) (Astron.) The "evening star" (q.v.).

**Hesse, Herm.** (1877- ), Ger. author; *novels, Peter Camenzind; Demian.*

**Hesse** (until 1866 **Hesse-Darmstadt**), *republic, Germany; 2,969 sq.m.; pop., 1,350,000; divided into Oberhessen and Rhein-* *hessen, in S., on both sides Riv. Rhine from Worms to Bingen, and Starkenburg, in N. (Wetterau vall. and region of the Vogelsberg range); extensive vineyards and wine trade; univ. at Giessen; chf. tn., Mainz; cap., Darmstadt. H.-Homburg, formerly inde-* *pendent landgraviate (1622-1866) within Hesse-Damstadt; Prus. since 1866. H.-* *Kassel, (Cassel) formerly electorate, now* *dist. in prov. of Hesse-Nassau (q.v.); cap.,* *Kassel. H.-Nassau, prov., Prussia; 6,470* *sq.m.; pop., 2,500,000; forestry, cattle-* *breeding; orchards and vineyards in S.; univs.* *urt and Marburg; cap., Kassel.*

**Hessian**, canvas-like fabric of jute or *hemp. H. fly, small fly of gall-midge type, black with blood-red abdominal markings; extremely destructive to crops; believed to have been introd. into Amer. by Hessian troops during War of Independence.*

**Hestia**, Gr. goddess of the hearth. Lat., *Vesta (q.v.).*

**Heston and Isleworth**, urb. dist., *Middx., Eng., W. sub. London; pop., 75,400 (includes Hounslow, q.v.).*

**Hesychasts**, relig. body of Eastern Chris- *tians who, like the later Quietists (q.v.), held that absolute repose of mental and physical faculties was best preparation of the soul for* *divine communica-* *tions.*

**Hetaerae** (women *friends*), superior class *of prostitutes in anc. Greece.*



Hetaera

**Hetch Hetchy Aqueduct**, brings *water from Sierra Nevada to San Francisco, 156 m.; capacity, 400 mill. galls. per day.*

**Heterogeneous**, of a different kind or *nature. Ant.: homogeneous (q.v.).*

**Heteromorphism**: *see* DIMORPHISM.

**Hetman, headman**, 1) chief army officer *in former Kgd. of Pol., title assumed (1918) by Petlura, for a short while head of an indep. Ukraine. 2) A Cossack chief, more correctly* *Ataman.*

**Heuristics**, method of teaching by wh. *the pupil is incited to find out knowledge for himself. Heuretic, pertaining to discovery or invention.*

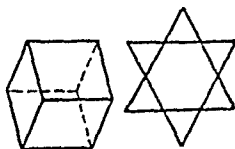
**Hevea brasiliensis**, tree of family *Euphorbiaceae*, indigenous to S. Amer.; chief *and best source of rubber (q.v.).*

**Hever**, vill., Kent, 7 m. S.W. of Sevenoaks, *on Riv. Eden; 15th cent. H. Castle, assoc. with Anne Boleyn.*

**Hewart**, of Bury, Gordon Hewart, 1st *bn. (1870- ), Eng. lawyer; Ld. Chf. Justice, 1922.*

**Hewins, Wm. Albert Samuel** (1865-1931), *Brit. economist and publicist; Director, London School of Economics, 1895-1903; M.P., 1912-18; Under-Sec. for Colonies, 1917-19; Secretary of Tariff Commission, 1903-17; prominent advocate of Tariff Re-* *form; pub. Empire* *Restored, 1927; etc.*

**Hexagon**, *(math.) a plane fig. with six sides and six angles. Hexagonal system: see* *Hexahedron · Hexagram* *CRYSTALS. Hex-*



**agram**, 6-pointed star formed of 2 equilat- *eral triangles; badge of Pythagoreans and* *of Judaism (Star of David).*

**Hexahedron**, 6-sided cube.

**Hexameter**, verse of 6 feet or metres; class. heroic verse — — — | — — — | — : — — — | — : — — — |, — — — | — — — caesura either after first 2½ feet or after first 3½ feet.

**Hexapla**, editn. of 6 texts or versions in parallel columns, esp. of Old Testament.

**Hexastich**, 6-line poem or stanza.

**Hexastyle**: see COLONNADE.

**Hexateuch**, (O.T.) first six bks. of O.T. (*Pentateuch* and *Joshua*).

**Hexham**, mkt. tn., S. Northumberland, on Riv. Tyne; pop., 8,900; 12th-cent. Priory church on site of Saxon cathed. (fndd. 7th cent.); 14th cent. Manor Office, prison of the anc. regality of Hexhamshire. **Battle of H.**, 15 May, 1464, defeat of Lancastrians, under Somerset, by Yorkists, under Montacute.

**Heylyn**, Peter (1600-62), English historian and Royalist propagandist; *Cyprianus Anglicus*, or *the Life and Death of William Laud*.

**Heyse**, Paul (1830-1914), Ger. novelist, dramatist, and poet; Nobel Prize (Lit.), 1910. *L'Arrabbiata*; *Merlin*; *Maria von Magdala*.

**Heysham**, seaside resort, part of Morecambe, on Morecambe Bay; steamers to Belfast and I.O.M.; pop.: see MORECAMBE.

**Heywood**, Thos. (fl. 1600-40), Eng. author and playwright; his works include: *Edward IV*, 1600; *A Woman Kilde with Kindness*, 1607; *The Four Prentises of London*, 1615.

**Hezekiah**, (O.T.) Kg. of Judah, 8th-7th cents. B.C.; abolished idolatry (2 Kings, xviii).

**Hf**, (chem.) symbol of hafnium.

**Hf.-bd.**, abbr. half-bound (of books).

**Hf.-cf.**, abbr. half calf (of books).

**Hg**, (chem.) symbol of mercury (Lat., *hydrargyrum*).

**H.H.**, abbr., 1) His Holiness (the Pope); 2) His (Her) Highness.

**Hiatus**, in prosody, break betw. 2 words, the 1st ending in a vowel or vowel combination, while 2nd begins with a vowel.

**Hiawatha**, legendary hero of the Onondaga tribe of N. Amer. Indians, believed to have lived c. 1450; accredited with union of six nations into the Iroquois; centre of many miraculous tales as the teacher and type of human civilization and progress. Subject of poem by Longfellow (1855) and cantata by Coleridge-Taylor, 1898.

**Hibernation**, state of torpor or suspended animation in wh. many reptiles and a few mammals pass the winter, and during wh. vitality is kept up at expense of reserves of fatty tissue built up during summer and early autumn.

**Hibernia**, Lat. name for Ireland.

**Hiccup**, **hiccough** (through assimilation to "cough"), spasmodic contraction of the diaphragm, often accompanied by sudden closure of glottis, at the moment of drawing

in the breath; the sound accompanying this; it is usually caused by dyspepsia, but may indicate some grave disorder.

**Hic et ubique** (Lat.), here and everywhere. **Hic jacet**, here lies.

**Hichens**, Robt. Smythe (1864- ), novelist; works incl.: *The Green Carnation*, 1894; *The Prophet of Berkeley Square*, 1901; *Bella Donna*, 1909; *Dr. Arlt*, 1929.

**Hickory**, nut-bearing Amer. tree, of several species, belonging to the genus *Carya*, allied to the walnut; has strong, tenacious wood.

**Hidalgo**, 1) former Span. nobleman of lesser rank having right to the title of *Don*. 2) Mex. gold coin, equal to 10 pesos or £2. 1s. 8d (\$10.00), at par.

**Hide**, old Eng. sq. meas., 100 ac.; formerly meas. of land sufficient to support a household; 40 hides = 1 barony. See HUNDRED.

**Hierarchy**, 1) one of the 3 divisions of angels; govt. by these (celestial H.); 2) organised govt. in religious matter by graded eccles. officers; 3) any graded system or body of officials.

**Hiero**: see HIERON.

**Hieroglyphics**, anc. Egyp. picture-writing on monumts. and papyrus scrolls, used until 3rd cent. A.D.; deciphered in part for 1st time 1822, by Champollion (see Rosetta Stone); also Mex. and Pers. picture-writings.



Hieroglyphics

**Hieron**, 1) (478-467 B.C.), Tyrant of Syracuse, patron of literature; court resort of Pindar, Aeschylus, Simonides and Epicharmus. 2) (268-215) Kg. of Syracuse; aided Romans in 2nd Punic War, after first assisting Carthaginians.

**Hieronymites**, **Jeronymites**, name of 3 or 4 congregations of Augustinian Hermits (q.v.) who supplemented their rule from St. Jerome's writings; 1) **Spanish H.**, estab. 1374; 2) **H. of the Observance**, or of Lombardy, now extinct; 3) **H. of Pisa**, fndd. 1377; 4) **H. of Fiesole**, suppressed in 1668.

**Higgins**, Edward John (1864- ), gen. of Salvation Army, succeeded William Bramwell Booth, 1929.

**High Church**: see ANGLO-CATHOLICS.

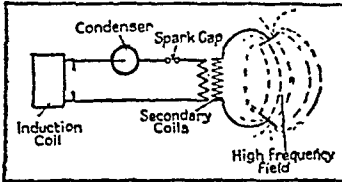
**High Commission**, Court of est. in 1559 to deal with questions of ch. discipline. Abol. in 1641, reconstructed as Court of Eccles. Commission, 1686, when it became an instrument of persec.; finally dissolved 1689.

**High Commissioner**, title of certain Brit. colonial governors, and of representatives in Lon. of each of self-gov. Dominions. Commercial representatives of Gt. Brit. with this title are also maintained in some of the Dominions (e.g., Canada and S. Afr.). In Scot. Lord High Commissioner is a layman apptd.

annually to represent Kg. on occasions of ~~some ceremony~~ in Presbyt. Church.

**High Court**, Eng. ct. exercising civil and ~~and probate~~, both original and appellate, but ~~subordinate~~ in civil matters to Ct. of Appeal. **Comptroler** Chancery Div., King's Bench Div. and Probate, Divorce, and Admiralty ~~Division~~.

**High frequency**, (elec.) alternating elec. current, usu. applied to 5,000 alternat. p. sec.



High Frequency Field (after Tesla)

upwards. Generated by spec. dynamo, by spark discharge of condenser thr. inductive circuit (Tesla), or by triode valves. When sent into *aerial*, wireless (electro-magnetic) waves are radiated. Passes thr. body without prod. shock, hence used in med., e.g., *diathermy* (used for heating or cauterising).

**Highgate**, hilly resid. district of N. London, in bors. of Hornsey, Islington, and St. Pancras; former site of toll-gate on Great North Road; **H. Cemetery** (1839) contains tombs of Herbert Spencer, George Eliot, Karl Marx, etc.; **H. School**, Eng. public sch. for boys; fndd. by Sir Roger Cholmeley, 1565.

**High German**: see LANGUAGE SURVEY, IV. *Germanic*.

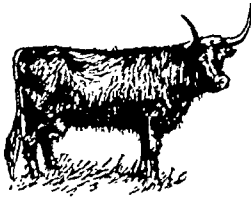
**High jump**, (athletics) leap made over an adjustable lath between 2 uprights, from either standing or running start. Record *H. J.* (running st.) 6 ft. 8½ in. by R. H. Baker (Eng. pro., 1900) and H. M. Osborne (U.S.A. amat.), 1924.

**Highland cattle**, Scottish breed of Western Highlands; native to that country; short legs, shaggy, tawny coat, large head, and branching horns; make first-quality beef.

**Highland**

**Light Infantry, the City of Glasgow Regiment**, Brit. infantry regt.; union of 71st and 74th Foot; depot, Maryhill (Glasgow); record office, Perth; 26 battalions in World War.

**Highland regiments**, mainly kilted, Brit. Army: Black Watch, Seaforth, Cameron, and Argyll and Sutherland *ers* (q.v.). Highland Light Infan-



Highland Cow

any mountainous region;

name usually given to mountainous part of Scot. extending from Moray Firth to Clyde, incl. Hebrides.

**Highness**, hon. title used in addressing princes.

**High places**, (O.T.) sites sanctified for altars (other than the Temple and Tabernacle), usu. for idolatrous worship.

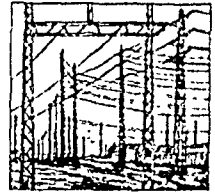
**High priest**, head of the anc. Jewish priesthood.

**High relief**, sculpture on a flat surface from which it stands out so as to resemble sculpture in the round (e.g., the metopes of the Parthenon).

**High school**, in U.S.A., etc., State-aided co-educational school, usu. free, preparing students for tech. colleges and universities.

**High-speed steel**, *self-hardening S.*; modern tool steel for working metal: 12%-18% tungsten, sometimes chromium, vanadium, molybdenum. Machines with wh. it is used reqd. to be of extra strength.

**High tension**, (elec.) tension of over 500 volts; for long-distance transmission, voltages up to 250,000 are commonly used. The higher the voltage used, the less the loss of energy in transmission thr. a given line, or the less the copper reqd. for a given loss of power over a given distance.



High Tension Overhead Transmission Line

**High treason**: see TREASON.

**High water**, highest level normally attained by body of water subject to fluctuations; state of tidal water at high tide just before it turns.

**Highway**, main road with continuous metalling; applied in U.S.A. to network of national roads which connects all parts of the country.

**H.man**, robber, generally mounted, who formerly extorted money from travellers on the public roads by threats of violence or murder; common in Eng. from 16th to early 19th cents.; notorious examples were CLAUDE DUVAL (1643-70), JACK SHEPPARD (1702-24), DICK TURPIN (1706-39).

**High Wycombe**, Chipping Wycombe, munic. bor., Bucks, Eng.; manuf. chairs, furniture; pop., 28,000.

**H.I.H.**, abbr. His (Her) Imperial Highness.

**Hilarius**, St., Pope (461-68), extended papal authority in Sp. and France.

**Hildebrand**, personal name of Pope Gregory VII (q.v.).

**Hildegard**, of Bingen, St. (c. 1100-79), Ger. mystic and writer; *The Radiance of Divinity*.

**Hildesheim**, tn., Hanover, Prussia; pop., 58,600; manuf. sugar, tobacco, rubber. Mediaev. buildings; 11th cent. cathedral.

**Hilferding**, Rudolf (1877- ), Ger.

statesman. and pol. econ.; Fin. Min., 1923, 1928-29; *Das Finanz Kapital*.

**Hill, Octavia** (1838-1912), Eng. philanthropist; worked esp. to improve housing of the poor in London and towards the preservation of open spaces. **H., Sir Rowland** (1795-1879), Eng. postal reformer; introduced penny postage, 1840.

**Hill 60**, high ground nr. St. Eloi, Belgium. 3 m. S.E. of Ypres; scene of severe fighting in World War. **H. 304**, ridge betw. Verdun and Le Mort Homme; scene of fierce fighting, 1916-17.

**Hillah**, tn. on Riv. Euphrates (Iraq); pop., 15,450; wool and textiles; grain trade; ruins of Babylon to north.

**Hiller, Ferdinand** (1811-85), Ger. composer; *Die Zerstörung Jerusalems; Nala und Damazanti*.

**Hilum**, (physiol.) the opening in an organ, usu. for the transmission of blood vessels, the bronchus and pulmonary vessels and lymphatics enter lung at its *hilum*; or root.

**Hilversum**, tn., N. Holland; pop., 52,000; indus.: textiles; wireless broadcasting station.

**H.I.M.**, abbr. His (Her) Imperial Majesty.

**Himalayas**, S. Asiatic mtn. range, highest in the world, betw. Tibet and India, and betw. Rivs. Indus and Brahmaputra; 1,500 m. long; av. breadth of 150 m. Tertiary ridges; watershed; 5 snow peaks over 26,500 ft. (*Mt. Everest*, 29,141 ft.), 17 over 25,000 ft., 40 over 23,000 ft., and 120 over 20,000 ft.; av. height of passes 16,000-18,000 feet. **Himalaya Railway**, from Darjeeling to Sadiya; av. gradient 1 in 30.

**Himation**, garment worn in anc. Gr. by youths and women of free birth over the chiton (q.v.).

**Himera**, anc. Gr. tn. of Sicily, fndd. c. 650 B.C. In 480 scene of Gelon's victory over Carthaginians; destroyed 409 B.C.

**Himyaritic**, formerly applied to langs. of Sabaeen inscripts. in S.W. Arabia; from Himyar, trad. kg. of Yemen.

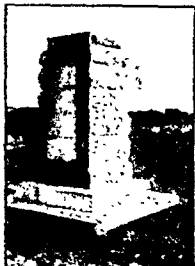
**Hinchingbrooke**, Elizabethan mansion (E. of Sandwich), Huntingdon; belonged to Cromwell family till 1627.

**Hinc illae lacrimae** (Lat. hence these tears): quotation from Terence usually applied ironically to a trivial disaster.

**Hind**, female of red deer.

**Hindemith**, Paul (1895- ), Ger. composer; *Sanda Susanna; Cardillac*, etc.

**Hindenburg**, Paul von (1847- ), Ger. F.M.; com. VIII Army, 1914, Tannenberg, Masuria; chief of General Staff 1916; 2nd Pres. of Ger. Repub. 1925. **H. Programme**,



Hill 60. Memorial

1916, econ. mobilisation of Ger. home resources for production of mil. necessities and food supplies. **H. Line**, last and strongest line of Ger. defence, broken after 9 days' battle, 29 Sept., 1918.

**Hindenburg, Zabrze**, tn., Upper Silesia, Prussia; pop., 122,700; coal-mines, iron and oil works.

**Hindhead hill** (895 ft.), Surrey, 2 m. N.W. Haslemere; on W. side is *Devil's Punch Bowl*.

**Hindi**: see LANGUAGE SURVEY, Ind. Languages.

**Hindu**, largest soc. and relig. subdivision of pop. of Ind.; racially mixed, mainly Aryo-Dravidian; religion, Brahmanism (q.v.); have caste system (q.v.); in past, great achievements in art, lit., and philosophy. **H. chronology**, dates variously from 3 principal eras apart from Mohammedan Era (see M. CALENDAR); *Kaliyuga Era*, beginning 3102 B.C.; *Vikrama Era*, 57 B.C.; *Saka Era*, A.D. 78; other eras exist locally; three varying computations of length of year are in use, all slightly longer than Julian year, so that Hindu seasons fall a few minutes later each year acc. to Western reckoning; both solar and lunar years are in use for civil purposes in var. parts of India.

**Hinduism**, term for later and modern developments of Brahmanism; see BRAHMA; INDIAN PHILOSOPHY.

**Hindu-kush**, desolate mtn. range in N.E. Afghanistan; *Tirachi Mir*, 25,400 ft.; several passes c. 12,000 feet.

**Hindustan, N.**, Indian plain betw. Rivs. Indus, Ganges, and Brahmaputra; area, 810,000 sq.m., partly fertile, partly desert.

**Hindustani**: see LANGUAGE SURVEY, Ind. Languages, princ. lang. of India.

**Hinge**, (bldg.) one of the swivel-joints by wh. doors, windows, etc., are hung along one edge, to enable them to be opened and closed. **H.-lock**, (bldg.) fixture forming pin for a certain type of door or window-hinge.

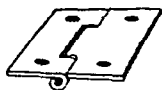
**Hinkler, Herbert J. L.** (1892-1933), Australian aviator; made record-breaking flight, England-Australia, 1928, and long-distance flight, New York-London via Brazil and W. Africa, 1931; lost his life (Italy) during solo flight, England-Australia.

**Hinny**, cross betw. stallion and she-ass; similar to ass in appearance. See also MULE.

**Hipparchus** (c. 190-125 B.C.), Gr. astron.; intro. circles of lat. and long.; stated



Hindenburg



Hinge

distance of moon from earth, made 1st list of fixed stars; fndd. trigonometry.

**Hipper**, Franz von (1863-1932), Ger. adm.; com. at Dogger Bank, 1915, and at Jutland, 1916.

**Hippocrates** (5th cent. B.C.), Gr. philosopher ("Father of Medicine"); practised and taught in Athens, Delos, and Larissa, where he died; his writings incl. *Airs, Waters and Places*, first known treatise on public health, and a surgical work, *On Injuries of the Head*.

**Hippodrome** (Gr.), orig. course for horse and chariot racing; now building for equestrian and other displays.

**Hippopotamus**, even-toed ungulate; second largest living terrestrial animal, attaining 11 ft. in length and weighing 3 to 4 tons; native of Africa. Long, barrel-shaped body and short legs; enormous mouth and head. Nostrils placed close together on highest point of muzzle. Both ears and nostrils can be closed when H. is submerged in river. Lives chiefly in water, only coming on land at night to graze. **Pygmy h.**, found in Liberia, W. coast of Africa, inhabits dense tropical forest and wallows in the swamps.

**Hips**, (bot.) fruit of the rose.

**Hiram I**, (O.T.) Kg. of Tyre (c. 1000 B.C.); ally of David and Solomon, to whom he supplied materials for bldg. of Temple (II Sam. v).

**Hire purchase**: see **INSTALMENT BUSINESS**.

**Hirohito**, Michi no Miya (1901- ); regent, 1921; Emp. of Japan, 1928.

**Hiroshige** (1797-1858), Jap. artist; colour prints.

**Hirschfeld**, Magnus (1868- ), Ger. physician and psychologist; studied, and founded inst. for, sexual diseases; dismissed by Nazi govt., 1933.

**Hiroshima**, 1) prov. centr. Japan; area, 3,250 sq.m.; pop., 1,617,680; 2) tn., S. Hondo, pop., 270,500; seaport.

**Hispania**, Lat. name for Spain; Rom. Hispania included both Spain and Portugal.

**Hissarlik**, hill on the site of ancient Troy.

**Histology**, science dealing with microscopic structure of the tissues of an organism.

**History**, that wh. happened to mankind in the past, or the description thereof. It is usually divided into: **Ancient H.** (up to the destruc. of the W. Rom. Empire, A.D. 476); **Medieval H.** (up to the fall of Constantinople (1453), or the discov. of Amer. (1492); **Modern H.** (up to the present). See **WORLD HISTORY**, synopsis.

**Hitler**, Adolf (1889- ), Ger. politic. of Austr. ancestry; part founder Ger. Nat.-Soc. party (Nazis); organized with Ludendorff unsuccessful insurrection, Munich, 1923;



Hitler

imprisoned (5 mths.), 1924; reorganized party with storm troops and brown shirt uniform; Chancellor, 1933; announced beginning of *Driftles Reich* and suppression of Jews, internationalists, and Marxists.

**Hitopadesa**, a popular summary, in 4 books, of the *Panchatantra*.

**Hittites**, ancient civilized people of Syria, frequently mentioned in O.T.; commanded extensive empire in Asia Minor from the 16th-8th cents. B.C.; perhaps also dominant in Egypt. temp. Hyksos (q.v.); conquered by Assyrians c. 717 B.C. Many inscriptions remain, and recent research has to some extent deciphered them; lang. probably belonged to the Indo-European group; see **LANGUAGE SURVEY**, *Ind.-Ger.*, A group.

**Hjälmar**, lake, in lake dist. of centr. Sweden, 190 sq.m. **H. Canal**, N. of Riv. Arboga, 8 m. long; 9 locks.

**H.L.I.**, abbr. Highland Light Infantry.

**Hlucin**: see **HULTSCHIN**.

**H.M.**, abbr. His (Her) Majesty.

**H.M.S.**, abbr. His (Her) Majesty's Ship, Service, or Steamer.

**H.M.S.O.**, abbr. His (Her) Majesty's Stationery Office.

**Ho**, (chem.) symbol of holmium.

**Hoare**, Sir Saml. John Gurney (1880- ) Brit. Conserv. politician; M.P., Chelsea, 1910; Sec. of State for Air, 1922-24, 1924-29; Sec. of State for India, 1931.

**Hoar-frost**, deposit of minute needles of ice on ground, surface of leaves, etc.; white frost, rime.

**Hoatzin**, pheasant-like S. Amer. bird; olive-coloured plumage; defective power of flight; long crest and tail.

**Hobart**, cap. of Tasmania, on estuary Riv. Derwent, S.E. coast; pop., 58,100; Anglican and R. Cath. catheds.; univ.; seapt. (good harbour); exports fruit and wool.

**Hobbema**, Meyndert (1638-1709), Dut. landscape painter.

**Hobbes**, John Oliver, pseud. of Pearl M.T. Craigie (q.v.). **H. Thomas** (1588-1679), Eng. philos.; *Leviathan*.

**Hobbs**, John Berry (1882- ), Eng. cricketer; 1st appeared for Surrey, 1905; has many times played for Eng. agst. Australia; played for M.C.C. team in Australia 1907-8, 1911-12, 1920-21, 1924-25, 1928-29.

**Hoboken**, 1) tn., prov. of Antwerp, Belgium, pop., 32,000. 2) Tn., New Jersey, U.S.A. on Hudson Riv. opposite New York, pop., 68,000; coal, iron, silk.

**Hoc genus omne** (Lat.), all this sort of people, or things.

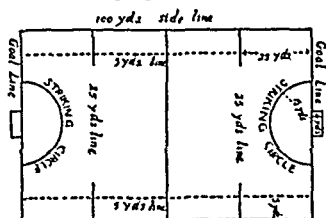
**Hoche**, Lazare (1768-97), Fr. gen.; suppr. Vendée revolt; deftd. Austr. on Rhine, 1797.



Thomas Hobbes

**Hock**, general name for Rhine wine, mostly white. Orig. abbr. of Hochheim, Ger., village near Mainz.

**Hockey**, game played by 2 teams of 11 with a hard ball propelled by a curved stick,



Hockey: Field of Play

which must not be lifted above the shoulder. Number of goals scored decides the game.

**Hocus pocus**, magical formula of conjurers; hence, pompous nonsense.

**Hodeida**, seapt., Yemen, Arabia, on Red Sea; pop., 50,350; exports coffee and millet-seed.

**Hodgkin**, Thomas, Eng. physician (1798-1866). **H.'s disease**, a fatal disease characterized by enlargement of lymphatic glands and anaemia.

**Hodler**, Ferd. (1853-1918), Swiss painter; protagonist of expressionist movement.

**Hodometer**: see ODOMETER.

**Hoe**, gardening implement for uprooting weeds, breaking up ground, etc.; small blade attached to long handle. Also, horse-drawn or machine-driven H. for farm-work.

**Hofer**, Andreas (1767-1810), Tyrolese patriot; led revolts agst. Fr. and Bavaria, 1796-1810; shot at Mantua.

**Höfding**, Harald (1843-1931), Dan. phil.: *Hist. of Modern Philosophy*; *Prob. of a Philosopher*; *Philosophy of Religion*, etc.

**Hoffmann**, Ernst Theodor (1776-1822), Ger. auth. and jurist; *Phantasiestücke*; *Die Elixire des Teufels*; *Die Serapionsbrüder*.

**Hofmannsthal**, Hugo von (1874-1929), Austr. poet; collabor. with Max Reinhardt and Richard Strauss.

**Hogarth**, William (1697-1764), Eng. artist and satirist; *The Rake's Progress*; *Marriage à la Mode*.

**Hogg**, James (1770-1835), Scot. poet ("the Ettrick Shepherd"); employed as shepherd at Yarrow, 1790-99; met Sir Walter Scott, 1802, who influenced publication of *The Mountain Bard*, 1807; settled in Edinburgh, 1810; works incl. *The Queen's Wake*, 1813; *Jacobite Relics*, 1819-20, etc. **H., Sir Quintin** (1845-1903), Brit. philanthropist; opened Polytechnic Inst., Regent St., London, 1882; organised holiday tours and labour bureau; pub. *Story of Peter*, 1900.

**Hogland**, Suursaari, isl. in Gulf of Finland; 8 sq.m.; pop., 725 (fishermen); mountainous; fertile.

**Hog's Back**, chalk ridge (500 ft.), Surrey, Eng., betw. Guildford and Farnham.

**Hogshead**, large cask; Brit. and U.S. liquid meas.; Brit.: beer 54, marsala 45½, sherry 54½, port 56½, brandy 57½ gallons; U.S.A.: beer and wine, 63 gallons.

**Hohensalza**: see INOWRAZLAW.

**Hohenstaufen**, Ger. Imp. dyn. (1138-1254), desc. from **Fred. of Staufen**, Duke of Swabia, 1079, foll. by **Conrad III**, 1138; **Fred. Barbarossa**, 1152, drowned when on Crusade; **Henry VI**, 1190-97; **Fred. II**, 1215-50; **Conrad IV**, 1268, beheaded at Naples.

**Hohenzollern**, Ger. Imp. dyn., first mentioned 1061; **Fred. III**, Burgrave of Nürnberg, 1192. In 1227 the fam. divided into the *Franconian Line* **Fred. VI**, Elector of Brandenburg, 1415; **Fred. I**, Kg. of Prussia, 1701; **William I**, Emp. of Ger., 1871; **William II**, 1859 (abdctd. 1918), and the *Swabian Line*, from which were formed the *H.-Hechingen* and the *H.-Sigmaringen* branches.

**Hohenzollern**, dist., S. Ger., belonging to

Prussia; area, 441 sq. m.; pop., 71,840; strip of land betw. Riv. Neckar and L. Constance; rock-salt beds in N.; cotton-spinning and smelting in Swabian Alps; cap., Sigmaringen.



Castle of Hohenzollern

**H. Canal**, part of ship-canal betw. Berlin and Baltic Sea (Stettin), connects Rivs. Havel and Oder.

**Hoi polloi** (Gr.), the multitude, the "man in the street."

**Hoist**, 1) (tech.) raising of weights. See ELEVATORS; BLOCK AND PULLEY; CRANES; WINDLASS. When lightly constructed, worked by hand; otherwise, formerly by hydraulic, now usu. by elec. power. 2) (Naut.) Hauling up of cargo, sails, flags, etc.; perpendicular height of flag or sail.

**Hokkaido**, Jap. for N. part of the empire: see YEZO.

**Hokusai Katsushuka** (1760-1849), Jap. artist, greatest painter of Popular School (Ukiyo-ye).

**Holbach**, Paul Henrich



The Wave, by Hokusai



Holbein the Younger

Dietrich, Baron d' (1723-89), Fr. sceptic and philosopher; *Le Système de la nature*.

**Holbein, Hans, the Elder** (c. 1560-24), Ger. artist; *Allar of St. Sebastian*. His s.

**Hans Holbein the Younger** (1497-1543); *Burgermeister Meyer's Madonna*; woodcuts *The Dance of Death* (q.v.); Eng. Court painter, 1537.

**Holborn**, met. bor., centr. London; pop., 38,820; contains Brit. Mus., Univ. Coll., City Temple, Gray's Inn, and Lincoln's Inn, and dist. of *Blombsbury*.

**H o l -**

**brooke,**

Joseph (or

Josef) (1878-

), Eng.

composer;

trilogy of

m u s i c -

d r a m a s :

*The Children*

*of Don, Dy-*

*lan, Bron-*

*wen*; symph. poems, *Ulalume, Queen Mab*,

etc.; chamber music, songs, etc.

**Hold**, (naut.) space within ship below lower deck, in wh. cargo is placed.

**Hölderlin**, Friedr. (1770-1843), Ger. poet; *Hyperion*.

**Holderness**, flat penins. of E. Riding, Yorks, ending in Spurn Head; wheat-growing dist.; gives name to well-known hunt.

**Holding companies**, (finan.) limited cos. formed for purpose of investing in shares of other cos., usu. in order to control them; e.g., co. formed to control several rubber or tea cos. Differ from investment trusts (q.v.) mainly in that they are concerned in control of cos. whose shares they hold, whereas investment trust's relation to co. in wh. it invests is purely that of an investor; difference also consists in greater concentration in shares of a few cos., in case of H.C., as compared with investment trusts, wh. spread their investments much more widely.

**Hole**, Saml. Reynolds (1819-1904), Eng. divine, author, and horticulturist; Dean of Rochester, 1887; *Book about Roses*, 1869; *Letters*, 1907; *Memories*, 1892.

**Holiness**, quality of God and of the Saints and Angels. **His H.**, title of Pope and, formerly, of the patriarchs of Constantinople.

**Holinshed**, Raphael (d. c. 1580), Eng. chronicler; part author of *Chronicles of England, Scotland and Ireland*, 1578, a source of many of Shakespeare's historical plays.

**Holism**, philosophic doct. that natural forces tend to coalescence of units, both in physical world and in human soc.; chief modern advocate, Gen. Smuts.

**Holland**, 1) *The Netherlands*, or *Low Countries*, kgdm. on North Sea betw. mouths of Ems and Scheldt: 13,205 sq.m.; pop.,



Holborn: Tudor Buildings

7,832,000 (3,600,000 Protestants; 2,400,000 R.C.). Bounded on E. by Germany, on S. by Belgium. Surface almost uniformly flat (except in E.) and, in parts, below sea-lvl.; much reclaimed land (polders), protected by dykes. Deep indentation of Zuider Zee, fringed by Frisian Isls., being reclaimed: four new polders aggregating 865 sq.m. to be formed, with fresh-water Lake Yssel in centre. Many isls. in estuaries of Rivs. Scheldt, Maas (Meuse), and Rhine. In the N. and N.E. are low moorland plateaux (c. 300 ft.) and pine-woods; in S.E. (prov. of Limburg), land rises to 1,000 ft.; rest mainly fertile, drained marshland. Many canals (1,925 m.) connecting to Rhine, Maas, and Scheldt. Agric., cattle-breeding, dairy-farming (cheese), market-gardening, horticulture (flowers, bulbs, etc., at Haarlem); fisheries; tobacco, sugar, chocolate, cocoa; leather; diamond-cutting (Amsterdam); coal in Limburg. Cap., The Hague; chf. ports, Rotterdam and Amsterdam (commercial cap.); univs. at Amsterdam, Groningen, Leyden, and Utrecht. Constitution of 14 Oct., 1848 (last revision, 1922): hereditary constitutional monarchy (House of Nassau-Orange), two chambers (States-General), State council, 11 Provinces (Groningen, Friesland, Drenthe, Overijssel, Gelderland, Utrecht, N. and S. Holland, Zeeland, N. B.).

Extensive colonial em. (Indies). Orig. inhab., Belgae, S. of the Waal, Teutonic Batavians in *insula Batavorum* (betw. Waal and Rhine), and Frisians N. of the Rhine; conquered by Rome 57 B.C., A.D. 13, and A.D. 47 respectively. Invaded by Franks, 4th cent. On division of Carolingian Emp., 843, most of the Netherlands passed to Lothaire, becoming part of terr. later known as Lorraine; divided betw. E. and W. Franks, 870. Disintegrated into several feudal States in 10th cent.; under rule of Burgundy (q.v.), 1384-1477; on death of Charles the Bold came under rule of the Habsburgs (through marriage of Mary of Burgundy to Maximilian of Austria). Charles V, having united 17 provs. of the Netherlands, abdicated in favour of his son, Philip II of Spain, 1555. War of Independence, 1566-1648, under William of Orange. United Provinces (q.v.) formed Union of Utrecht, 1579. Repub. of United Netherlands, 1581; acknowledged by Peace of Westphalia, 1648. Period of seapower and colonial expansion (Dut. E. India Co. fndd. 1602). Batavian Repub. establd. by Fr. intervention, 1795. Louis Napoleon kg., 1806-10. United with Belgium (kgdm. of the Netherlands), 1815; separated from Belgium, 1830. Neutral in World War. 2) **North H.**, maritime prov. of Holland, on E. of Zuider Zee; 1,065 sq.m.; cap., *Haarlem*. 3) **South H.**, maritime prov. of Holland, delta of Maas and Rhine

(Waal); 1,135 sq.m.; cap., *The Hague*; largest tn., Rotterdam.

**Holland**, S.E. division Lines, Eng.; chf. tn. *Boston*.

**Hollander**, Bernard (1864- ), Brit. physician; writer on medical subjects; investigated localization of psychical functions in the brain; *The Insanity of Genius*, 1913; *Psychology of Misconduct*; *Vice and Crime*, 1922.

**Holland House**, Tudor mansion in Kensington, London, built 1607; formerly in possession of carls of Holland; leased by Wm. Penn and Joseph Addison among other men of note; famous in late 18th and early 19th cents. as rendezvous of men of letters and statesmen; surrounded by largest private gardens in London. The rooms, finely decorated in the Jacobean style, contain valuable collections of pictures and other objects of art; present owner is the Earl of Ilchester.

**Hollands**, gin (q.v.) distilled in Holland.

**Hollar**, Wenceslaus (1607-77), Bohemian engraver; came to Eng., 1633; illustrated Dugdale's *Warwickshire*, and *Monasticon* (vol. I), and produced many views of London.

**Hollebeke**, Belg. vill., nr. Ypres; scene of fighting in World War.

**Holloway**, resid. district of N. London, incl. in bor. of Islington; female prison.

**Holloway College for Women**, Royal, Egham, Surrey; coll. for higher education of women, fndd. 1886 through bequest by Thos. Holloway (1800-83), manufacturer of patent medicines; recreation hall contains fine art collection; see LONDON UNIVERSITY.

**Holly**, any tree of the genus *Ilex*. Common or European holly, *I. aquifolium*, has evergreen prickly leaves and red berries; wood is used for turnery and leaves and berries in folk med. as a febrifuge. Leaves of certain Amer. kinds infused for making tea.

**Hollyhock**, *Althaea rosea*, tall ornamental plant with large terminal spike of flowers and gen. white, pink, or purple.

**Hollywood**, California, U.S.A., centre of cinematograph indust.; annexed to Los Angeles, 1910.

**Holmes**, Sir Charles John (1868- ), Brit. artist; Dir. Nat. Port. Gallery, 1909; Nat. Gall., 1916. **H., Oliver Wendell** (1809-93), Amer. physician and author; *Autocrat of the Breakfast Table*. **H., Oliver Wendell** (1841- ), Amer. jurist, son of above; 1902 apptd. to U.S. Supreme Court; famous for liberal dissenting judgments.

**Holmium**, (chem.) very rare metallic element; at. wt., 163.5; sym., Ho.

**Holm oak**, *Quercus ilex*, also called Evergreen O., Holly O.; shrub-like tree, common

in Mediterranean countries, and in England, where it grows to a smaller size; so called from the resemblance of its leaves to those of the holly (q.v.).

**Holofernes**, (Apoc.) general of Nebuchadnezzar; slain by Judith (q.v.).

**Holst**, Gustav Theodore (1874- ), Eng. composer; *The Planets* (1915) for orches.; choral works, part songs, etc.

**Holstein**, S. part of Schleswig-Holstein (q.v.). **H. cattle**, large black-and-white breed, well known in U.S.A.; yield abundant milk.

**Holtzendorff**, Henning von (1853-1919), Ger. adm.; Chief of Staff, 1915; commanded U-boat warfare.

**Holy Alliance**, 1815, betw. Pruss., Russ., Aus., and all Europn. States except Eng. and Turkey; nominally in Christian brotherhood, actually to resist all polit. change.

**Holy Chair**: see APOSTOLIC SEE.

**Holy Coat of Trèves**, a relic preserved in cathed. at Trèves, alleged to be Christ's seamless robe (John xix. 23).

**Holy Communion**, sacramental partaking of the Body and Blood of Christ: see TRANSUBSTANTIATION.

**Holy Cross**, mtn., 13,978 ft., Colorado, U.S.A.; nat. monument (1929). **H. C. (Rood) Day**: see CROSS, EXALTATION OF.

**Holy Ghost**, third Person of the Holy Trinity; the Comforter, the Paraclete. See TRINITY.

**Holyhead**, seapt. tn. on Holy Isle, Anglesey, N. Wales; mail steamers to Ire.; pop., 10,700.

**Holy Island**: see LINDISFARNE.

**Holyoake**, Geo. Jacob (1817-1906), Eng. secularist and reformer; sentenced to 6 mos. imprisnt. for blasphemy, 1841; pioneer of co-operative movement; works incl. *The Rochdale Pioneers*, 1857; *Hist. of Co-operation in Eng.*, 1875 (rev. ed., 1906).

**Holy Office**: see INQUISITION.

**Holy of Holies**, (O.T.) part of Temple reserved for Ark of the Covenant (q.v.) wh. high priest alone might enter.

**Holy Places**, any places especially venerated by adherents of any religion (e.g., Mecca, Lhasa); more esp. the spots rendered sacred to Christians and frequented by pilgrims by reason of their association with events in the life of Christ; esp. Ch. of the Holy Sepulchre at Jerusalem, Nazareth, and Mt. of Olives. Disputes with Turkish Govt. with regard to the rights and protection of such pilgrims were a cause of the Crimean War.

**Holy Roman Empire**, *The*, comprised the Ger.-speaking peoples of Centr. Eur. and originally part of Italy, and was ruled by an elected Emp., who claimed to be the repres.



Gustav Holst



of the anc. Rom. Emps., and who asserted (in theory) authority over nations of west. and centr. Eur.; first called "Holy" by Barbarossa, from idea of its divine appointment, and also from interdependence of Empire and Church. It began with Charlemagne (800) and contd. through various lines till Francis II (Francis I of Austria) abdic. as last Emp. in 1806. **H. R. E., Estates of the**, *spiritual* princes and dignitaries and *secular* princes, counts of the emp. and imperial cities, having a seat and vote in the diets of the Holy Roman Empire.

**Holyrood House**, royal palace, Edinburgh, Scotl.; residence Mary Qn. of Scots, 1561-7; seat of the Crt., and of Lord High Commissioner to Assembly of United Church of Scotland; State apartments; picture gallery.

**Holy Scriptures:** *see* BIBLE.

**Holy Sepulchre**, Christ's grave in Jerusalem; Emp. Hadrian built temple of Aphrodite over it, 135; its remains removed 325, and circular building (the Anastasis) erected around tomb then disclosed; this tomb partially destroyed, 1010. Church of the H.S. is collection of mainly mediaeval buildings, but includes orig. Anastasis. Question of proprietary rights led to much dispute in both anc. and mod. times. **H. S., Canons Regular of the**, relig. order founded c. 1114; survived in Europe till French Revolution. Canonesses of the Order still exist in Western Europe. **H. S., Knights of the:** *see* HOSPITALERS. **H. S., Order of the**, Papal order of knighthood fndd. c. 1496.

**Holy Water**, water blessed by a priest and considered to be efficacious as a means of grace when used in a spirit of devotion.

**Holy week**, the week preceding Easter.

**Holz**, Arno (1863-1929), Ger. natural. and poet; *Traumulus; Phantasia; Daphnis*.

**Homburg, Homburg vor der Höhe**, watering-place, Hesse-Nassau, Ger., at foot of Taunus Mtns.; pop., 15,000; castle; mineral springs.

**Home industries**, (econ.) those in wh. goods are manuf. in workers' own homes, from materials supplied by an employer; work is usu. pd. for at piece-rates.

**Home market**, market for home products within country of prod.; of importance even in countries where expts. are consid.; U.K. consumes over 70% of produc., but some products mainly for expt. trade, e.g., prop. of cotton goods exptd. 80%; of coal mined abt. 20%; of iron and steel manuf., 30%; of engineer. goods, 25%; of ships built, 50%; of woollen manuf. over 50%.

**Home Office**, dept. of Brit. Govt. under one of the 7 secretaries of state (*q.v.*) orig. charged with corresp. betw. kg. and his subjects, and then generally with all internal administratn.

not allocated to other depts. *Specif. deals* with maintenance of order, control of aliens, and the repression of crime.

**Homer**, Gr. epic poet of whom nothing is known; presumed author of *Iliad* and *Odyssey* (*q.v.*).

**Homer**, anc. Hebr. meas.: 1) dry 11.1 bushels (403.4 litres); 2) liquid 85 gallons (386.3 litres).

**Home Rails**, (Stk.

*Exch.*) name for railway stocks in Great Britain.

**Home Rule**, tech. term for parl. sep. from an Imperial or overruling Parlt.; term orig. used with ref. to Ireland, extended later to India, etc.

**Homespun**, rough woollen matl. made of coarse yarn; used for sports clothes.

**Homestead**, 1) dwelling, or farm with grounds and adjoining bldgs.; 2) land granted to settlers in U.S.A. and Canada, under *H. Laws*.

**Home workers**, artisans and craftsmen employed to work in their own homes, employer supplying tools and materials; still practised in cert. lines of manuf.; prevalent bef. and at beginning of indus. revol., esp. in textile industries.

**Homiletics**, (theol.) art of preaching; **homily**, a sermon.

**Hominy**, food prepared from coarse maize, hulled and broken, mixed with water and boiled.

**Homo**, (man, 1) prehistoric; *see* PREHISTORY.

**H. Heidelbergensis**, name given to man whose jaw-bone was found in 1907 in a sand-pit, nr. Heidelberg, Germany (referred to Lower- or Early-Palaeolithic Period (*q.v.*)).

**H. Primigenius**, prehist. man known by discoveries of buried skeletons in Kent (Eng.), Dordogne (France), and Moravia; referred to Upper (Later) Palaeolithic Period. **H. Rhodesiensis:** *see* BROKEN HILL.

2) **H. sapiens** (Lat.), man endowed with wisdom; scientific name for man as distinct from the anthropoid apes.

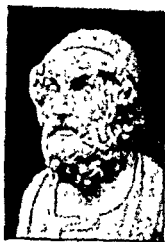
**Homo sum, humani nihil a me alienum puto** (Lat.), "I am a man and nothing human is alien to me"; quotation from Terence (*q.v.*).

**Homæo-**, Gr. prefix: similar.

**Homœopathy**, principle formulated by Hahnemann (*q.v.*) that every disease can be treated by the administration in minute quantities of those drugs which, if given in large quantities, would produce the same symptoms as those of the disease. **Homœopathic doses**, very minute doses.

**Homogeneous**, of same nature. *Ant.: heterogeneous.*

**Homologous**, similar in sound and name.



Homer

**Homologue**, (chem.) substance having a corresponding or relative position in an analogous series, e.g., paraffins and alcohols.

**Homonym**, words having same sound but dif. meaning, e.g., "flea", "flee."

**Homophonous**, music in which one part has the melody, the other part accompanying.

**Homosexuality**, sexual desire directed towards a person of one's own sex.

**Homs**, see HEMS.

**Homunculus**, miniature man proca. artificially (e.g., in *Faust*); hence, a very small man or dwarf.

**Ho-nan**, prov., N. China, in Yellow Riv. terr., 63,840 sq.m.; pop., 35,290,000; fertile plain (loam); cultivation of rice; coal, iron-ore, and copper-ore mines; silk (Honan silk). Cap., *Kai-feng* (pop., 200,500).

**Hondecoeter**, Melchior (1636-95), Dut. painter; *Jackdaw Deprived of His Borrowed Plumes*; *A Spaniel Hunting a Partridge*.

**Hondo**: see JAPAN.

**Honduras**, repub., Centr. Amer., c. 59,600 sq.m.; pop., 860,000 (70% half-breeds, 20% Indians); mountainous (*Montaña de Salaque*, 10,000 ft.); chief products: bananas, sugar, tobacco. Cap., *Tegucigalpa*. Discovered by Columbus, 1502; Span., 1523; independent, 1821.

**Hone**, very fine stone used for sharpening hand-tools.

**Honegger**, Arthur (1892- ), Swiss composer; *King David*; *Judith*; *Antigone*.

**Honesty**, popular name of *Lunaria biennis*, a garden plant of the mustard family, with purple flowers and silvery, transparent, circular seed pods, for which it is chiefly valued, and to which it owes its local Eng. name "money"; also known as moonwort.

**Honey**, sweet, translucent liquid substance produced by the h-bees and other hymenoptera from the juice of plants (see NECTAR), with addtn. of their own glandular juices; varying from white to brown acc. to plants of origin. H. can be pressed out of combs, or extracted by draining, when it is in a liquid state. See BEES. **H. badger**, small martin that eats honey; found in E. India and S. Africa. **H.comb**, a formation of hexagonal cells of wax constructed by bees for honey and rearing the larvae. **H.-dew**, sugary excretion of tree-lice. **H. fungus**, edible fungus, *Armillaria mellea*: destructive tree-parasite. **H.-moon**, period foll. wedding, usually one month. **H.-suckle**, woodbine (*Lonicera periclymenum*) twining shrub, with gaping flowers, yellow inside, red outside; very fragrant. **H.-wort**, *Galium cruciata*, crosswort, maywort; common Eng. hedge-plant with fragrant yellow flowers.

**Hong Kong**, Brit. crown colony, S. coast of China, comprising island of H.

(32 sq.m.), Kowloon Penins., and leased territories behind penins.; total area, 390 sq.m.; pop., 840,500; island hilly (*Victoria Peak*, 1,800 ft.); separated from mainland by strait, forming harbour of 10 sq.m. Cap., *Victoria*, on N. shore of island; pop., 577,500 (18,000 Europeans). Important naval station and seapt.; exports rice, sugar, cottons, silks; chief entrepôt S. China trade; univ. (1912).



Hong Kong, Harbour

**Honi soit qui mal y pense** (Fr.), "Shame to him that thinks evil", motto of the Order of the Garter; of uncertain origin.

**Honiton**, 1) mkt. tn., Devon, Eng., on Riv. Otter; lacemaking; pop., 4,600. 2) Pillow lace made at H.: see LACE.

**Honolulu**, cap., Hawaii; pop., 83,240; port, on isl. of Oahu; shippb.; iron industry.

**Honorarium**, fee, esp. for services of members of professions, such as doctors, authors, etc., when there is no fixed amount.

**Honoris causa** (Lat.), honorary acad. degree conferred on distinguished persons.

**Honorius**, name of 4 popes and 1 anti-pope, of whom the most important, historically, are: **H. I** (625-72), continued work of Gregory I (q.v.), in promoting Christianity in Eng. and Ireland; charged with assenting to heresy of Monotheism. **H. II** (1061-72), *antip.*; apptd. by Emp. but not accepted by Ch. **H. II** (1124-30) sanctioned Praemonstratensian order and that of Knights Templars (q.v.). **H. III** (1216-27), acquired Isle of Man as a fief.

**Honorius**, Flavius (384-423), Rom. emp.; on partition of empire became Emp. of the West; his bro., Arcadius, Emp. of the East.

**Honourable**, courtesy title of children of Eng. peers below rank of marquess, High Court judges, maids of honour, and some others. Marquesses are *most honourable*; peers below that rank, all privy councillors, and certain lord mayors *right honourable*.

**Honourable Artillery Company** (H.A.C.), Brit. territorial corps; oldest Eng. volunteer assocn. (fndd. 1537); hdqrs. at Finsbury (London) since 1641; two batteries and one infantry battalion; seven batteries and three infantry battalions in World War. Captain-general and Col., the King. **Ancient and Honorable Artillery Company of Massachusetts**, oldest U.S. milit. organzn., fndd., Boston, by members of the H.A.C., 1683.

**Hon. Sec.**, abbr. Honorary Secretary.

**Honshu**: see JAPAN.

**Honthorst**, Gerard van (1590-1656), Dut. painter.

**Honvéd**, Hung. nat. troops reserves.

**Hooch**, Pieter de (1629-77), Dut. artist; chfily. painted interiors.

**Hood, Saml. H.**, 1st visct. (1724-1816), Brit. admiral; gov. of Naval Academy, 1778; second-in-comm. to Rodney in W. Indies, 1780; c-in-c. in Mediterr., 1793-94; adm., 1794; gov. of Greenwich Hospital, 1796. **H., Thos.** (1789-1845), Eng. poet and humorist; *Dream of Eugene Aram*, 1829; *Song of the Shirt*, 1843, etc.

**Hoof**, horny covering of foot of certain animals, e.g., horses, oxen, etc. See UNGULATA.

**Hoohly**: see HUGLI.

**Hook**, Theodore Edw. (1788-1841), Eng. author; his powers of improvisation and mimicry won favour with Prince Regent; apptd. accountant-gen. of Mauritius, 1812; recalled owing to deficiency in accs., 1817; in prison, 1823-25; published Tory journal, *John Bull*, 1820; works incl. *Sayings and Doings*, 1826-29; *Gilbert Gurney*, 1836.

**Hook of Holland, Hoek-van-Holland**, Dut. tn. and harbour, 17 m. W.N.W. of Rotterdam; steamship service to Harwich.

**Hooke**, Robert (1635-1703), Eng. physicist, 1st to describe heat as movement of the smallest particles; found, by microscope, the cells in plants; discvd. law of elasticity.

**H.'s law** (extension propor. to force); inv. **H.'s joint**, device for connecting 2 rotating shafts the axes of wh. intersect, so that motion can be transmitted from one to another. Similar to universal joint (q.v.).

**Hooker, Sir Jos. Dalton** (1817-1911), Eng. botanist; surg. on the "Erebus" in Antarctic expdn., 1839; travelled in N. India, 1847-51, in U.S.A., 1877; dir. of Kew Gdns., 1865; pres. Roy. Soc., 1873; O.M., 1907; works incl. *Flora Antarctica*, 1845-48; *Students' Flora of the British Islands*, 1870; *Genera Plantarum*, 1862-83. **H., Richard** (c. 1553-1600), Eng. divine and writer; master of the Temple, 1585; rector of Boscombe, Wiltshire, and prebendary of Salisbury, 1591; rector of Bishopsbourne, 1595-1600; *The Laws of Ecclesiastical Policy*, 4 bks., 1594, 5th, 1597; 6th, 7th, and 8th pubd. posthumously.

**Hookworm**, *Ankylostoma duodenalis*, parasite which invades the small intestine; esp. common among tin miners; causes serious anaemia; very prevalent in East.

**Hoopoe**, bird of the sub-order *Upupae*, with erectile crest, long, curved beak, and square tail; sandy colour. Insectivorous; breeds in burrows; inhabits temperate Europe and Asia and occasionally visits Gt. Britain.

**Hossier State**: see INDIANA.

**Hoover**, Herbert (1874-



Hoopoe

of U.S.A., 1929-33; organ. Com. for Relief in Belgium, 1914; Food Administrator, U.S.A., 1917, and chm. Inter-allied Food Council; chief of Supreme Econ. Council, 1918; chm. Amer. Relief Administration and European Children's Fund, 1918-22; Sec. of Commerce, 1920; organ. relief in Volga region, 1921; introduced the *Hoover Plan*, 1931, postponing payment of Ger. reparations (q.v.). **Hop**: see HOPS.



Hoover

**Hope**, Anthony, pen-name of Sir A. II. Hawkins (1863-1933), [Eng. novelist; wrote *Prisoner of Zenda*, 1894; *Dolly Dialogues*, 1894; *The Intrusions of Peggy*, 1902; etc.

**Höpker-Aschoff**, Hermann (1883- ), Ger. politic.; Pruss. Fin. Min., 1925.

**Hopkins, Sir F. G.** (1861- ), Eng. bio. chem.; Nobel Prize (Med.), 1929, with Eijkman. **H., Gerard Manley** (1844-89), Eng. jurist and poet; chfily. noted for experiments in rhythm and diction; *Poems*, ed. by Robt. Bridges, 1918.

**Hopkinson**, John (1849-98), Eng. physicist and eng.; pioneer in constr. of dynamos; for many years collab. with Edison.

**Hoplites**, heavily armed foot-soldiers in anc. Gr. armies.

**Hopper**, (rly.) an arrangement for unloading open rly. trucks by means of tipping up one side of body so that goods (e.g., coal) fall out; tip-truck.

**Hoppner**, John (1758-1810), Anglo-Ger. portrait painter; R.A. (1795).

**Hops**, *Humulus lupulus*, found in Eur. and Asia; female plant cultivated and trained on poles; fruits form cones (strobiles) and are picked when fully formed, dried in kilns, and pressed into bales. Active principle is *Lupulene*, an aromatic bitter, mildly sedative; used in "bitter" beer; a pillow stuffed with dried hops is a folk remedy for insomnia.



!Hops

**Hopsack**, (text.) a canvas-like weave, used in woollen matl. for dresses and coats.

**Horace**, Quintus Horatius Flaccus (65-8 B.C.), Rom. poet; *Odes*; *Satires*; *Epistles*; *Art of Poetry*.

**Horae**, the Hours, Gr. goddesses of the seasons: *Dike* (Justice), *Eunomia* (Wise Legisltn.), *Irene* (Peace).

**Horatius Cocles**, legendary Roman hero; celebrated for his defence of bridge over Tiber agnst. Etruscans; subject of poem by Macaulay.

**Hörde**, industrial tn., Westphalia, Prussia, nr. Dortmund, on Riv. Emscher; pop-

ulation, 35,000; coal-mines, iron and steel works.

**Horeb**, (O.T.) name given by some writers of O.T. to the mountain Sinai (q.v.); associated with Moses and Elijah.

**Horehound**, popular name for two perennial labiate herbs: 1) common or white H., *Marrubium vulgare*, has thick stem with many branches, abt. 1 ft. high, with a white coating; formerly used for preparation of bitter infusion for treatment of coughs, etc.; 2) black H., *Ballota nigra*, reaches height of 3 ft., has red or purple flowers and a fætid scent.

**Horizon**, circle bounding part of earth's surface visible from given point; line at wh. sky appears to meet land or sea. **Astronomical h.**, or Great Circle, imaginary extension of plane of H. to meet the celestial sphere (q.v.).

**Horizontal amalgamation or trust:** see COMBINE.

**Horizontal bar**, gymn. apparatus consisting of adjustable cross-bar betw. 2 up-rights.

**Hormisdas, St.**, pope (514-23), brought abt. reunion of E. and W. Churches, 518, after schism dating from 484.

**Hormones**, (physiol.) substances formed in and liberated by glands of internal secretion. See GLAND; SECRETIONS.

**Horn, Gustav, Ct.** (1592-1657), Swed. gen.; com. army in Ger., 1632. **H., Philip de Montmorency, Ct.** of (1518-68), Dut. statesm.; resisted Span. rule in Netherlands; exec. by Alva.

**Horn, Cape**, most southerly point of South America, on Horn Isl. (Tierra del Fuego).

**Horn, 1** (hunting) small, usually straight, wind-instrument, used for giving signals in the hunting-field. 2) (Zool.) term applied to dense outgrowths from the skin, such as nails, hoofs, outgrowths on heads of ruminants. **H.-core**, centr. bony part in hollow-horned ruminants.

**Hornbeam**, *Carpinus betulus*, tree related to birch and hazel, with catkin blossoms and small nuts. Hard wood.

**Hornbills**, remarkable birds belonging to the sub-order *Bucerotes*, characterized by immense crested beaks; vary in size from nearly 4 ft. to hardly 1 ft. in length. Natives of Africa, India, and Malaya; omnivorous feeders; nest in holes in trees, the hen bird being walled up by the male, who leaves an opening through wh. he can pass food to his mate while she is engaged in incubating the egg.

**Hornblende**, greenish or black variety of amphibole (q.v.) found in granite, syenite, diorite, and other igneous rocks; composed of arcillaceous earth, silicic acid, and ferric oxide.

**Horn-book**, name given to child's primer, c. 16th cent., consisting of sheet inscribed with numerals, letters of the alphabet, Lord's Prayer, etc., mounted on a board and protected by transparent horn.

**Horne, Sir Robt. Stevenson** (1871- ), Brit. lawyer and politician; director of Suez Canal Co.; rector, Aberdeen, Univ., 1921; M.P. (U.), 1918; 3rd Civil Lord of the Admiralty, 1918; Min. of Labour, 1919; pres. Board of Trade, 1920-21; Chanc. of Exchequer, 1921-23.

**Hornet**, large Europ. social wasp; yellow with reddish-brown markings. Builds its nest in hollow trees. **H.-moth**, species of moth with transparent wings and body banded yellow and black; larvae live in roots and trunks of poplars.

**Horniman Museum**, scientific museum in S.E. district of London, Eng., fndd. (1890) by F. J. Horniman, who presented it to London County Council (1900). Two main depts.: *Ethnological*, illustrating evolution of arts and appliances and containing exhibits from Stone, Bronze, and Iron Ages; *Zoological*, containing series of exhibits illustrating evolution, animal habits, protective colouring, etc.

**Hornpipe**, lively Eng. dance, esp. pop. among sailors.

**Hornsey**, munic. bor., Middx., part Greater London; working-class dist.; pop., 95,500.

**Horn Silver:** see CHLORIDE OF SILVER.

**Hornwort**, (bot.) *Ceratophylla demersum*, aquatic plant, grows entirely under water; bristle-like leaves.

**Horoscope**, (astrol.) diagrammatic representation of position of celestial bodies at a given place and time, gen. the instant of birth (Nativity) of a person; see ASTROLOGY.

**Horresco refrens** (Lat.), I shudder at telling.

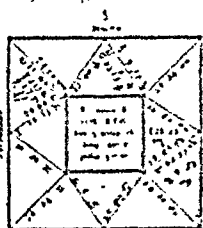
**Horribile dictu** (Lat.), horrible to relate.

**Horsai:** see HENGIST.

**Hors de combat** (Fr.), out of the fight; disabled.



Horn book



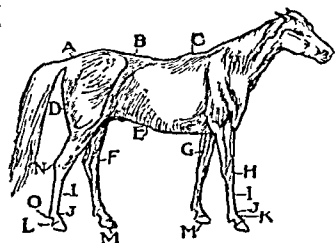
Horoscope

**Hors d'œuvres**, small dishes of sardines, anchovies, smoked salmon, caviare, etc.; or veg. mixed with salad, cream, or mayonnaise, with a slightly salt flavour. Served as 1st course to whet the appetite.

**Horse**, single-hoofed ungulate descended from a five-toed ancestor; the greatly enlarged middle finger or toe, with its nail forming the hoof, while the other digits are reduced to the so-called *splint bones*. The

*tarpan*, or wild horse, of the Russ. *steppe*, may be the direct descendant of original primitive stock from which the domesticated true horse (*Equus caballus*) has been derived. As result of selection, many breeds have been established and are known under such names as Arab, hunter, hackney, dray, punch, etc. See also **GELDING**; **MARE**; **STALLION**. **H. Chestnut**, tree native to E. Europe and Asia, abt. 60 ft. high, bearing white or pink blossoms; the nuts are known as *conkers*. **H.-fly**, *Tabanus*, blood-sucking insect of Order *Diptera* (two-winged); attacks horses and cattle. **H. hair**, hair on tail and mane of a horse; used in upholstery, also for plaiting and weaving and for stretching across bows of stringed instruments. Chief countries of production: Russia and Hungary. **H. latitude**, one of 2 oceanic zones abt. 30° N. and S.: esp. that in N. Atlantic, distinguished by frequent calms and high barometric pressure: so called because becalmed sailing vessels, carrying horses to the West Indies, sometimes had to jettison part of their cargoes here through lack of water. **H. leech**: see **LEECH**. **H. mackerel**, *Scad*, fish allied to mackerel, but with more compressed body and conical teeth; found in all temperate and tropical seas. **H. power**, *H.P.*, (mechan.) unit of work or energy exerted by machine, etc.; equiv. to force reqd. to raise 550 lbs. one ft. per. second. **H.-racing**: see **RACING**. **H. radish**, *Cochlearia armoracia*, tall plant with small yellow flowers; long fibrous root used as a condiment. **H. shoe**, iron rim nailed to horse's hoof. **H. tail**, (bot.) see **EQUISETUM**.

**Hörselberg**, mountain, on Riv. Hörsel,



Points of Horse

A Croup. B Loin. C Withers. D Quarters. E Flank. F Hock. G Chestnut. H Knee. I Cannon. J Fetlock. K Pastern. L Heel. M Hoof. N Point of hock. O Ergot.



Horse-fly

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Horseshoe

Ger., 1,600 ft.; subj. of many legends (*Venusberg* of Tannhäuser legend).

**Horsham**, mkt. tn., W. Sussex, 8 m. S. of Dorking; pop., 13,500; at W. Horsham, 3 m. W., is Christ's Hospital (q.v.).

**Hortense de Beauharnais** (1783-1837), Qn. of Holland, 1806-10; m. Louis Bonaparte, 1802, Kg. of Holland, 1806; mother of Napoleon III.

**Horthy de Nagybánya**, Nik. (1868- ), Hun. adm.; since 1920, regent of Hungary.

**Horticulture**, cultivation of gardens; productn. of flowers, fruit, vegetables. See **GARDEN**; **GRAFTING**; **INTENSIVE CULTIVATION**, etc.

**Hortus deliciarum** (Lat.), "garden of delights," richly illus. manuscript of the 12th cent., by the Abbess Heirad von Landsperg. **Hortus siccus**, "dry garden," herbarium, collection of dried plants.

**Horus**, Egypt. god, having head of a falcon; son of Osiris and Isis.

**Horvath**, Michael (*Halvani*) (1809-78); Hun. histor., statesm.; Bp. of Csanad, 1848; Minister of Public Instruction, 1849; wrote *History of the Magyars*, 1842-46.

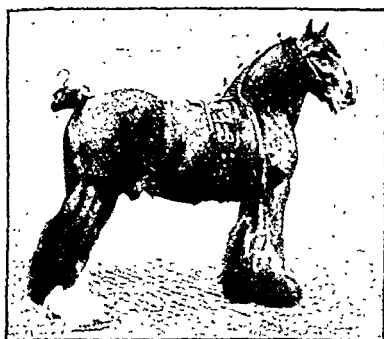
**Hosanna**, (N.T.) cry (save, we pray!) raised by populace on Christ's entry into Jerusalem.

**Hosea**, (O.T.), prophet (8th cent. B.C.). **Bk. of H.** denounces idolatry of Israel.

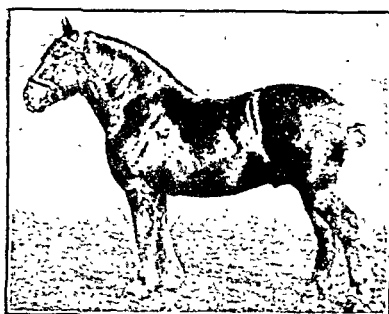
**Hoshea**, (O.T.), last Kg. of Israel (c. 733-24 B.C.).

**Hospice**, (Fr.) 1) house of entertainment and refuge for travellers, esp. one maintained by a relig. order; 2) asylum for infirm or destitute.

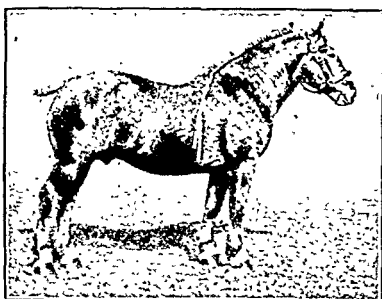
**Hospital**, institution providing medical and surgical treatment, nursing, etc., for sick and injured. H. originally implied a place where a guest received shelter (origin of *hotel*); later denoted refuge for poor and infirm, and endowed educational establishments (Christ's H.). First recorded H. in Eur. fndd. in Rome, c. A.D. 380, but cert. temples of pre-Christian times had medical schools attached to them. In Gt. Brit. the sick were largely cared for by monks until the dissolution of monasteries in 16th cent.; among the oldest Hs. are St. Bartholomew's and St. Thomas's, fndd. in 12th and 13th cents. A number were fndd. in 18th cent. (Guy's, St. George's, etc.). A large number of Eng. Hs. are maintained by a system of voluntary contributions; others are controlled by local authorities and rate-supported. Besides Hs. serving special sections of the community (naval, military, Freemasons', etc.) there are special Hs. for the treatment of cancer, diseases of the chest, ophthalmia, nervous diseases, etc. **King Edward's Hospital Fund** for London Hs. was fndd. 1897, to commemorate 60th year of Queen Victoria's reign.



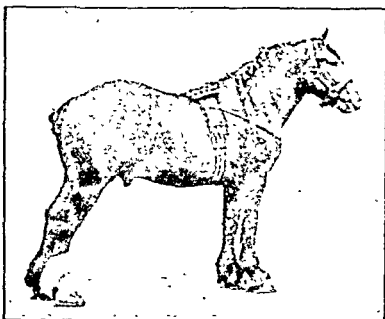
Shire Stallion



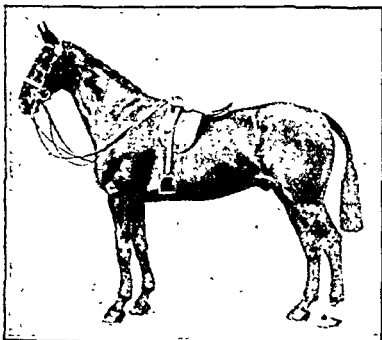
Suffolk Stallion



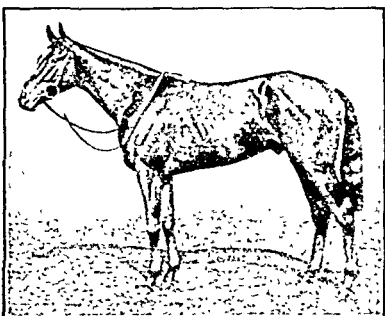
Percheron Stallion



Clydesdale



Hunter



"Trigo": Derby Winner, 1929

## TYPES OF HORSES

**Hospitallers** (also called Knights of the Holy Sepulchre, of St. John of Jerusalem, of Cyprus, of Rhodes, of Malta), fndd. in Jerusalem 11th cent., with object of succouring pilgrims. Developed into great milit. organization and acq. many privileges and possessions. Defended Jerusalem, but on reconquest of Holy Land by Saracens, 1291, moved to Cyprus; captured Rhodes, 1310; received most of possessions of suppressed Templars (*q.v.*), 1312; driven from Rhodes, but given Malta, 1530, remaining

there till 1798; organized as hospital service, 1879. In Eng. property confiscated 1530, but order revived for ambulance and charitable service 1830; royal charter granted, 1888.

**Hospodar, Gospodar**, Slav title meaning Lord, used by rulers of Moldavia and Wallachia under Turkey, Grand Dukes of Lithuania, and early Kgs. of Poland.

**Host** (eccles. Lat., *hostia*, a victim), name applied to the consecrated wafer of bread in the *Mass* (*q.v.*).

**Hot-air engine**, many types of engine worked by hot air instead of steam, nearly all with piston in cylinder heated at bottom; silent and reliable: term now practically restricted to very small-powered engines. **H.-bed**, (hortic.) bed of earth warmed by fermentation of manure, usu. glass-covered; for forcing early vegetables, etc. **H. chamber**, used for ignition of explosive mixture in heavy oil engines, where a carburettor is not used. **H. house**, building of glass, heated by radiators, for cultivation of tropical plants or forcing vegetables and flowers. See INTENSIVE CULTIVATION. **H. Springs**, Arkansas, U.S.A.;



Dorchester Hotel, Park Lane, London

pop., 20,250; health resort, hot min. springs; national park ( $1\frac{1}{2}$  sq.m.). **H.-water supply**, 1) centrally from an open reservoir or closed boiler thr. hot-water boiler by means of constant heating; 2) by sep. apparatus with gas or elec. heating; regulated automatic current passing thr. or with hot-water accumulator. **H.-wire instruments**, (elec.) devices for



Lounge, Dorchester Hotel

measuring current and voltage by expansion of wire heated by current. Used chffy. with high-frequency current.

**Hotchkiss**, Benjamin (1828-85), Amer. gun manuf.; inv. **H. machine-gun**, air-cooled and gas-operated. Used in the Fr. army and in mounted units of the Brit. army.

**Hotel**, modern name for large guest-house

or inn; H. industry greatly developed in 20th cent., resulting in palatial bldgs. such as Dorchester, Mayfair, Ritz (London); Waldorf-Astoria, Ambassador (N.York); George V (Paris); Adlon, Bristol (Berlin), etc. H.-planning is a distinct and important branch of mod. architecture, in wh. consideration of econ. of space, utility and luxury play their part. II. organization highly complicated, involving large personnel; II. of 500 rooms may have staff of 600. See LICENSED VICTUALLER. **H. garni**, term usu. applied to house providing bed and breakfast only.

**Hôtel Dieu** (Fr.), hospital.

**Hottentots**, S.W. Afr. mixed pastoral race, orig. from mingling of Hamites and Bushmen. See LANGUAGE SURVEY, *Ethiop. Languages*.

**Houdon**, Jean Antoine (1741-1828), Fr. sculptor.

**Houghton, Richd. Monckton Milnes**, 1st bn. (1809-85), Eng. statesm. and man of letters; friend of Tennyson, Hallam, Trench, etc.; M.P., 1837; assisted in passing Copyright Act, 1842; created Bn. H., 1863; visited America, 1875; *Poetical Works*, 1876; *Palm Leaves*, 1844; *Life and Letters of Keats*, 1848. His son subsequently became Marquess of Crewe (q.v.). **H., Wm. Stanley** (1881-1913), Eng. playwright; dramatic critic for *Manchester Guardian*; works incl. *The Dear Departed*, 1908; *Trust the People*, 1911; *Hindle Wakes*, 1912.

**Hound**, any breed of dog used in the chase, and hunting by scent; esp. foxhound (q.v.).

**Hounslow**, tn., Middx., 12. m. W. of London; former coaching centre; pop. (c. 23,200) included in Heston and Isleworth (q.v.); infantry depots; Royal Milit. School of Music at Kneller Hall; Hounslow Heath (now mainly enclosed), once a haunt of highwaymen; Osterley Park (E. of Jersey), mansion built 1577, rebuilt by Robt. Adam, 1770.

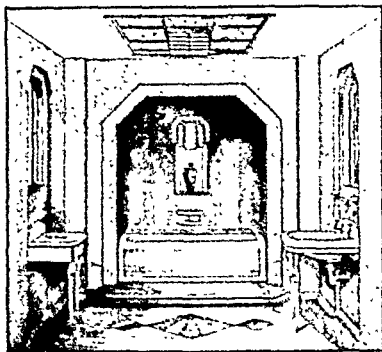
**Hour**, one 24th of a day; period taken by the earth to complete 15 of its 360 degrees of rotation. By the ancient Greeks the day and night, i.e., the periods betw. sunrise and sunset and betw. sunset and sunrise were each divided into 12 equal hours which, consequently, varied in length with the changing seasons. **H.-glass**, glass vessel in 2 pts. joined by narrow neck, containing fine sand or mercury wh. takes specified time to run from one pt. to other; used to ascertain rate of ship by log; and to time boiling of eggs; also in timing sales by auction.

**Houri**, from the Koran (q.v.); name of beautiful girls of paradise.

**Hours**, **Book of**, that part of the Breviary (q.v.) containing offices to be said during the daytime.

**Hours, canonical**, periods of day to which the Breviary (*q.v.*) allocates appropriate offices. They are: *matins*, 1st office said after midnight; *lauds*, usually combined with *matins*, sometimes said independently betw. this and *prime*, 1st hr. of the day, abt. 6 A.M.; *terce*, 3rd hour, abt. 9 A.M.; *sext*, said at noon; *none*, 6th hr., abt. 3 P.M.; *vespers*, abt. 6 P.M.; *compline*, abt. 8 or 9 P.M.

**Hours of Labour**. Movement for reduction of working hours recd. great impetus during World War, owing to discovery that increased output was not incompat. with shorter hrs.; princ. of 8-hr. day was internat.



Modern Bathroom

recognised in Versailles Treaty (1919). Eight-hr. day was establd. for miners in Eng. (*Coal Mines Reg. Act*, 1908) and later reduced to 7 hrs. for underground workers (1919). later raised to 7½ (1926). Hrs. are usu. fixed by collective agreement in separate industries, in most cases at 44-48 per week.

**House**, Col. Edw. M. (1858- ), Amer. diplomat; confidential adviser of Pres. Wilson.

**House**, any structure erected for man's habitation; probably 1st. built by primitive



Bed-Sitting-Room

man in form of roofed-in shelter before cave-dwelling, developing from huts of mud and stones to more elaborate bldgs. of timber or baked bricks. For later developts. see *ART*,

**HISTORY OF (Architecture)**. Changed conditions of mod. life, restricted space, labour-shortage, etc., have led to planning with a view to labour-saving and simplification of furniture, etc.

**House bill**, (finan.) bill of exch., drawer and drawee of wh. are of same firm, *e.g.*, a London house and its foreign branch; such bills are looked on with disfavour in discount market because they carry behind them the credit and resources of only one firm instead of two; hence they are often referred to as *Pig-on-Pork*, or *Pig-upon-Bacon*.

**Housebreaking**, theft effected by breaking and entering a dwelling-house by day with intent to commit a felony there, or, being there, commission of a felony coupled with breaking out. When committed at night it is burglary (*q.v.*).

**House-fly**, common grey, hairy insect, universally distrib.; eggs usually laid in excrement; active disease-spreader; see *DIP-TERA*. **Biting H.-fly**, a species not unlike the common house-fly, but having mouth-parts adapted for sucking blood; attacks man, esp. on the legs; breeds in stable refuse.

**Household Brigade**, (milit.) part of the Brit. army comprising the Household Cavalry and the 5 regts. of Foot Guards (*qq.v.*). **H. Cavalry**, the Life Guards (1st and 2nd), and the Royal Horse Guards (The Blues) (*qq.v.*). Personal escort of the Brit. sovereign.

**H. Troops**, the personal bodyguard of the Brit. sovereign; incl. the Yeomen of the Guard, Gentlemen-at-Arms, and Household Brigade (*qq.v.*), the last alone forming part of the combatant army. See also *ARCHERS*, *ROYAL COMPANY OF*. **H. Appliances**, devices employed in mod. house management for simplification of work; many new inventions have appeared in recent years in response to demand for labour-saving apparatus; large number worked by electricity. See *Illustration* next page.

**Housel**, (archaic) consecrated elements of the Eucharist (*qq.v.*); administration of these.

**House leek**, *Semperivium tectorum*, grows on old walls and roofs: has pink flowers; poultice made from the fresh bruised leaves is said (folk med.) to cure warts and corns; also used for burns and stings.

**Housemaid's knee**, condition due to excessive kneeling; caused by swelling of *bursa*, a small bag of fluid at kneecap. Relieved by use of kneeling pad, painting with strong tincture of iodine, elastic bandage.

**House of Commons**, representative chamber in Parl. of Gt. Brit. and N. Ire. Chamber similarly named exists in N. Ire., and certain Brit. Dominions. Possessing sole power of taxation, it can force resignation of Cabinet by cutting off supplies.



**House of Lords**, second or upper chamber in Parl. of Gt. Brit. and N. Ire., consisting of "Peers Spiritual" i.e., bishops, and "Peers Temporal" (mainly heredit. but some, who act as judges of appeal, apptd. for life). Acts also as final Ct. of appeal for Gt. Brit. See HOUSE OF COMMONS; PRIVY COUNCIL.

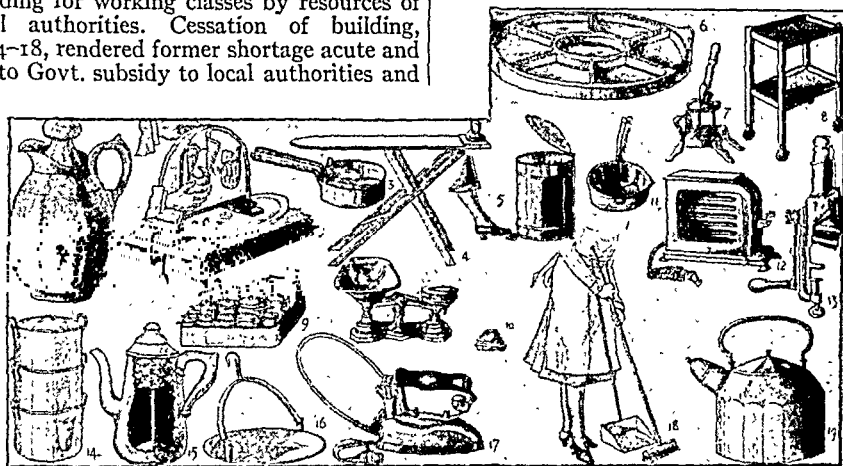
**House of Representatives**, in U.S.A. (and some other countries) chamber corresp. Brit. House of Commons.

**Housing Acts**. In Eng., H. Acts from 1885 onward aimed at supplementing private building for working classes by resources of local authorities. Cessation of building, 1914-18, rendered former shortage acute and led to Govt. subsidy to local authorities and

(*Diptera*) which have the habit of hovering in the air; some resemble bees and wasps in colour pattern; larvae feed on aphids.

**Howard**, family of: see ARUNDEL, EARLS OF, and NORFOLK, DUKES OF

**Howard, Sir Ebenezer** (1850-1928), pioneer of garden cities; his book *Tomorrow*, 1898, led to formation of the Garden Cities Association, 1899, and so to creation of garden cities at Letchworth, 1903, and Welwyn, 1920. **H., John** (1726-90), Eng.



HOUSEHOLD APPLIANCES

- 1) Vacuum Jug.
- 2) Vegetable Slicer.
- 3) Aluminium Egg Poacher.
- 4) Folding Ironing Board.
- 5) Hygienic Refuse Receptacle.
- 6) Hors d'Œuvre Set.
- 7) Potato Chip Machine.
- 8) Dinner Wagon.
- 9) Stewpans and Covers.
- 10) Household Scales.

- 11) Deep Fat Fryer.
- 12) Toast Maker (elec.).
- 13) Marmalade, etc., Slicer.
- 14) Steam Cooker.
- 15) Coffee Percolator.
- 16) Scotch Girdle.
- 17) Electric Iron.
- 18) Long-handled Dustpan.
- 19) Whistling Kettle.

private builders, espec. by Housing Acts of 1919, 1923, 1930. Parallel steps in other countries, especially Ger. and Austria. See RENT RESTRICTION ACTS.

**Housman, Alfred Edward** (1859- ), Brit. poet and schol.; *A Shropshire Lad*. **H., Laurence** (1867- ), Brit. auth. and artist.: *Bethlehem; Angels and Ministers; Little Plays of St. Francis*.

**Houston**, tn., Texas, U.S.A.; pop., 292,350; centre of oil-fields; oil refineries, machinery, cotton.

**Hove**, munic. bor., Sussex, seaside and residential resort, adjoining Brighton; pop., 55,000.

**Hoven**, (vet.) flatulency; distension of the body, occurring in sheep and cattle, after excessive feeding on rich clover or grass; caused by fermentation of fodder and formation of gas in stomach.

**Hover-flies**, a group of two-winged flies

philanthropist and prison-reformer; high sheriff of Bedfordsh., 1773; inspected Eng. and Continental prisons; *State of the Prisons in England and Wales, etc.*, 1777.

**Howe, Julia Ward** (1819-1910), Amer. poet and philanthropist; *The Battle Hymn of the Republic*, 1861. **H., Richd. H.**, 1st earl (1726-99), Eng. admiral; vice-admiral, 1775; comm.-in-chf. in America, 1776; in command of Eng. naval operations during War of Indep. until 1778; returned to Eng.; 1st Ld. of Admiralty, 1783-88; destd. Fr. fleet off Ushant, 1794; Admiral of the Fleet, 1796.

**Howells**, Wm. Dean (1837-1920), Amer. novelist and poet; U.S. consul, Venice, 1861-65.

**Howitzer**, ordnance for firing at high angles (overhead fire), gen. with an adjustable charge.

**Howleglas**: see EULENSPIEGEL.

**Howler monkey**, S. Amer. monkey of genus *Alouatta*, having a sturdy, ungainly body and dog-like muzzle, with a remarkable thickening of one of the throat-bones into a large shell-like organ, which enables it to utter loud and discordant yells.

**Howrah**, tn., Bengal, India, on Hugli Riv., opposite Calcutta; pop., 195,300; textiles, jute.

**Hoy**, second largest of the Orkney Is.; 53 sq.m.; pop., 1,000; Ward Hill, 1,365 ft.; isolated sandstone "Old Man of Hoy," 450 feet.

**Hoylake**, urb. dist. and popular resort, Wirral Penins., Cheshire, at mouth of Riv. Dee, 7 m. W. of Birkenhead; pop., 17,100; links of Roy. Liverpool Golf Club, 1869.

**Hoyle**, Edmund (1672-1769), English writer on games; first to frame laws of whist; his *Short Treatise on Whist* (1742) forms basis of *Hoyle's Games*, wh., in modernised form, is still published.

**H.P.**, abbr. horse-power.

**H.Q.**, abbr. headquarters.

**Hradec Králové, Königgrätz**, cathed. city (pop., 13,000), Czechoslovakia, on the Bistritz, nr. battlefield of Sadowa (q.v.).

**Hrdlička**, Alš (1869- ), Czech physician and anthropologist, settled in U.S.A.

**H.R.H.**, abbr. His (Her) Royal Highness.

**Hrosivtha**, of Gandersheim, Ger. nun and poetess of 10th cent.; Lat. relig. dramas.

**Hsi Gnan Fu**: see SI-AN.

**H.S.S.**, abbr. *Historiae Societatis Socius* (Lat.), Fellow, Historical Society.

**H.T.**, abbr. high tension.

**Hub**, projecting centre of wheel; revolves round axle.

**Hubert**, St. (d. 727), Bp. of Liège; patron of hunters; said to have been converted by miraculous appearance of a stag bearing a cross betw. its antlers.

**Hubertusburg**, former hunting lodge of Saxon princes; near Wernsdorf, Germany. **Peace of H.** (1763) ended Seven Years' War.

**Huckaback**, coarse linen or cotton fabric with rough surface, used for towels, etc.

**Huckleberry**, fruit of several N. Amer. shrubs, allied to whortleberry and cranberry (q.v.).

**Hucknall Torkard**, colliery tn., Notts., 8 m. N. of Nottingham; Byron's tomb in church; 3 m. N. is Newstead Abbey (q.v.).

**Huddersfield**, co. bor., W. Riding, Yorks, on Riv. Colne; pop., 113,500. Worsted and woollen goods; dye works.



Howler Monkey



Hub

**Hudibras**, satirical poem against the Puritans, by Samuel Butler, 1663-78.

**Hudson**, Henry (1550-1611), Eng. navigator; disc. *H. Bay*, 1610.

**Hudson**, riv., U.S.A., in New York State (320 m.); rises in Adirondack Mtns., flows to New York harbour; navig. as far as Albany.

**Hudson Bay**, great inlet, N. America, betw. Canada and Labrador, connected by the **H. Strait** with the Atlantic Ocean, and by Foxe Channel with the Arctic Ocean; frequent fogs and storms; ice-bound for 8 months of the year; area, 450,000 sq. miles.

**Hudson's Bay Co.**, association, fndd. by Prince Rupert and others, to whom charter was granted, 1670, for trade monopoly in H.B. district; N.W. Fur Co., of Montreal fndd. in competition, c. 1764, the two amalgamtd., 1821; Co.'s rights of govt. transferred to Canada, 1869.

**Huê**, tn., cap. of Annam, Fr. Indo-China; pop., 41,460; exports cinnamon.

**Huelva**, 1) prov., S.W. Spain, 3,894 sq.m.; pop., 340,000; mild climate, fertile soil; mineral springs. 2) Cap. of prov., on Riv. Odiel; pop., 46,900; harbour; fisheries; exports copper and manganese from Rio Tinto (q.v.).

**Huff**, (in draughts) action by wh. opponent's piece is removed as forfeit for not taking an exposed piece.

**Hugenberg**, Alfred (1865- ), Ger. financier, newsp. propr., and prominent member of the German Nationalist party; joined Hitler's Cabinet, 1933; Chm. of Krupp Co. (Essen), 1909-18.

**Hugh** *the Great*, (d. 956), Duke of Franconia, Ct. of Paris; m. 1st, Eadchild, sister of Aethelstan; 2nd, Hadwig, sister of Otto the Great; forced by Otto to acknowledge Louis IV, Kg. of France. His son, **Hugh Capet** (c. 938-96), Ct. of Paris, Duke of Franconia; crowned Kg. of France, on death of Louis V, 987; fndd. Capetian dynasty.

**Hughenden**, vill., Bucks, 2 m. N. of High Wycombe; *H. Manor* was res. of E. of Beaconsfield from 1848 to his death in 1881.

**Hughes**, Charles Evans (1862- ), Amer. lawyer and statesm.; unsuccessfully opposed Wilson for Presidency, 1916; Sec. of State, 1921-24; Chf. Justice of U.S.A., 1930.

**H., David Edward** (1831-1900), Anglo-Amer. physicist; inv. microphone and **H. apparatus**, a type-printing telegraph instrument. **H., Hugh Price** (1847-1902), Brit. Methodist divine; estab. West London Mission, 1887; inaug. nonconformist paper, *Methodist Times*, 1885; pres. Wesleyan Conference, 1898. **H., Thomas** (1822-96), Eng. author: *Tom Brown's Schooldays*; fndd. unsuccessful settlement of Brit. farmers at New Rugby, Tenn., U.S.A., 1879. **H., William Morris** (1864- ), Austral. polit.; leader of Federal Lab. Party; formed

coal. gov't. during war; opp. by Lab. Party; Pr. Min. 1915-23.

**Hugli, Hooghly**, westernmost channel of Riv. Ganges and W. limit of Ganges-Brahmaputra Delta (*see* GANGES); length, 145 m.; flows past Calcutta into Bay of Bengal.

**Hugo**, Victor (1802-85), Fr. poet and novelist; leader of 19th-cent. Romantic school; peer of Fr.; *Notre Dame de Paris*; *Les Misérables*.

**Huguenots**, Fr. Calvinist Protestants of 16th-18th cents. **Persecution of H.**: 1562, carnage of Vassy; 1572, massacre of St. Bartholomew; 1598, Edict of Nantes, giving religious freedom and rights of citizenship, revoked in 1685, when hundreds of thousands took refuge in foreign lands.

**Huia**, *heteralocha acutirostris*, a bird, variously referred to the hoopoe, crow, and starling families; found only in neighbourhood of certain mtn. ranges of New Zealand; beak of male, short and sharp; of female, long and curved; wings, long and rounded; plumage, black, with broad white band at end of tail; orange wattles, white beak; eggs, grey-white with dark spots at larger end.

**Huitzilopochtli**, Aztec war god.

**Hull**, 1) officially **Kingston-upon-H.**, city, co. bor. and seapt. tn. on Riv. Humber, in E. Riding of Yorks; pop., 313,400. Third port in U.K.; extensive docks; shipb.; oil-seed crushing; fishing. Univ. college; parish church, 14th-15th cent. 2) Tn., Quebec, Canada, on Ottawa and Gatineau rivs., opp. Ottawa (bridges); pop., 40,000; lumber, paper.



By courtesy of Hull Development Committee

River Front, Hull

**Hull insurance**, in marine insurance, covering ship, apart from cargo, agst. loss, damage, or misappropriation.

**Hultschin, Hlucin**, frontier tn., Czechoslovakian Silesia on Riv. Oppa; pop., 5,125.

**Hultschiner Ländchen**, dist. betw. Rivs. Oppa and Oder; 121 sq. m.; pop., 49,200 (6,860 Germans); indust. dist., formerly part of Prussia; allotted to Czechoslovakia, 1919.

**Hum.**, abbr. *humaniora* (Lat.), the humanities.

**Humane Society, Royal**, Brit. Soc., fndd. 1774, for rescuing persons from drowning, restoring life by artificial respiration, etc. Chf. office in London, with abt. 300 branches in U.K. equipped with suitable apparatus. Soc. awards money and medals for notable bravery in life-saving.

**Humanism**, the intelligent and appreciative study of the Greek, Latin, and Hebrew classics that was both one of the causes and one of the effects of the Renaissance; pioneers of the movement (*Humanists*) were Sir Thos. More, Colet, Erasmus, and Ficino.

**Humanitarianism**, 1) system of thought wh. holds that pain and suffering are the worst ills incidental to humanity, and which seeks, by eliminating these, to raise and improve the condition of mankind. **Humanitarians**, school of theologians denying divinity of Christ.

**Humanities**, (educ.) studies that connote "culture," esp. the classics, poetry, rhetoric, grammar, and literature generally, philology, and sometimes archaeology. Cf. the academic degree, L.H.D. or Litt. Hum. D., and the *Chair of H.* in certain Scot. universities.

**Humanum est errare** (Lat.), to err is human [to forgive divine].

**Humber**, estuary of the Trent and Ouse, draining into North Sea; 38 m. long.

**Humbert I**, Kg. of Italy (1844-1900), son of Kg. Victor Emmanuel and Qn. Adelaide of Austria; lieutenant-gen. at battle of Custoza, 1866; m. cousin, Maria Margaret of Savoy; acced., 1878; assassinated.

**Humble-bee**, large hairy bee of social habit, living in nests constructed in the soil, especially mossy banks. Males, females, and workers are produced. *See* BEE.

**Humboldt, Alexander Bn. von** (1769-1859), Ger. naturalist and traveller; explored Centr. and S. Amer. (1799-1804), expedn. to Centr. Asia 1829. His bro. **Wilhelm von H.** (1767-1835), Pruss. statesman and philologist; Min. of Education; *Researches into the Early Inhabitants of Spain by the Help of the Basque Language*.

**Hume, David** (1711-76), Brit. philos., statesman and histor.; prominent in Free Thought movement; *Treatise of Human Nature*. **H., Fergus** (1859-1932), Brit. novelist; *Mystery of a Hansom Cab*. **H., Joseph** (1777-1855), Brit. politic.; challenged useless expenditure; brought about repeal of laws forbidding trade unionism, 1824-25.

**Humfrey**, Pelham (1647-74), Eng. composer of anthems, odes, etc.

**Humidity**, moistness, water-content. *Absolute H.* of air or gas is that part of its pressure due to water-vapour. *H.* is usu. measured by dew-point (q.v.)

**Humillati**, penitential relig. order, founded 12th cent., with Benedictine rule; St. Charles Borromeo tried to reform its abuses and was murderously attacked by one of the monks, in punishment for wh. the order was suppressed, 1571.

**Hummel**, Johann Nepomuk (1778-1837), Hungarian composer of masses, concertos, etc.; tutor to Mozart.

**Humming-birds**, group of small New World birds, with brilliantly metallic plumage; some 500 species are known, confined chiefly to S. and Centr. Amer.; a few migrate in summer as far N. as Canada; the largest barely measures  $8\frac{1}{2}$  in. in length, and the smallest hardly 2 inches. Flight more like that of a hawk-moth, the bird hovering in front of a flower as if suspended in air, with wings vibrating at immense speed. Food consists of minute insects and nectar from the flowers. **H.-b. hawk-moth**, species of diurnal tropical moth; has tufted end to abdomen; hind-wings are yellowish.



**Humour**, mood; jocularity; a state of mind which quickly appreciates the ludicrous.

**Humours**, name given by early medic. writers to the 4 fluids (viz., blood, phlegm, and black and yellow bile), wh., accdg. to Hippocrates, were contained in the body and influenced the temperament.

**Hump-back**, backward curvature of the vertebral column,

**Humperdinck**, Engelbert (1854-1921), Ger. operatic composer: *Hänsel und Gretel*; *Humoreske*.

**Humus**, product of decayed organic matter; valuable constituent in soil-fertilisation; present in peat-bogs.

**Hunan**, prov., centr. China, in basin of Yangtze-kiang; 83,400 sq. m.; pop., 40,530,000; watered by rivs. Siang-kiang and Yuen-kiang, meeting in Tung-ting Lake; rice and tea cultivated; metallic ores and coal mines. Cap., *Chang-sha*.

**Hundred**, old admin. divn. of Eng. or Irish co.; perhaps originally an area supporting a hundred free families or containing 100 hides. See **HIDE**.

**Hundred Days**, *The*, period 20 March-28 June, 1815 betw. Napoleon I's escape from Elba and his 2nd abdication.

**Hundredweight** (abbr. cwt.),  $\frac{1}{8}$  ton; 112 lbs. (Brit.), 100 lb. (U.S.A.); = 50.803 kilo.

**Hundred Years' War**, *The* (1337-1453), series of wars betw. England and France, brought about through the claims of the Eng. sovereigns to the Fr. throne; Eng. mainly victorious until 1430, when they were driven from the whole of France, except Calais; first action was that off Sluys, 1340, and the last, the battle of Castillon, 1453.

**Hungarian**: see LANGUAGE SURVEY, *Finno-Uralic*.

**Hungary**, inland kgdom. of centr. Europe bounded N. by Czechoslovakia, E. by Rumania, W. by Austria, S. by Yugoslavia. Area, 35,557 sq. m.; pop., 8,684,000 (incl. 5,600,000 R.C.); 1,800,000 Lutherans. Surface mainly flat: Great Hungarian Plain in centre and E., Little H. Plain in N.W. The



moderate hills may be regarded as a remote spur of the E. Alps: Bakony Forest (2,350 ft.) and Vértes in the N., Matra, Bukk, and Hegyalja in N.E., and Mecsek Mtns. in S.W. To S. of Bakony Forest is Lake Balaton (270 sq.m.). Riv. Danube forms part of N. frontier and crosses H. centrally from N. to S.; tribs., Drava or Drave (right) and Tisa or Theiss (left). Climate generally temperate (mean ann. temp., 48-52° F.); rainfall moderate. H. is predominantly agricultural; the soil (largely alluvial) very fertile; wheat, maize, barley, rye, oats, sugar beet, potatoes, and tobacco; wine dist. in N.E., and on banks of L. Balaton; marshland is being drained by canals; treeless plains (the Pussta, much of wh. is now arable) provide pasture for horses, cattle, and sheep; forestry; river fisheries. Coal, iron, salt; flour-milling; sugar refining; manuf. agric. implements; textiles. Rlys., 5,400 m.; chf. waterway, Riv. Danube. Chf. tns., *Budapest* (cap.), Szeged, Debrecen, Kecskemet, and Pesterzabet. CONSTITUTION: Monarchy; vice-regent until question of succession has been settled. *Reichstag* consisting of *Upper House* (permanent; 250 members), and *Chamber of Deputies* (245 members). National debt 1928:  $1\frac{1}{2}$  milliard pengo. In 5th cent. ruled by Huns, then by Avars; since 900 Magyar-Hungarian. Invasions in W. Eur. repulsed by Otto I, 955; 1001, converted to Christianity under Kg. Stephen the Saint; 1077-1301, Arpad dyn.; 1308-82, house of Anjou (Louis the Great); zenith of power, cong. of Naples, union with Poland, 1370; 1526, Austrian; two centuries of wars with Turkey; 1848, revolution under Kossuth, suppr. 1849 with help of Russ.; Hung. an Austrian crown land; 1867, settlement: independent govt. and (Honved) army; Oct., 1918 Republic (Count Karolyi); March, 1919, Communist Soviet Repub. (Béla Kun); Rumanian occupn.; re-establishment of monarchy; regent, Nik. v. Horthy; 1920, Peace of Trianon (*q.v.*); 1923, entry into League of Nations.

**HISTORY**: Huns, Asiatic people from 2000 B.C. on borders of China; their attack on West in A.D. 374 set Germanic peoples of Black Sea (Goths, Alans) wandering (Migration); their leader Attila (d. 454) ruled from Passau to Caspian Sea, and penetrated to neighbourhood of present Orleans (battle on Catalaunian Plain 451) and as far as Rome. Descendants of Huns in S. Russia, Hungary, and Bulgaria.

**Hunstanton**, seaside resort, Norfolk, on the Wash; pop., 4,300; at *Old H.*, 1 m. S., is *H. Hall* (15th century).

**Hunt**, *Jas. Hy. Leigh* (1784-1850), Eng. poet, essayist, and critic; friend of Lamb, Byron, Keats, Shelley, etc. *Men, Women and Books*, 1847; *Autobiography*,

1850. **H., Wm. Holman** (1827-1910), Brit. painter; pre-Raphaelite school; *The Light of the World*.

**Hunter, John** (1728-93), Brit. physiol. and surgeon; elected F.R.S., 1767; fndd. museum; *Treatise on the Blood, Inflammation and Gun-shot Wounds; Certain Parts of the Animal Economy*. His brother, **William** (1718-1783), Brit. anatomist and physician; *Anatomical Description of the Human Gravid Uterus*.

**Huntingdon, Selina**, Ctess. of (1707-91), Eng. religious leader; dau. of Earl Ferrers; devoted herself to propagation of evangelical religion after death of husband and sons, and fndd. sect known as the *Countess of H.'s Connexion*.

**Huntingdon**, 1) co. tn., Hunts, Eng., on *Great Ouse*; pop., 4,100; birthplace Oliver Cromwell. 2) Tn., Pa., U.S.A. pop., 7,560.

**Huntingdonshire, Hunts**, midland co., Eng.; area, 366 sq. m.; pop., 56,200; surface generally flat, mainly agric; co.tn., *Huntingdon*.

**Huntington**, tn., W. Virginia, U.S.A., on Ohio Riv.; pop., 75,550; motorcars, machinery, furniture.

**Hunts**, abbr. Huntingdonshire.

**Huntsman**, person in charge of a pack of hounds, under the "Master."

**Hunyadi**, Joh. (1387-1456), Hung. nat. hero; statesm. and warrior; deft. Turks, 1443-54.

**Huon pine**, *Dacrydium franklinii*, Tasmanian tree belonging to the Conifers (q.v.); much prized for its close-grained timber (used for shipb.); reaches 100 ft., with circumference at base to 20 feet.

**Hupoh**, prov., centr. China, drained by Riv. Yang-tse-kiang, 72,000 sq. m.; pop., 28,616,600. Cultivation of tea; iron ore. Cap., *Hankow*.

**Hurdle**, (agric.) movable framework, usu. of osier, used as temporary fence for sheep-pens, etc. **H. race**, race over hurdles; *usual distances*: 120 yds. with 3 ft. 6 in. h.; 220 and 440 yds. with 2 ft. 6 in. h. ("low hurdles"); at Olmp. Games; 110 and 400 mtrs. Rec. for 440 yds. by J. Gibson (U.S.A.), 1927: 52 $\frac{3}{4}$  seconds.

**Hurlingham**, house and grounds in Fulham, Middx., used as sports and social club since 1869; orig. pigeon-shooting club; became headquarters of Brit. polo, 1874. Grounds cover abt. 80 acres.

**Huron, Lake**, second largest of the great Canadian lakes; 22,775 sq. m., with densely pop. shores (except in the N.); connected with Lake Erie by St. Clair Riv.; abounds in fish.

**Hurons**, N. Amer. Inds. of Iroquois nation; now almost extinct.

**Hurricane**, violent cyclonic storm or tornado in W. Indies or tropical Atlantic; highest velocity of wind; *see* BEAUFORT SCALE.

**Hurst**, Sir Cecil J. B. (1870- ), Brit. jurist; legal adviser For. Office, 1918-29; Judge Perm. Ct. Internat. Justice, The Hague; Brit. member, Perm. Ct. of Arbitration, 1929.

**Hurst Park**, Eng. race-course, 14 m. from London; race-meetings in Apr., June, July, Aug., and Nov., and steeplechases in Jan., Feb., Mar., and December.

**Huskisson**, Wm. (1770-1830), Eng. statesm. and financier; M.P., 1796; Sec. of Treasury, 1804-06, 1807-09; pres. of Board of Trade, 1823-27; Colonial Sec., 1827-29; accidentally killed at opening of Liverpool and Manchester railway.

**Huss**, or **Hus**, John (c. 1373-1415) Bohem. reform. and martyr; condemned by Council of Constance, 1415, and burned at the stake.

**Hussites**, adherents of John Huss, organised, after his death, as a political and religious party; rose in arms agst. Emp. Sigismund, 1419, and built city Tabor in Bohemia; continued mainly successful campaign under two generals named Procopius, culminating in victory over imperialists, 1431, followed by short peace. H. then split into moderate (*Utraquists*) and extremist (*Taborites*) sections. Taborites defeated at Lippau 1434, and finally merged with the *Bohemian-Moravian Brethren* (q.v.). Utraquists were granted toleration by treaty of Iglau, 1436, but opposed Sigismund's successor to Bohemian crown and were defeated 1438; they became absorbed partly by R.C.s, partly by Lutherans.

**Hussar**, soldier of light cavalry, with distinctive uniform; 9 hussar regts. in Brit. Army: 3rd the King's Own H., 4th Queen's Own H., 7th Queen's Own H., 8th King's Royal Irish H., 10th Royal H. (Pr. of Wales's Own), 11th H. (Prince Albert's Own), 13th/18th H., 14th/20th H., 15th/19th Hussars.

**Husseln**, Ibn ali (1856-1931), son of Ali Pasha, Grand Sheriff of Mecca, whom he succeeded, 1909; with Brit. support proclmd. Kg. of Hejaz, 1916; acted with the Allies agst. the Turks and proclmd. independence of the Caliphate, Jan., 1918; abdicated 1924, on capture of Mecca by Wahabis.

**Husserl**, Edmund (1859- ), Ger. philos.; fndd. School of Phenomenology (q.v.); *Ideas*.

**Hutten**, Ulrich von (1488-1523), Ger. poet, knight, and humanist.

**Hutton**, James (1726-97); Eng. geolog.; fndd. Plutonism (q.v.); *Theory of the Earth*,



Huss Going to the Stake: Contemporary Miniature



Aldous Huxley

or an Investigation of the Laws Observable in the Composition, Dissolution, Restoration of Land upon the Globe.

**Huxley, Aldous** (1894—), Eng. novelist; *Crome Yellow*, *Point Counter Point*; grandson of **H., Thos. Henry** (1825-95), Eng. biologist; pres. of Royal Society, 1881-85; *Man's Place in Nature*; essays.

**Huygens, Christian** (1629-95), Dut. physicist; discv'd. laws of collision of elastic bodies; adapted pendulum to clocks; originator of wave theory (*q.v.*) of light; explained double refraction of crystals.

**Huysmans, Joris Karl** (1848-1907), Fr. novelist and mystic; *La-Bas*; *A Rebours*.

**Huysum, Jan van** T. H. Huxley (1682-1749), Dut. painter; painted esp. fruit and flowers.

**Hvar, Lesina**, Dalmatian isl., S. Jugoslavia; 116 sq. m.; vineyards and orchards; cap., *Lesina*, on S.W. coast, pop., 3,800; bathing resort.

**Hwang-ho**: see YELLOW RIVER.

**Hyacinth** 1) (bot.), *Hyacinthus orientalis*. liliaceous plant, with spikes of bell-shaped white or coloured flowers. The blue-bell or wild *H.* (*Scilla nutans*), grows abundantly in woods in springtime. 2) (Mineral.) Semi-precious stone, usually of blue or dark colour, the *jacynth* of ancient writers; red or brownish variety of zircon (*q.v.*); brownish variety of garnet, cinnamon-stone (*q.v.*).

**Hyades**, 1) (Gr. myth.) nymphs, daughters of Atlas and sisters of Pleiades. 2) (Astron.) Group of stars including Aldebaran in constell. Taurus (*q.v.*).

**Hybrid**, (biol.) any cross-bred animal or plant.

**Hybris**, arrogance, a com. subj. in Gk. trag.; as offence to gods it leads to disaster.

**Hyde**, munic. bor., Cheshire, Eng., 7 m. E. of Manchester; cotton-mills; pop., 32,100.

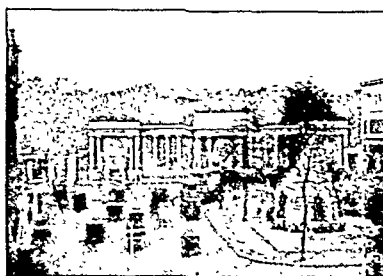
**Hyde Park**, London, covering c. 360 acres; rides (Rotten Row), drives, Serpentine Lake, bird sanctuary; westwards, Kensington Gardens (see KENSINGTON PALACE.)

**Hyderabad, Haidarabad**, 1) largest and most important native State in India (Nizam's dominions), in Deccan, betw. Madras and Bombay; area, 82,700 sq. m.; pop., 12,471,770 (nine-tenths Hindus, though State is Mohammedan); surface a tableland; chief rivs., Godavari, Kistna; rice, wheat, cotton, fruit, vegetables; coal and iron. 2) Cap. of State, walled and fortified; pop., 377,000 (mainly Mohammedans); carpets, textiles, paper mills. 3) City, cap. dist. same name, and historical cap. of Sind, India, close to Riv. Indus; pop., 81,850;

manuf.: silk, brocades, gold and lacquer work.

**Hydnum**, genus of fungi (*toothed*), most of wh. are edible.

**Hydra**, isl., Greece, S.E. of Argolis, betw.



Hyde Park Corner

Gulfs of Nauplia and Aegina; Hydriot fleet distinguished in Gr. War of Independence.

**Hydra**, 1) (Gr. myth.) dragon of Lake Lerna in Argolis, having 9 heads, each of wh., on being cut off, was replaced by 2 new ones; killed by Hercules. 2) (Astron.) Constell.: see PL., ASTRONOMY, S.C.H., D. and E. 3) (Zool.) Microscopic fresh-water polyp, found in ponds and shallow streams, where it attaches itself to submerged plants, and by means of its tentacles captures its prey.



Hercules slaying the Hydra

**Hydrangea**, one of a genus of Asiatic and N. Amer. shrubs, cultivated in gardens and greenhouses for its handsome globular clusters of pink, white, or blue flowers.

**Hydrant**, valve attached to a water system, for drawing off water in case of fire or bursting of pipes.

**Hydrarg.**, abbr. *hydrargyrum*, mercury.

**Hydrates**, (chem.) in inorganic chem. compounds of metals or metal-like radicals with group—OH; e.g., sodium H., NaOH, ammonium H., NH<sub>4</sub>OH. In organic chem. H. are compounds formed by addition of water.

**Hydraulic cement**, (bldg.) type of cement (*q.v.*) which hardens under water (used for harbour works).

**H. motor**: see WATERWHEEL; TURBINE. **H. press**, pressure applied to small-section piston, is transmitted to liquid wh. forces large-section piston upwards; power is in propor. to cross-section of cylinder. **H. ram**, pumping machine; utilises pressure of mass of flowing, suddenly arrested, water to raise the level of a part of it.

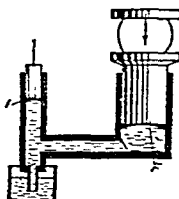


Diagram of Hydraulic Press  
f Small-section piston; F Large-section piston

**Hydraulics**, science of liquids, esp. water, in motion; applied also to construction and maintenance of river, canal, and harbour works.

**Hydrazine, Diamide** (chem.), sym.  $N_2H_4$ , m.p.  $1.4^\circ$ ; b.p.  $113.5^\circ$ ; colourless, poisonous liquid; used in the produc. of dyes and lead azide.

**Hydria**, Gr. water-pot, pitcher. See VASE.

**Hydrides**, (chem.) compounds of hydrogen with metals, e.g.,  $Cu_2H_2$ .

**Hydrocarbons**, chem. compounds of carbon and hydrogen only; number limitless. *Aliphatic* hydrocarbons have C atoms arranged in chain, *aromatic* in ring or rings, generally 6 forming hexagon, or honeycomb structure of hexagons. *Paraffins* (q.v.) are saturated aliphatic Hydrocarbons, having max. amount of H.; very inactive chemically. *Olefines* (q.v.) are unsaturated aliphatic Hydrocs. Benzene,  $C_6H_6$ , has one ring; naphthalene,  $C_{10}H_8$ , two; phenanthrene,  $C_{14}H_{10}$ , three. No limit is known. Hydrocs. are regarded as the parents of most organic compounds, which are obtd. by substituting other elements, or groups of elements, for hydrogen; e.g.,  $-OH$ , giving alcohols, phenols, sugars;  $-COOH$ , giving acids;  $-CHO$ , aldehydes;  $-NH_2$ , amides, etc.

**Hydrocele**, collection of fluid within membrane covering testicle.

**Hydrocephalus**, (med.) an abnormal condition, in wh. there is great accumulation of fluid in the cavities of brain; may be either congenital or acquired.

**Hydrochloric acid**, (chem.) sym.  $HCl$ ; water-soluble gas prep. by direct combination of hydrogen and chlorine, or by action of strong sulphuric acid on common salt. Spirit of salt is an impure solution of the gas (28 to 32%). Both are widely used in many industries.

**Hydrocyanic acid**: see CYANOGEN.

**Hydrodynamics**, mechanics of fluids in motion; sc. of currents.

**Hydro-extractor**, centrifuge (q.v.) for extracting moisture from substances, e.g., washed fabrics, sugar crystals.

**Hydrofluoric acid**, (chem.) sym.  $HF$ ; see FLUORINE.

**Hydrogen**, (chem.) element, sym.  $H$ ; at. wt. 1.0078; lightest of the elements; tasteless, odourless, colourless gas, very inflammable; does not occur free in nature to any great extent, but believed to be pres. in vast quant. in sun. When burned in air forms water ( $H_2O$ ); may be produced by action of sulphuric acid on zinc; commercially prepd. by reduction of steam, by passing it over white-hot coke; used in welding (oxyhydrogen flame); in manuf. of soap and margarine and to fill balloons and airships. **H. Sulphide**, sulphuretted hydrogen ( $H_2S$ ); colourless,

foul-smelling, poisonous gas; occurs nat. in sulphur springs (e.g., Harrogate) and is produced by decomposition of albuminous substances; forms sulphides with many metals.

**Hydrogenation**, formation of higher hydrocarbons (e.g., petrol) from lower hydrocarbons (e.g., powdered coal) treated with hydrogen under heat and pressure.

**Hydrogeology**, science of the occurrence and behaviour of water in nature.

**Hydrography**, descriptive science treating of the bodies of water on the earth's surface.

**Hydrology**, science treating of the subterranean distribution of water.

**Hydrolysis**, (chem.) action of water as acid or alkali, or both, upon chem. compound, causing its decomposition. Water is chemically  $H.OH$ , and thus analogous both to acids, e.g.,  $HCl$ , hydrochloric acid, and alkalis, e.g.,  $NaOH$ , caustic soda. Hence salt of strong base and weak acid, e.g., sodium carbonate (washing soda,  $Na_2CO_3$ ) is hydrolysed by water giving strongly alkaline solution; conversely ferric chloride,  $FeCl_3$ , gives acid solution. In organic chemistry, hydrolysis of esters (q.v.) is sometimes called saponification.

**Hydrometer**, appar. for ascrt. sp. gr. by means of a floating elongated body wh. is submerged all but a narrow stem, wh. may be graduated to read direct, or in deg. (Baumé, Twaddell), or may be bight. to same mark every time by add. of weights.

**Hydronephrosis**, (med.) distension of kidney and destruction of its tissue, due to obstruction to flow of urine from kidney to bladder.

**Hydrophobia**: see RABIES.

**Hydroplane**, form of gliding motor boat, with planes attached, to enable it to skim or glide on surface of water; plane attached to submarine to enable it to sink or rise.

**Hydrosphere**, waters on the earth's surface collectively; aqueous vapour of the atmosphere.

**Hydrostatics**, sc. of equilibrium of fluids; *hydrostatic paradox* principle that a large wt. of fluid in one tube may be balanced by a small weight in another.

**Hydrozoa**, animals forming a class of coelenterata (q.v.), including jellyfish and polyps.

**Hyena**, powerful, ungainly carnivore; nocturnal, gregarious, and cowardly, feeding on carrion and carcases; powerful teeth and jaw muscles enable H. to crack and crush bones of animals killed by lions. Three species: *striped*, native of India, S.W. Asia, N. and E. Africa; *brown* and *spotted*, both natives of S. Africa.



Hyena

**Hyères**, tn., dépt. of Var, France, E. of Toulon, nr. Médit. coast; pop., 19,820; health resort. Perfumery, cultivation of flowers, fruit, vineyards.

**Hygiene**, science of maintaining the health of the individual or community; sanitary principles and methods. See PUBLIC HEALTH; REFUSE.

**Hyginus**, St., traditionally the 8th of the popes, c. 138-42; 1st gnostic heresies in Rome began to appear during his pontificate.

**Hygrometer**, (hys.) instr. for determ. humidity of atmos.; gen. by a hair stretched taut, the length incr. in proportion to the incr. of humidity and moving pointer over a scale. Most accurate is *wet-bulb thermometer* (q.v.).

**Hygroscopic**, attracting moisture; applied to substances wh. draw moisture from the atmos. (calcium chloride, sulphuric acid, etc.), used in chem. as drying materials; when they become moist or liquid as a result, they are called *deliquescent*.

**Hyksos**, Syrian-Semitic nomad race of Asia Minor; penetrated into Egypt in 18th-16th cents. B.C.

**Hyle**, matter, as distinguished from form; hence, **Hylism**, philosoph., view that matter is the principal source of evil. **Hylotheism**, belief (esp. among primitive peoples) that God and matter are one. **Hylozoism**, philosoph. view that all matter is endowed with life.

**Hymans**, Paul (1865- ), Belg. statesm.; Pres. 1st Assembly L. of Nations, 1920.

**Hymen**, 1) (myth.) Gr. god of marriage, represented as a youth with nuptial torch and bridal veil. 2) (Med.) Membrane across the entry to the vagina.

**Hymenoptera**, order of insects with two pairs of wings which function in unison; containing a very large number of known species of much varied habit; metamorphosis complete. Included in the order are: social and solitary bees and wasps; ants; ichneumons and saw-flies.

**Hymettus**, now **Trelovuni**, heath-covered mountain S.E. of Athens, 1,030 ft. high, famous for its sunset glow; marble quarries; honey.

**Hymn**, solemn song of praise or triumph addressed to a god or gods; in Christian worship, a song intended to be sung in church or as part of a service.

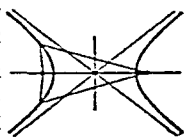
**Hyoscine**: see HYOSCYAMINE.

**Hyoscyamine**, (chem.) alkaloid,  $C_{17}H_{23}NO_3$ , one of the poisonous constituents of henbane, *Hyoscyamus niger*, the other being hyoscine,  $C_{17}H_{21}NO_4$ .

**Hyoscyamus** (*henbane*) an active principle in hyoscine or scopolamine, used in med. as a hypnotic; admin. with other hypnotics, to induce in child-birth partial anaesthesia, pop. called "twilight sleep."

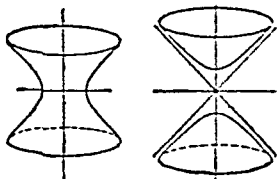
**Hyperæmia**, (med.) increased flow of blood to part of the body.

**Hyperbola**, conic section having two symmetrical branches extending to infinity, such that difference of distances from any point on the curve to two fixed points, the foci, is constant. The minor axis of the H. is the centr. vertical line of the major axis. **Hyperbolic speech**, exaggeration of fact or description.



Hyperbola

**Hyperboloids**, curved planes, produced by the rotation of a hyperbola (q.v.) either round the major axis, giving a H. of one nappe, or round the minor axis, giving a H. of two nappes.



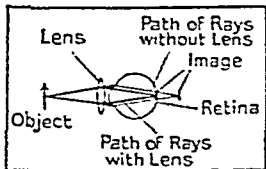
**Hyperboreans**, myth. H. of one nappe H. of two nappes barbaric race of the N.; denizens of the N. Polar regions.

Hyperboloid

**Hypercatalectic**, applied to a verse having addit. syll. on  $\frac{1}{2}$  ft., after last complete dipody, on double foot.

**Hyperion**, 1) (Gr. myth.) god of the sun, succeeded by Apollo; subject of an incomplete poem by Keats; 2) (Astron.) 7th satellite of Saturn (q.v.).

**Hypermetropia**, long sight; inability to see clearly at short distances, owing to excessive shortening of the axis of the eye. Can be corrected by lenses (eyeglasses).



Hypermetropia

**Hyperpiesia**, (med.) abnormally high blood-pressure, usu. due to thickening of arteries or to kidney disease, but may be of nervous origin.

**Hyperthesis**, transference of letter from own syll. to syll. immed. before or after; e.g., *an adder* from *a nadder*; *a next* from *an ext*.

**Hypertonic solution**, solution of greater osmotic pressure (q.v.) than the blood.

**Hypertrophy**, (med.) excessive growth of an organ of the body.

**Hypnos**, (Gr. myth.) god of Sleep.

**Hypnosis**, state of sleep or somnolence, artificially induced by power of the eye, by words, or magnetic passes. The



Head of Hypnos



will and imagination of hypnotised person (see **MEDIUM**) are governed by those of the **hypnotist**, and the consciousness of the medium is arrested to a greater or less extent. **H.** requires strong concentration on both sides and is sometimes applied for remedial purposes. Its use by unqualified persons is dangerous.

**Hypochlorites**, salts of hypochlorous acid ( $\text{HClO}$ ), very unstable; see **CHLORIDE OF LIME** (basic calcium hypochlorite). **Sodium h.** made by electrolysis (*q.v.*) of common salt, very widely used as antiseptic under various names: Eusol, Dakin's Solution, Eau de Javelle.

**Hypochondriac**, valetudinarian; one who complains of imaginary ailments. **Hypochondria**, state of intense mental receptivity to physical ailments.

**Hypodermic syringe**: see **INJECTION**.

**Hypogynous plants**, those in wh. the ovary is placed below the base of the perianth (*q.v.*), as in the rose.

**Hypophosphites**, compounds of bases with hypophosphorous acid,  $\text{H}_3\text{PO}_2$ ; e.g., **Sodium H.**, used as a tonic.

**Hypostasis**, substance, reality, essence; (theol.) any one of the persons of the Holy Trinity. **Hypostatic union**, union of Christ's human nature to the hypostasis or person of God the Word.

**Hyposulphite of soda**, (chem.) sodium-thiosulphate ( $\text{Na}_2\text{S}_2\text{O}_3$ ); used in photography; dissolves out silver-bromide in film which has been unaffected by development.

**Hypotenuse** in a right-angled triangle is the side opposite the right angle.

**Hypothecation**, pledging of property to a creditor, property itself remaining in possess. of debtor. See **MORTGAGE**.

**Hypothesis**, an admittedly unproved assumption adopted as a basis of inference, or for the sake of argument.

**Hypothetical imperative**, moral law wh. only needs to be accepted for the fulfilment of some desired condition or end; see **CATEGORICAL IMPERATIVE**.

**Hypotonic solution**, a solution of lower osmotic pressure (*q.v.*) than the blood; causes the red corpuscles to swell up and burst.

**Hypsometry**, (math.) measurement of differences in elevation betw. two points on the earth's surface by differences in atmos. pressure (barometer); also by taking the distance from both points and the inclination of the connecting line (trigonom.); or by levelling, most accurate method (*q.v.*).

**Hyrax**, small ungulate of rodent-like appearance, somewhat resembling a large guinea-pig; the *coney* of Scripture; native of Africa and Syria; majority of species live in colonies among cracks and crannies of the rocks; some are arboreal.

**Hyssop**, *Hyssopus officinalis*, blue-flowered herb used in folk-medicine as a stimulant, a carminative, and in colds and lung complaints.

**Hysteresis**, lag of an effect behind its cause. In electro-magnetism, lagging of magnetisation and demagnetisation of iron, steel, etc., behind the current acting; results in loss of energy in a complete cycle, wh. appears as heat in the metal.

**Hysteria**, functional nervous disorder, frequently imitating genuine organic disease, and marked by extreme excitability and weakened will power; usu. mental in origin and due to inability to cope with the difficulties of life.

**Hysteron proteron**, (Gr.) gram. or rhetor. inversion of the natural and logical order of words or clauses and ideas; logical fallacy of begging the question.

**Hythe**, munic. bor., Kent, one of the Cinque Ports; seaside resort; army Small Arms School; pop., 8,400.

**I**, (chem.) symbol of Iodine.

**la.**, abbr. Iowa.

**Iago**, in Shakespeare's trag. *Othello*, type of calculating villain.

**Iamblichus** (d. c. A.D. 333), Syrian philos.; fndd. Neoplatonism (q.v.).

**Iambus**, met. foot —.

**Iapetus**, 1) (Gr. myth.), one of the Titans, son of Uranus, father of Prometheus and Atlas, reputed ancestor of the human race. 2) 8th satellite of Saturn (q.v.).

**lb.**, abbr. *ibidem* (Lat.), in the same place.

**Ibadan**, tn., S. Nigeria; trading centre; pop., 175,000.

**Ibañez**, Vicente Blasco (1867-1928), Sp. novelist; *The Four Horsemen of the Apocalypse* 1916; (Eng. trans., 1918).

**Ibar**, riv., trib. of the W. Morava; rises in the Montenegrin highlands.

**Iberian Peninsula**, collective name for Spain and Portugal; area, c. 232,100 sq.m.; derived from anc. Iberian race who lived in region of Riv. *Ebro* (Iberus) and from whom the Basques (q.v.) are descended.

**Ibex**, generic name of various species of wild goat inhabiting mountain regions of Eur., Asia, and Abyssinia. Horns are long, laterally compressed, sometimes spirally twisted.

**Ibidem** (Lat.), in the same place; used in giving literary references.

**Ibis**, medium-sized somewhat heron-like bird of the family *Ibididae*, with long curved bill. The *Sacred I.* of the anc. Egyptians still inhabits the Upper Nile regions. *Glossy I.*, breeds in marshes of Lower Danube and similar situations in Africa and India. About 20 genera have been described.

**Iblis**, **Eblis**, name for the devil in Moslem theology; another name is *Shaitan*.

**Ibsen**, Henrik (1828-1906), Norw. dramat. and poet; *Peer Gynt*, 1867; *Pillars of Society*, 1877; *A Doll's House*, 1879; *Emperor and Galilean*, 1873.

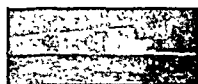
**Ibycus**, (fl. c. 550 B.C.) Gr. lyric poet; poems in the Gk. Anthology.

**Icarus**, (Gr. myth.) son of Daedalus (q.v.); attempted to fly with wings made by his father but the sun melted the wax with wh. they were attached to him, and he was drowned in the sea.



Ibsen

**Ice**, 1) frozen water; water in crystalline, solid form assumed at temp. of 32° Fahr. and under. 2) Name given to sev. frozen confections, broadly divided into *cream* and *water* ices; cream ices may consist either of genuine cream or of some custard preparation frozen and variously flavoured; water ices are a frozen syrup of sugar and water with flavouring added; a *sorbet* is a water ice with the addition of fruit and a liqueur flavouring. **I.-axe**, mountaineering implement for cutting footholds in ice, etc.



Iceberg

**I. berg**, large mass of floating ice broken off from a glacier or polar ice-floe; often of immense size, and always with greater part submerged and invisible. **I.-boat**, boat with runners for sailing on ice. **I.-box**, wooden cupboard or chest with double walls, filled with materials non-conductive to heat and having space for ice; for keeping food fresh. **I.-breaker**, ship with strong, curved and pro-



Ice-Breaker

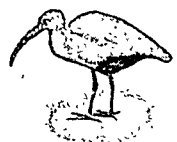
jecting bows, wh. rise onto ice-packs thr. the forward thrust of propellers, and break the ice by ship's weight. **I.-hockey**, game resembling hockey (q.v.), played on skates, with a "puck" (hard rubber disk) instead of a ball. **I.-plant**, *Mesembryanthemum crystallinum*, biennial plant, native of S. Europe; under-surface of leaves is covered with crystalline drops giving appearance of ice. Formerly used in medicine as a demulcent and diuretic.

**Ice Age**: see GLACIAL PERIODS.

**Ice Fjord**, deep gulf, W. coast Spitsbergen; 28 glaciers.



Ibex



Ibis

**Iceland, Island**, island kgdm. in N. Atlantic Ocean betw. Greenland and the Faeroes; 39,698 sq.m.; only the coastal areas (16,750 sq.m.) inhab.; pop. 107,000 (mainly Lutherans). Though N. coast touches Arctic Circle, climate relatively mild. Coast-line deeply indented by fjords; penins. in N.W. almost sep. from rest of country. Surface barren and mountainous (to 6,952 ft.), mainly volcanic rock and lava; over 100 volcanoes, 25 active (Hekla, Katla, etc.), hot springs (geysers); sulphur springs; earthquakes; huge snow-fields (Vatnajökull in S.; 3,300 sq.m.), with glaciers descending almost to sea-lvl.; many lakes (Thing-vallavatn, in S.W.) and rivers; grassy plains (almost treeless), with cattle, sheep, and horses; root-crops cultivated; all cereals imported; fishing, whaling, and sealing; exports salt fish, train-oil, wool, eiderdown, Iceland moss. No rlys.; few roads. Cap., *Reykjavik*. *Constitution*. Independent sovereign State under Kg. of Denmark: *Allthing* (world's oldest parliament) elected by universal suffrage (6 of the 42 members usually forming 2nd Chamber). Colonised by Irish before 870, by Norwegians afterwards; converted to Christianity c. 1,000; Norwegian 1264-80; Danish 1280-1918 (sep. constitution 1874); independent (personal union with K. of Denmark), 1918. **I. moss**, edible lichen growing in Northern regions, from wh. a nutritious and demulcent jelly is prepared. **I. spar**: see CALCITE.

**Icelandic Language**: see LANGUAGE SURVEY. **I. literature**: see SAGA, EDDA.

**I-chang**, treaty port, prov. of Hupeh, China, on Yang-tse-kiang; pop., 110,500.

**Ich dien** (Ger., "I serve"), motto of Pr. of Wales; legend asserts that motto and badge of 3 ostrich plumes was orig. borne by John of Bohemia, and assumed by the Black Prince after battle of Crécy (1346).

**Ichneumon (mongoose)**, small, active carnivore, found in Africa and the Orient as far as the Philippines. Deadly foe of rats and snakes, hence often kept as semi-domesticated pet in the Tropics. Body long and weasel-like; legs short; tail fairly long; small head with short, rounded ears and sharply pointed muzzle; coarse, loose fur on body and tail.

**I-fly**, hymenopterous insect of parasitic habit, depositing its eggs in larvae of other insects, the resulting ichneumon larvae feeding on the body-tissue of the host. A large number of species, many beneficial as a check on injurious caterpillars.

**Ichthylol**, sulphuric oil-shale, a by-

product of distillation; in med. applied outwardly to relieve inflammation.

**Ichthyology**, branch of zoology concerned with fishes, their structure, habits, and classification.

**Ichthyosaurus**, fish-like reptile of the Jurassic and Cretaceous periods, abt. 30 ft. in length.



Ichthyosaurus

**Ichthyosis**, skin disease in wh. the surface becomes very rough and peels.

**Icing pump**, small metal tube used for pressing whipped cream or icing sugar on to sweets and cakes by suction.

**Icknield Street**, old highway in South of England, probably used by Romans, but of prehistoric origin.

**I.C.N.**, abbr. in *Christi nomine* (Lat.), in the name of Christ.

**Icon**, an image or portrait; esp. (Gr. Orth. Ch.) a sacred portrait, mosaic, etc., frequently having face, and sometimes hands, painted or made in enamel, with other parts of figure—if any—superimposed in metal.

**Iconium**: see KONIA.

**Iconoclasts**, 1) relig. sect wh., in the 8th cent., opposed the use of images in churches and broke them; 2) those who attack traditional or cherished beliefs.

**Iconostasis**, screen adorned with icons (*q.v.*), separating the sanctuary from rest of church (Gr. Orth. Church).

**Icosahedron**, polygonal solid bounded by 20 triang. surfaces of equal size; met with in crystals.

**I.C.S.**, abbr. Indian Civil Service.

**Ictus** (Lat.), rhythmical or metrical stress.

**I.C.U.**, abbr. International Code Use (Signals).

**I.D.**, abbr. Intelligence Department.

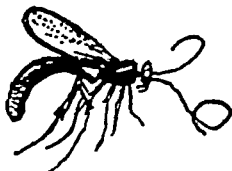
**Id**, abbr. *idem* (Lat.), the same.

**Ida**, 1) Or *Psiloritis*. Cretaceous limestone mtn., Crete; alt. 7,995 ft.; trad. birth-place of Zeus. 2) Or *Kas-Dagh*, mtn. range, Asia Minor, overlooking Plain of Troy; highest peak, 5,775 feet.

**Idaho** ("Gem") State in N.W. of U.S.A.; 83,880 sq.m.; pop., 446,000; chfly. forest in N.; arable land and pasture in S.; mountainous in W. spur of *Rocky Mtn.* range; gold and silver mines; cap., *Boise*.

**I.D.B.**, abbr. illicit diamond buyer, or buying; term used in S.Africa for unlawful buying of diamonds from natives or other unauthorised persons.

**Idesleigh**, Stafford Hy. Northcote, 1st Earl of (1818-87), Brit. statesm.; entered Parliament, 1855; gained confidence of Disraeli; pres. of Board of Trade, 1866; Sec. for India, 1867; Chanc. of Excheq., 1874-



Ichneumon-Fly

1880; leader of opposition to Gladstone's govt., 1880-85; created Earl of Iddesleigh and Visct. St. Cyres, 1885; Foreign Secretary, 1886.

**Idea**, 1) a mental image, e.g., revival of a past sensation, experience, etc., as opposed to actual sensation and perception; an image. 2) (Philos.) Concept (*q.v.*); mental image of a thing in itself minus its attributes or incidentals (*abstract idea*), or of a thing including its attributes, etc. (*general idea*). *Co-ordinated ideas*, equivalent, correlated, or associated ideas, constituting in their totality a comprehensive concept.

**Ideal**, 1) motive; voluntarily adopted purpose; perfection, whether attainable or not, in any matter; visionary; ant.: *real*. 2) (Psychol.) Element of perception not immediately given in sensation; e.g., snow produces immed. sensation of whiteness, while its coldness and softness are *ideal* deposits from past memory. 3) **I. of Pure Reason**, Kant's expression of the idea of an Original Supreme Being.

**Idealism**, 1) metaphysical theory that entire universe is an expression and embodiment of mind or spirit; see MATERIALISM. 2) Theory of knowledge; doctrine that *thought* is the only true reality; known as *subjective I.*, ant.: *realism* (*q.v.*); *objective I.*, admits matter as the basis, wh. attains reality only thr. *thought*. 3) Habit of mind, wh. seeks to attain highest spiritual perfection and tends to regard the ideal as equiv. to the real.

**Idee fixe** (Fr.), fixed idea; obsession.

**Idem** (Lat.), the same.

**Identical note**: see NOTE.

**Identity, Law of**: see THOUGHT, LAWS OF. 1., **Philosophy of**, view that opposites, e.g., matter and spirit, have the same origin in the Absolute, contradictory characteristics being merely outward appearances of a collective whole.

**Ideography**, system of writing in wh. ideas are rep. by symbols or pictures inst. of by letters of alphabet.

**Ideology**, 1) Science of origin of ideas. 2) Unproductive thought; visionary theorising. 3) A coherent system of ideas: e.g., "bourgeois ideology," "Marxian ideology."

**Ides**, in Rom. calendar, name given to 13th (or in March, May, July, Oct., 15th) day of month. **I. of March**, day on which Julius Caesar was assassinated, 44 B.C.

**Id est** (Lat.), abbr. *i.e.*, that is.

**Idiom** (Gr.), charact. form; esp. applied to colloquial speech.

**Idiosyncrasy**, 1) temperament, habit of thought, peculiar to an individual; 2) (med.) physical constitution of a specific person; also, excessive sensitiveness, e.g., towards certain foods or medicines, causing severe

symptoms such as rash, vomiting, etc., to occur after taking doses wh. would have no effect on a normal person.

**Idiot**, a person of very defective mind, incapable of rational judgment.

**I.D.N.**, abbr. *in Dei nomine* (Lat.), in the name of God.

**Ido**, artific. constructed universal lang.; a modification of *Esperanto* (*q.v.*).

**Idol**, image, statue, etc., representing or symbolising a deity and worshipped as such.

**Idolatry**, 1) worship of idols or false gods; 2) excessive devotion or admiration.

**Idumeans**: see EDOM.

**Idun**, (Norse myth.) a goddess possessed of the golden apples, the tasting of wh. conferred immortal life.

**Idyll** (Gr.), a "little image," usu. short, polished descriptive poem, esp. one with pastoral subject.

**I.E.**, abbr., Indo-European; *i.e.*, *id est* (Lat.), that is.

**Ifni**, Span. colony, N. Africa, on Atlantic coast, forming enclave in Fr. Morocco; 965 sq.m.; pop., 20,000. It was ceded to Spain by Morocco in 1860.

**I.G.**, abbr., 1) Inspector-General; 2) Indo-Germanic.

**Igarka**, port, on Riv. Yenisei (420 m. from estuary), Asiatic Russia, built 1929; pop., 13,000; access to ships up to 6,000 tons; saw mills; graphite factory; exp. timber; planned to be Siberia's most important outlet.

**Iglau, Treaty of**: see HUSSITES.

**Ign.**, abbr. *ignotus* (Lat.), unknown.

**Ignatius**, Father, adopted name of Joseph Leicester Lyne (*q.v.*).

**Ignatius of Antioch**, St., Father of the Church; mart. c. 115. **I. Loyola**: see LOYOLA.

**Igneous rocks**, (geol.) those formed by solidification of molten material; 3 classes, plutonic, e.g., granite; hypabyssal, e.g., porphyry; extrusive or volcanic, e.g., basalt.

**Ignis fatuus** (Lat.), will-o'-the-wisp (*q.v.*).

**Ignition**, device for firing (igniting) explosive mixture in cylinder of internal combustion engines: *hot-tube* for paraffin eng.; *magneto* or *coil* for petrol eng.; *compression* for heavy oil eng. In blasting operations, *friction*, *spark* or *fuse*. **I. temperature**, temp. at wh. substances catch fire in air: coal gas, 600° C.; benzine, 415°; petroleum, 380°; coal tar, 500°; benzol, 520°.

**Ignorantines**, relig. body founded in France, early 18th cent., by St. John Baptist de la Salle, and strongly supported by Jesuits; purposed to give free relig. and secular instruction to the people.

**Ignoratio elenchi** (Lat.), ignoring of, or avoiding of, the point at issue.

**Igorot**, Luzon tribe in Philippine Isls.; head-hunters; native name Ifugao.

**Iguana**, arboreal lizard with dorsal crest and long tail. The true iguanas are New World tropical lizards, varying considerably in size, more than a hundred kinds being known; for the most part insect-feeders; many very handsome.



Iguana

**Iguanodon**, large, extinct, herbivorous, dinosaurian reptile of Jurassic and Cretaceous periods; up to 30 ft. long; walked on strong hind-limbs, supporting itself by its tail.

**I.H.P.**, abbr.: indicated horse-power.

**I.H.S.**, abbr. *Iesus Hominum Salvator* (Lat.), Jesus, the Saviour of Men.

**Ikhnaton**, Kg. of Egypt, see AMENHOTEP.

**Ilang-Ilang**: see LALANG.

**Île-de-France**, 1) anc. prov., France, bounded by Rivs. Seine, Marne, Oise, Thève, Beuvron, with cap., *Paris*. 2) Former name of Mauritius.

**Ilets**, tn. in the Kirghiz, Russia, 50 m. S. Orenburg; rock-salt mines producing 90,000 tons annually; health resort; mud, brine, and salt baths.

**Ilex**: see HOLLY.

**Ilford**, munic. bor., Essex, part of Greater London; pop., 131,000.

**Ilfracombe**, seapt. and mkt. tn., N. Devon, on Bristol Channel; summer resort; pop., 9,000.

**I.L.H.**, abbr. Imperial Light Horse.

**Il**, riv., W. Asia, rising in *Tianshan Mtns.*, and flowing to L. Balkhash; length, 930 m.; navig. 430 miles.

**Iliad**, Gr. Homeric epic (see HOMER), in 24 books, describing the siege of Troy.

**Ilium** (anc. geogr.): see TROY.

**Ilkeston**, munic. bor., Derbysh., 8 m. N.E. Derby; manuf. earthenware, silk, hosiery; pop., 32,800.

**Ilkley**, urb. dist. in Yorks, 12 m. from Bradford; pop., c. 10,000; health resort; *I. Moor* adjoins town.

**Ill**, riv., France, trib. of Rhine, rising in *Jura Mtns.*; length, 135 m.; feeds Rhine-Marne and Rhine-Rhone canals; flows past chf. tns. in Alsace (Mulhouse, Colmar, Schlestadt, Strasbourg).

**Ill.**, abbr. Illinois.

**Ille-et-Vilaine**, dépt. N.W. France (Britany); 2,697 sq.m.; pop., 562,558; moors, forests, salt marshes; poultry, dairy prod.; iron mines and foundries; shipb.; cap., *Rennes*.

**Illegitimacy**, state of having been born out of lawful wedlock; bastardy. In Gt. Brit., the father of an illegit. child is not bound to register its birth, and his name may not be entered by registrar, except at joint request of himself and the mother. The mother of a bastard is bound to maintain her child until the age of 16; if she can give proof as to identity of father she may compel him (by affiliation summons) to contribute to its maintenance. Property can be bequeathed to illegit. children, born at time of making the will, under names by which they are commonly known; they cannot inherit property willed to "children" or issue of testator unless they are specif. mentioned. Under Legitimacy Act (1926), subsequent marriage of parents of illegit. child changes its legal status to that of legitimacy, provided the parents were in a position to marry at the time of child's birth. See AFFILIATION; BASTARD.

**Illimani**, peak of the Andes, in Bolivia; 22,900 ft.

**Illinium**, (chem.) rare earth element, at. wt., 61; sym., *Il*; identified by B. S. Hopkins, 1926.

**Illinois**, 1) ("Sucker," "Prairie") State, U.S.A.; 56,665 sq.m.; pop., 7,600,000; fertile, well wooded plains towards S.; wheat-growing, maize, and oats; stock-breeding; pork-packing; mining: coal, iron, zinc; cap., *Springfield*; commerc. centre *Chicago*. 2) Chf. riv. trib. **I.**, of Mississippi. **University of I.**, at Urbana, State of Ill.; art, sciences; coll. of commerce and business; law, music, and medicine; fndd., 1867. **I. Central System**, U.S.A., railroad operating in Wisconsin and Illinois, and States southwards to Mississippi and Alabama: 5,019 miles.

**Illmo.**, abbr. *illustrissimo* (It.), most illustrious.

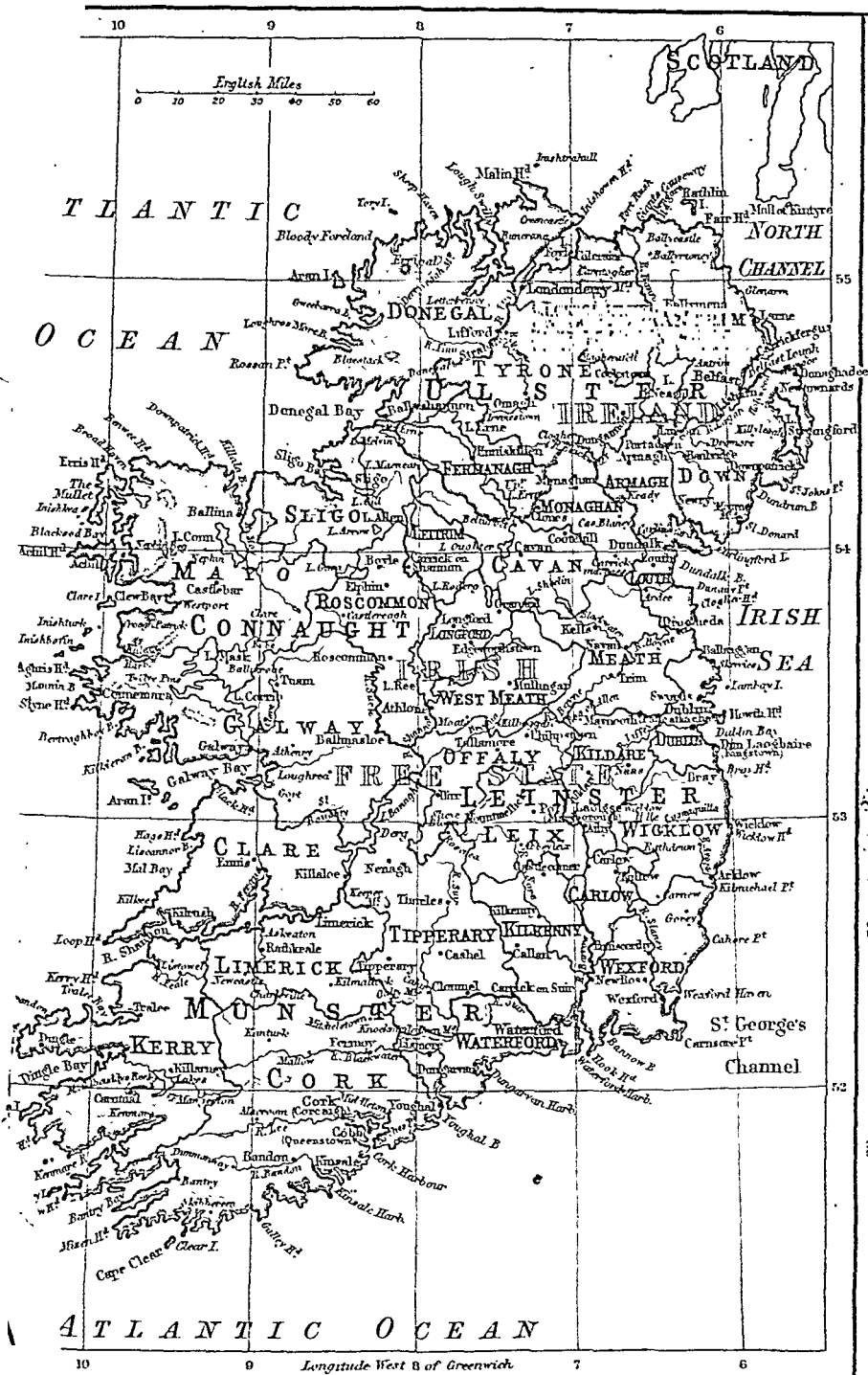
**Illuminati**, 1) persons claiming exceptional endowments or perception; 2) name given to several relig. sects, e.g., Rosicrucians; 3) secret deistic and republican society fndd. in Bavaria, 1776.

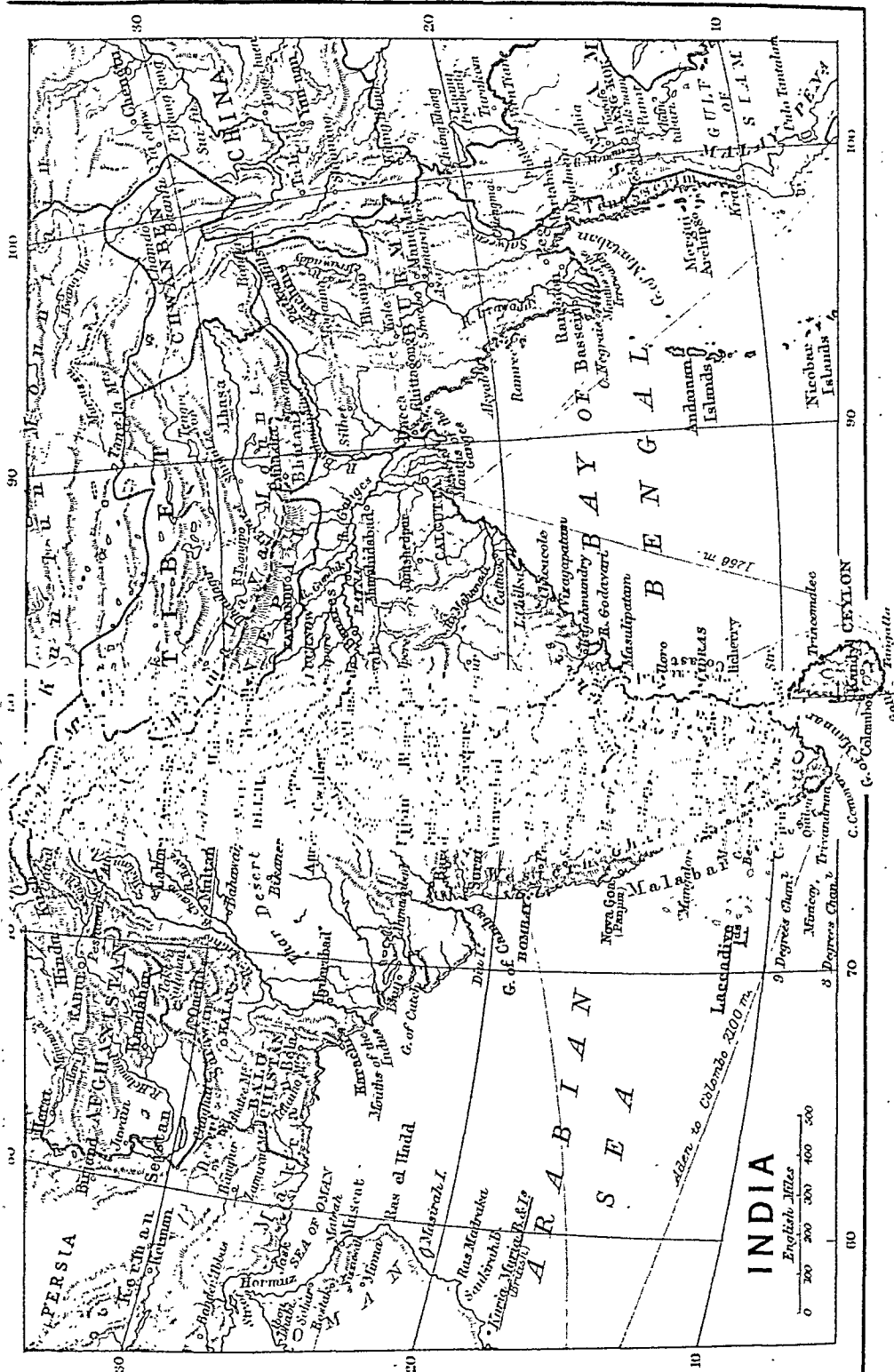
**Illumination**, artificial, in former times by torches, candles, and oil lamps; then by coal gas (early 19th cent.), improved by the incandescent gas mantle. In recent times, elec. arc lamps and incandescent lamps (*q.v.*). Power of light measured by candle-power; orig. defined by standard candle, now, by light emitted by 1 sq. centim. of platinum at its melting-point. Brightness of an illumtd. surface measured in *Lux* units; i.e., illumination of 1 C.P. at 1 metre. See ACETYLENE LAMP; COAL GAS; INCANDESCENT GAS.



Iguanodon

# IRELAND





**Illusion**, self-deception; false perception of an object, less persistent than a delusion; not so completely objective as an hallucination; artificially produced and deceptive representation. **Illusionist**, one who harbours false hopes; a professional magician. **Illusory**, having no foundation in objective reality.

**Illustration, Methods of:** *see* COLLOTYPE, HALF-TONE: LINE; LITHOGRAPHY; PHOTOGRAPHURE; THREE-COLOUR PROCESS.

**Illyria**, Balkan dist., bordering the Adriatic from Fiume to Albania, extending inland to rivs. Danube and Morava. Conquered by Slavs, 7th cent.; Fr. prov., 1809-13; Austrian, 1815; Jugoslav, 1919.

**Ilmen**, fresh-water lake, N.W. Russia, W. of *Valdai Mts.*; area, 355 sq.m.; fed by Riv. Volkhov; fisheries.

**Ilorin**, tn. in Nigeria, 250 m. N.N.E. Lagos; trading centre; manuf. leather goods, pottery; pop., c. 70,000.

**I.L.P.**, abbr. Independent Labour Party.

**I.L.S.**, abbr. Incorporated Law Society.

**Image**, 1) (relig.) carved or painted representation of person or animal to which worship is accorded; 2) (R.C.Ch.) such effigy of a saint, as object of veneration.

**Imaginary number**, (math.) a quantity multiplied by the *imaginary unit*  $\sqrt{-1}$ , the square root (*q.v.*) of  $-1$ . **I. quantity**, Im. root of an equation.

**Imago**, (entomol.) final, fully developed stage of an insect.

**Imam**, 1) leader of prayer in Moham. mosque; 2) chief priest of the Shi'ah (*q.v.*).

**Imandra**, Russian lake on Kola penins., Arctic Ocean; 330 sq.m. On its banks stands world's most north. experim. agric. station.

**Imatra**, falls in Riv. Vuoksen, Finland, n. L. Saima; electric power station.

**Imbibition**, absorption of water and other liquids by colloid substances, *e.g.*, gelatine, wood; heat usually given out in process; expansion of solid may produce enormous force, as when wooden wedges, driven into rock crevices, split rock when wetted—a common method of mining before explosives were available.

**Imbros**, Turk. island in the Aegean Sea; 86 sq.m.; pop., 6,765, chfly. Greeks; manuf. carpets. G.H.Q. Brit. Dardanelles force in World War.

**Imitation of Christ**, 15th cent. religious treat. in Latin, ascribed to Thomas à Kempis.

**Immaculate Conception**, R.C. dogma (1854) that the B.V.M. was, by a special grace of God, born without original sin. *Feast of I.C.*, Dec. 8th.

**Immanent** (Lat.), 1) inherent, indwelling; ant.: *transient*. 2) (Theol.) Attribute of the Deity; pervading entire universe.

**Immanuel:** *see* EMMANUEL.

**Immediacy**, in feud. syst., state of holding

an office or property directly (*i.e.*, without any intervening authority) from an overlord.

**Immediate democracy**, govt. by whole people, reaching its own decisions. Imposs. except where govt. unit is small enough for all to attend meeting. Found in anc. City States (citizen pop. alone formed govt. body, larger part of numerical pop. being slaves); survives in Eng. in parish meeting and in U.S.A. in town meeting. *See* REPRESENTATIVE DEMOCRACY.

**Immingham**, seapt., Lincs, on Riv. Humber, 7 m. N.W. of Grimsby; large docks; pop., c. 1,000.

**Immortality**, perpetual life; property ascribed in most religious faiths, and some philosophical systems, to the human soul.

**Immortelles**, *everlastings*, aster-like flowers, naturally devoid of moisture; when dried they do not lose shape or colour.

**Immunity**, 1) (med.) resistance to disease or infection. **Natural I.**, resistance of individual to infection by organism to which others are susceptible. **Artificial I.**, a) *active*, produced by injection of vaccines of living or dead organisms, *e.g.*, smallpox vaccine; b) *passive*, produced by injection of antitoxic serum. 2) (Law) Exemption from legal liability, espec. as Continental term equiv. to Eng. privlgs. of Parliament; right granted to diplomats of foreign countries duly accredited.

**I.M.N.S.**, abbr. Imperial Military Nursing Service.

**Imp.**, abbr. *imperator* (Lat.), emperor; *imperatrix* (Lat.), empress.

**Impact**, force exerted by one object suddenly striking another. **I. strength**, (phys.) power of material to resist a blow or shock; tested in machine delivering blow sideways to rod held at one end. **I. test**, of material; finding force necessary to break, by blow, notched rod of standard size.

**Impasse** (Fr.), deadlock; difficulty from which there is no outlet.

**Impasto**, (art) use of thick layers or masses of paint to give effect of high relief and solidity.

**Impeachment**, (law) charge instituted agst. a person in Parliament in wh. Hse. of Comm. prosecutes and Hse. of Lords acts as judge; procedure confined to great political offenders; most famous case of I. in Eng., that of Warren Hastings (*q.v.*).

**Imperative**, verbal form expressing command, *e.g.*, *give!*

**Imperator**, title of Rom. gen.; after Augustus, synon. with Emperor.

**Imperfect**, tense denoting action going on but not complete or, more frequently, past action occupying some space of time, *e.g.*, "He was speaking."

**Imperial**, 1) (meas.) standard fixed by statute of Gt. Brit.; *e.g.*, *imperial pint*, *im-*



*perial gallon.* 2) (Numis.) Former Russ. gold coin = 15 roubles or £1. 11s. 11d. (\$7.65) at par. **I. Airways**, subsidised Brit. civil aviation co. operating 13,000 miles of Europ. and Empire air lines, including London-Karachi-Delhi, and London-Cairo-Mwanza-Capetown (both weekly); see AVIATION. **I. Conference**, four-yearly meeting of chief statesm. of Gt. Brit. and her dominions to discuss affairs of common interest, under presidency of Brit. Premier; began as *Colonial C.*, 1887; name changed to I.C., 1907; first I.C. outside Gt. Brit. held at Ottawa, 1932. **I. Institute**, London, bldg. opened, 1893, to commemorate Golden Jubilee (1887) of Qn. Victoria; designed to further Empire trade and development. Exhibits (agric., mineral, engineering, etc.) arranged under sections of Brit. Empire, to each of wh. a *Court* is allotted; lectures and demonstrations to schools, etc., organized. **I. War Museum**, London, collection of naval, military aerial trophies and other mementoes of World War. First housed (1920) in Crystal Palace; removed (1924) to galleries of Imperial Institute (*q.v.*). Exhibits grouped under: Navy, Army, Air Force, Women, Art. Library (in adjoining bldg.) contains most complete collection of books on World War in existence. The exhibits are to be moved to the Bethlehem Hospital site (*q.v.*).

**Imperialism**, policy of national expansion, espec. annexation of terr. or control of subject population.

**Imperial Service Order**, (companionship of) order instit. 1902, bestowed on members of adminis. and clerical branches of Brit. and Empire Civil Seives, for meritorious service; ribbon: crimson, blue, crimson.

**Imperium**, right to exercise overriding authority in Rom. State; the Roman Empire.

**Impersonal**, form of verb used only in 3rd pers. sing. with nom. *it*, e.g., *it* is raining.

**Impersonal accounts** (book-keeping), those in which transactions affecting business (goods, cash, wages, etc.) are entered, as opposed to *personal accts.*, wh. record transactions affecting persons (customers, etc.).

**Implements**, weapons or tools, esp., in archaeol., those made by primitive man from flint, bronze, iron, etc. See PRE-HISTORY.

**Imposing stone**, (printing) flat, metal-top table on wh. type is assembled for locking up in chase (*q.v.*).

**Impost**, (bldg.) that part of a wall from wh. an arch springs.

**Impotence**, lack of power; usu. applied to male when unable to copulate.

**Impregnate**, 1) (phys.) to force substances into interstices of solid bodies, such as wood and textiles. Textiles waterproofed with aluminates, rubber, copper-salts (Willesden canvas); wood rendered rot-proof with creosote, zinc chloride, boric acid, etc.; textiles and wood fireproofed with tungstates, etc. Cellulose acetate and viscose now used with wood, paper, leather, etc. 2) To render productive; to cause a female to conceive.

**Impression**: see EDITION.

**Impressionism**, art movement, originating in France in mid. 19th cent., aiming at luminosity by juxtaposition of pure colours based on scientific analysis of spectrum. Monet's practice developed into Pointillism (*q.v.*), but various methods were employed by a group of artists (Manet, Renoir, Degas, etc.) united in belief that realism could only be obtained by recognition of light as the source of all visible effects.

**Imprimatur** (Lat.), "let it be printed"; formula used to indicate final permission. to print, after all corrections have been made; esp. of licence to print issued by R.C. authorities to authors of books dealing with religious subjects.

**Imprisonment**, any restraint on a person's liberty. **False I.** is the illegal restraining of another's liberty.

**Impromptu** (Fr.), unprepared, unrehearsed, improvised on the spur of the moment; hence mus. composition unrestricted in form.

**Improvisation**: see COMMEDIA DEL' ARTE.

**In**, (chem.) symbol of Indium.

**Ina**: see INE.

**In aeternum** (Lat.), eternally, forever.

**In articulo mortis** (Lat.), at the point of death.

**In bond**, (commerc.) term applied to goods held in bonded warehouses (*q.v.*) under official custody for later clearance and payment of duty, or for re-exportation without such payment. Sugar may be refined *in b.*, tobacco manufactd. *in b.*, etc. Differs from *drawback* (*q.v.*), where duty is paid, and refunded when goods are re-exported.

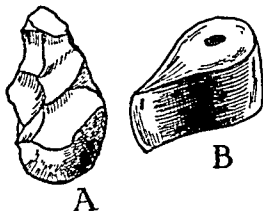
**Inbreeding**, propagation betw. blood-relations; in stock-breeding, mating of animals of the same family.

**In brevi** (Lat.), in short, to sum up.

**I.N.C.**, abbr. *in nomine Christi* (Lat.), in the name of Christ.

**Inca**, ruling caste in anc. Peru; **I. State**, community of very anc. origin, with high culture and art; worshippers of the sun; destroyed 1533 by Span. conquerors under Pizarro.

**In camera** (Lat.), in (the judge's) chamber: applied to cases at the hearing of which the gen. publ. is excluded. Cf., *A huis clos*.



Implements of Primitive Man  
A Palaeolithic Flint Implement.  
B Neolithic Polished Axe-Head.

**Incandescent**, hot enough to emit light.  
**1. gas**, system of lighting invtd. by Auer von Welsbach (1858-1929); bunsen burner with "mantle" coated with thorium and cerium oxides.

**Incarnation**, 1) becoming flesh; 'the visible form of God; assumption of human form by Christ; 2) that wh. embodies and typifies an abstract quality.

**Incense**, fragrant smoke from burning herbs and spices, ceremonially used in religious worship; *see* CENSER.

**Incest**, sexual relations betw. persons related by blood or marriage, within certain prohib. degrees.

**Inch**, twelfth part of a foot; 2.54 centimetres; 3 barley-corns.

**Inchape**, James Lyle Mackay, 1st E. (1852-1932), Brit. merchant and ship-owner; member of Council of India, 1897-1911; pres. of Chamber of Shipping of U.K., 1893, 1918, 1919; chm. of P. and O. Steam Navigation Co.; director, Suez Canal Co., etc.

**Inchape Rock**: *see* BELL ROCK.

**Incisors**: *see* TEETH.

**Inclination of earth's axis**, angular distance of earth's axis from the vertical to its orbit; equals angle wh. Equator makes with ecliptic; value abt.  $23^{\circ} 27'$ ; *see* ECLIPTIC.

**Inclination of magnetic needle**: *see* MAGNETISM.

**Inclined plane**, (phys.) one of the simple "machines" by which elementary problems of matter, motion, gravity, and friction are elucidated.

**Incog.**, abbr. *incognito* (Lat.), in secret, unrecognized.

**Income bonds**: *see* BOND.

**Income tax**, tax levied on income of resident in Gt. Brit. or on income accruing in Gt. Brit., computed acc. to var. methods; five *Schedules*: Sch. A on annual value of property and land; Sch. B on occupn. of land; Sch. C on cert. govt. securities; Sch. D on profits of trade, profession, securities, etc.; Sch. E on salaries, wages, etc. Standard rate, 1933, 5/- in £; subject to

certain reliefs and allowances. *See also* SUR-TAX.

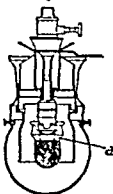
**In commendam** (Lat.), in trust, by favour; expression applied to temp. holding of an eccles. living until a regular incumbent be appointed.

**Incontinence**, (med.) lack of control causing involuntary discharge of urine, faeces, semen, etc.

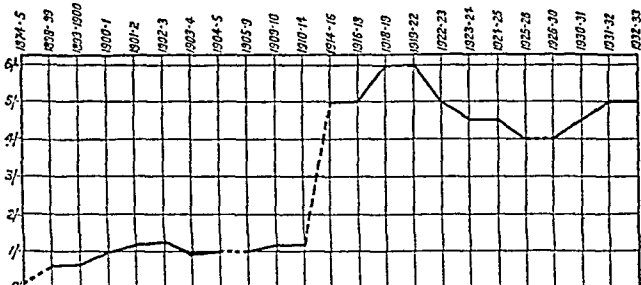
**In contumaciam** (Lat.), in contumacious [absence]: verdict *in c.* given agst. defendant when he wilfully fails to appear in court.

**Incorporation**, process of giving character of legal person to a body or association.

**Incroyable** (Fr.), incredible; name given to extravagant fops of the Fr. Directory (*q.v.*),



Incandescent Burner



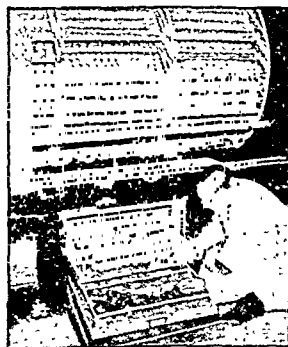
Since the revival of tax in 1842 the lowest rate attained was 2d in the £ in 1874 and the highest 6/- at close of World War

who affected the dropping of the letter "r" in their speech.

**Incrustation**, 1) (geol.) covering of a body by minerals, e.g., salts, etc. 2) (Arts and crafts) Inlaying a harder material into a plastic bed; laying on material on walls, panels, etc.

**Incubation**, 1) among anc. Grks. sleeping in sacred place to receive message from gods. 2) (Med.) Period betw. contraction of disease and its 1st symptom.

**Incubator**, cabinet, temperature of wh. is maintained by a heating apparatus at a cert. degree of warmth (usually  $98.4^{\circ}\text{F}$ ). Used in bacteriology for the cultivation of bacteria; also in poultry-rearing, and for maintenance of warmth in prematurely born infants.



Incubator

**Incubus**, in medieval legend a male demon



Incroyable

said to visit women and cause birth of witches and demons (*see* SUCCUBA); an oppressive person or thing.

**Incumbent**, one who holds an eccles. benefice; sometimes applied to holder of secular office.

**Incunabula** (Lat.: "swaddling-clothes"), books printed in 15th cent.; since 17th cent. have been eagerly sought by collectors; collections exist in most great public libraries, esp. British Museum, Rylands' lib., Manchester, Paris Bibliothèque Nationale, and Munich State library.

**Incus**, (anat.) Lat., *anvil*; central bone of the 3 small bones of middle ear (auditory ossicles), the other 2 being the *malleus* (hammer) to the outer side of I. and *stapes* (stirrup) to the inner side of I.; these carry the sound-waves from drum to inner ear.

**I.N.D.**, abbr. *in nomine Dei* (Lat.), in the name of God.

**Ind.**, abbr. Indiana.

**Indanthrene**, blue synthetic dye; fast to light and washing.

**Indefinite**, (gram.) term applied to articles, adjectives, pronouns, etc., not determining person, thing, or time to which they refer.

**Indemnity**, 1) guarantee agst. loss or penalty; 2) (in public admin.) **Act of I.**, statute ratifying action taken without legal warrant; esp. Eng. Act passed, 1660, granting pardon to those who had rebelled agst. Chas. I.

**Indenture**, (law) deed or contract drawn up betw. two or more parties, with copies corresponding to number of persons concerned; formerly all copies were made on one parchment and cut with a toothed (indented) edge so that they would join or *tally*. Deeds executed for one person had a smooth (or polled) edge; hence such a one was known as *Deed Poll*.

**Independence, Declaration of**, solemn act by which 13 orig. United States met in congress, repudiated allegiance to Britain on July 4, 1776. **I. Day**, July 4th, U.S.A., legal holiday commemorating promulgation of D. of Independence.

**Independent Labour party**, Brit. Socialist organiz. fndd. 1893 (*see* SOCIALISM); took active part in fndtn. of Lab. Party (*q.v.*), 1899; led by J. Keir Hardie and later J. R. MacDonald; adopted more extreme policy after 1924; led by J. Maxton, broke away from official L.P. in 1932. *See* INTERNATIONAL.

**Independents**: *see* BROWNISTS.

**Indeterminism**, doctrine that human will and choice of action are free and not determined by external causes. *Cf.* DETERMINISM.

**Index**, anything used to point out or guide, e.g., fore-finger, movable pointer on a dial; list arranged alphabet. containg. references to

various subjects dealt with in a book; formula showing ratio or proportion of one dimension to another; (maths.) figure or letter showing power or root of a quantity; etc. **I. numbers**, (econ.) simplified numerical statements, obtnd. by process of averaging, showing relative changes over time or space in some econ. or social phenomenon, changes being too complex to admit of direct interpretation; thus, I.N. may be computed for unemployment, purch. power of money, cost of living, production, consumption, etc.; partic. year or place taken as basis of compar.; given value usually 100. **I. of Prohibited Books** (*Index Librorum Prohibitorum*), list, compiled by R.C.Ch. of books which R.C.s are forbidden to read. First Index publ. 1559; from 1590 to 1918 in charge of the Congregation of the Index (presided over by a Cardinal), and now of that of the Holy Office, wh. makes additions from time to time.

**India**, centr. penins. of S. Asia; bounded N.W. by Persia and Afghanistan, N. by Tajik S.S.R. and Tibet, and E. by China, Fr. Indo-China, and Siam. Divides Indian Ocean into Arabian Sea (W.) and Bay of Bengal (E.). Separated from crown colony of Ceylon by Palk Strait. Comprises *British India* (territories governed by



King-Emperor through the Viceroy), *Indian States* (governed by Indian princes and chiefs in subordinate alliance with King-Emperor), and *Independent States* (under the political influence of the Indian Govt.).

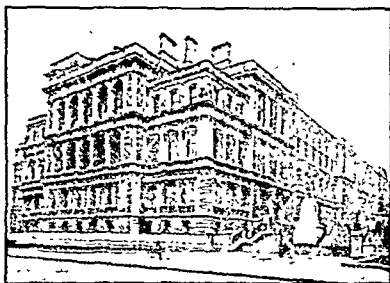
Area (Brit. India and Indian States) 1,805,332 sq.m.; pop., 352,987,000 (70% Hindus, 22% Mohammedans, 3% Buddhists). Area divides naturally into the N. Frontier Mtns., the Plains, the Deccan, and Burma. The N. Frontier Mtns. comprise some of the great ranges radiating from the Pamir Plateau, Himalayas, with world's highest summits (*Everest*, 29,041 ft.), Karakoram (*Godwin-Austen*, 28,250 ft.), Hindu Kush (*Tirach Mir*, 25,400 ft.; mainly in Afghanistan). The Plains lie betw. the mountainous N. and the Deccan, and extend from Arabian Sea to Bay of Bengal; they include (W.) the fertile alluvial basins of the Indus and of the "five rivs." of the Punjab, and (E.) the delta of the Ganges and Brahmaputra, as well as extensive tracts of desert; name of Hindustan sometimes applied to this part of India. The Deccan (*q.v.*) comprises the peninsular portion of India S. of Vindhya Mtns. Burma (*q.v.*) lies on E. of India proper. Climate influenced by monsoons; subtropical in N. and N.W., with cool winters and intensely hot, dry summers; tropical in

S. and S.E., with persistent moist heat; rainfall regular and seasonal, though amount varies from 8 in. in Sind to 430 in. in Assam (Cherrapunji), and is not sufficient for agriculture: hence extensive irrigation (over 31 million ac. in 1928): crops include rice, wheat, maize, cotton, coffee, tea, sugar-cane, opium poppy, and spices. Large tracts of jungle; over 100,000 sq.m. under scientific afforestation: characteristic trees are teak, deodar, bamboo, sandalwood, ebony, and the sacred banyan-tree; rubber in Burma; rhododendrons and magnolias in E. Himalayas. Fauna include the lion, leopard, cheetah, wolf, bear (in Himalayas), elephant, rhinoceros, wild pig, many kinds of snakes, and the pariah dog. Precious metals and stones (esp. rubies) found in Burma and Assam; mines of coal, iron, copper, manganese ore, and tin. Manufs. important though 70% of pop. is agricultural or pastoral; cotton-mills in Bombay, jute in Bengal; carpets and rugs in United Provs. Rlys. 41,700 m.

British India comprises provs. of Bengal, Bombay, Madras, United Provs. of Agra and Oudh, Punjab, Bihar and Orissa, Central Provs. and Berar, Assam, Burma, N.W. Frontier Prov., Ajmer-Merwara, Coorg, Brit. Baluchistan, and Delhi; in addition the Andaman and Nicobar Isls. form a fifteenth province. The Indian States (two-fifths of area, one quarter of pop.) incl. Hyderabad, and Mysore in Centr. India; Baroda, in W.; Rajputana, in N.W.; Centr. India (under Centr. India Agency); Kashmir, on N. frontier; Sikkim, on N.E. frontier; Sikh States (incl. Patiala), in Punjab; Madras States, in S.; etc. Independent or semi-indept. states incl. Nepal and Bhutan, on N.E. frontier, Baluchistan on N.W. frontier; etc. Rulers of Oman, Bahrein, Kuwait and other territories on the Persian Gulf are in treaty relations, while Aden (incl. Sokotra, Perim, and Kuria Muria Isls.) is administered by govt. of India. Chf. cities: *New Delhi* (cap.), Calcutta (cap. till 1912), Bombay, Madras, Hyderabad, Rangoon, Lahore, Karachi. Summer cap. Simla. Benares is the sacred city of the Hindus; Amritsar, of the Sikhs.

About 2000 B.C., immigration of Aryans occurred; the Hindus are the result of the mixing of Aryans and aborigines. Buddha died c. 480 B.C. Trade with Greece dates from Alexander the Great's invasion in 326 B.C. Until c. A.D. 1200, India was div. among numerous princes; in 1398 the Mongol, Timur, conquered a great part of India; one of his successors, Baber, fndd. (1526) the Mogul Empire (Hindustan and Deccan; cap., Delhi). Through discov. of sea-route to E. India by Vasco da Gama (1498), Dut. and Eng. trading centres were estbd. in the 17th century. From these arose commercial Cos. supported by their respective

govts. (e.g., Brit. East India Company). From that time Brit. dominion in India steadily expanded. Indian mutiny, 1857; in 1877 Queen Victoria proclaimed Empress of India. Constitution granted 1920, but growing movement, headed by Gandhi (q.v.), for complete independence. Round Table Conference, 1931, failed to conciliate Gandhists, but led to proposals for further concessions. **I., Central**, group of 90 native States, Centr. India, divided into two by Jhansi dist. (United Provinces), and supervised by pol. officer in charge of *Centr. I. Agency*; includes Gwalior, Rewa, Indore, Bhopal; area, 51,531 sq.m.; pop., 6,615,100; cap., Indor. **I. French**: see FRENCH INDIA;



India Office, London

**I. Office**, dept. of Brit. Govt. under control of Sec. of State for India, with Council of persons experienced in Indian administration, charged with relations betw. Brit. and Indian governments. **I. Portuguese**: see PORTUGUESE INDIA. **I. rubber**, commercial product made from solidified juice of rubber plant (see RUBBER); esp. small piece of rubber used for erasing pencil or ink marks.

**Indian club**, (gym.) bottle-shaped wooden club for swinging exercises. **I. Empire**, Order of, fndd. 1877, for services rendered to Ind. Empire; comprises the Sovereign, Grand Master (Viceroy of India), Knights Grand Commander (G.C.I.E.), Knights Commanders (K.C.I.E.), and Companions (C.I.E.); ribbon, purple. **I. Languages**: see LANGUAGE SURVEY, *Indo-Ger. B* group. **I. Mutiny** (1857-58), revolt of Sepoys agst. Brit. authority in India; began at Meerut and was carried on esp. at Delhi, Cawnpore, and Lucknow; on its suppression the Mogul (q.v.) was banished, govt. by the E. I. Co. came to an end, and Qn. Victoria was proclaimed throughout India with Ld. Canning as 1st Viceroy. **I. Ocean**, bounded by Africa, Asia, Malay Archipelago, Australia, and the Antarctic; area 29 million sq.m.; divided in N. by Deccan Penins. (India) into Bay of Bengal (E.) and Arabian Sea (W.); with Red Sea and Persian Gulf). **I. religions**: see VEDA; BRAHMANISM; HINDUISM (abt. 210,000,000 adherents); BUDDHISM

**Inebriate**, habitual drunkard; described (Eng. law) under Inebriates Act (1879) as a person who, while not amenable to jurisdiction in lunacy, is "by reason of habitual intemperate drinking of intoxicating liquor at times dangerous to himself or to others, or incapable of managing his affairs"; under certain conditions court may order detention of inebriate; see ALCOHOLISM.

**Inertia**, (phys.) *Vis Inertiae*, resistance of a mass to every alteration of its state of motion. **Law of I.** (Newton, 1687): A body persists in a state of rest or uniform motion in a straight line unless acted upon by a force (*q.v.*). For diff. betw. inertial and gravitational mass see RELATIVITY, THEORY OF. **Moment of I.**, the resistance of a rotating body to any change in its speed of rotation.

**In esse** (Lat.), in being, essentially.

**In excelsis** (Lat.), in the highest.

**In extenso** (Lat.), in full, unabridged.

**In extremis** (Lat.), at the point of death; at the end of one's resources.

**Infallibility**, freedom from liability to error; Cath. doctrine that the teaching of the Ch. is an infallible rule of faith. **I. of Pope**, dogma laid down by Vatican Council (1870) that the Pope, when speaking *ex cathedra* in virtue of his office upon matters of faith, is as infallible as the Ch. herself.

**Infant**, in Eng. law, any person below age of 21. An infant is incapable of holding or disposing of property, and cannot make a will or bring action in his own name. A newborn I. should be abt. 19 in. long, and weigh abt. 7 lbs. Protection against ophthalmia is made by wiping eyes from nose outwards immediately head is born. Child should be given the breast 4 hrs. after birth. **I. Welfare**, organised care of young children and of mothers before and immed. after birth of child.

I. W. centres in Grt. Brit. now administered by local authorities (county councils, bor. councils) under Ministry of Health and Board of Education. Centres in Eng. and Wales have increased from 90 (1910) to over 3,000 (1932).

**Infante, Infanta**, titles given to princes and princesses of the former royal houses of Spain and Portugal.

**Infantile convulsions**, mild convulsions in children caused by digestive trouble, partic. when teething. **I. paralysis**, anterior poliomyelitis, an infectious disease wh. occasionally becomes epidemic. Attacks the nervous system and leads to paralysis of the limbs or spinal muscles. Often leaves permanent disability. Children most liable to

attack, but young adults are also subject to the disease.

**Infantilism**, arrested development.

**Infantry** (from Span. *infante*, "boy" or "knave"), foot soldiers. **Light i.**, in the 18th-19th cents., troops with lighter arms and equipment than grenadiers or fusiliers (*q.v.*); adapted for rapid movement. Name of various regiments, e.g., Somerset L.I. See also CHASSEURS, JAEGER, and RIFLES.

**Infants' school**, separate dept. of public elementary school for educ. of children from 5 to 8 yrs.; cf. NURSERY SCHOOL.

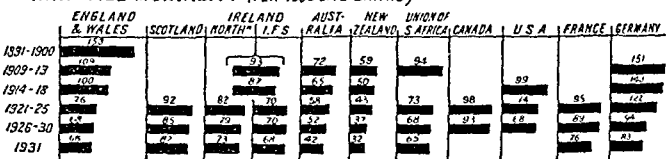
**Infection**, invasion of the body by disease germs; may occur through entrance of bacteria into intestines or respiratory tract by means of contaminated food, water, air, etc., or through the skin and wounds (as in tetanus). Some diseases (e.g., malaria) conveyed by insects. Contagious diseases differ from infectious diseases in that they are transmitted, by direct contact, from one person to another. See NOTIFIABLE DISEASES.

**Inferiority complex**, psychopathological state in wh. a person subconsciously, sometimes to a certain extent consciously, feels himself to be inferior to others and inadequate for whatever task he has in hand, and wh. he often seeks to combat by an exaggerated aggressiveness and self-assertiveness.

**Internal machine**, powerful bomb fitted with clockwork, so that the explosion may occur at a prearranged time.

**Infiltration**, (med.) penetration of tissues by an abnormal substance, e.g., pus, or by excess of a normal substance. *I. anaesthesia*,

INFANTILE MORTALITY (PER 1000 LIVE BIRTHS)



Rate of infant mortality has fallen in the present century throughout the civilized world; New Zealand and Australia have the lowest death rates.

local anaesthesia following injection of local anaesthetic, e.g., cocaine.

**Infinitesimal calculus**, (maths.) collective name for the differential and integral calculi; concerned with quantities less than smallest finite value.

**Infinitive**, form of verb expressing action or condition without ref. to any person or statement, e.g., to love.

**In flagrante delicto** (Lat.), in the act; red-handed.

**Inflammation**, change occurring in any part of body as a response to injury or to invasion by bacteria; signs of I. are heat, redness, swelling, and pain.

**Inflation**, (finan.) expansion in quantity

of credit or currency beyond needs of community for normal conduct of business at price-levels obtaining. **I.** tends to raise prices, other things being equal, esp. in case of rapid currency **I.** where confidence in currency is weakened; e.g., in Ger., Austria, etc., when post-war **I.** caused prices of goods in everyday use to rise to 100 or 1,000 times above pre-war levels. Term *Reflation* recently come into use; it means actually **I.**, but implies that *deflation* has prev. taken place, so that ensuing **I.** is *reflation* to original level; see DEFLATION; MONEY, QUANTITY THEORY OF.

**Inflexion**, variation in terminations of words, verbs, and nouns; expressing gram. relation; see CONJUGATION.

**Inflorescence**, (bot.) arr. of flowers on main vegetative axis; the flower cluster.

**Influence**, (phys.) in electrostatics, induction of a charge by a charged conductor. **I. machine** (Wimshurst, etc.), produces high-tension, low-quantity supply of electr. by rotating charged sectors on glass plates in opp. directions. Very sensitive to damp.

**Influenza**, general feverish infection wh. is epidemic, i.e., **Spanish I.**, of 1918. Light or severe attacks may end fatally.

**In formâ pauperis** (Lat.), in the condition of a pauper; as a poor man; see POOR PERSONS.

**Infra dignitatem** (Lat.), beneath one's dignity; often abbr. as *infra dig.*

**Infra-red radiation**, invisible radiation emitted by all bodies below red heat; longer wave-length than red. Has been shown to join on continuously to shortest Hertzian (electro-magnetic) waves. Photogr. plates can be sensitised to it, and photos. taken by it in dark. Also penetrates smoke, fog, and cloud, hence photos. of distant objects possible when obscured.

**Infula**, white woollen fillet worn by anc. Rom. as symbol of dedication. **Infulae**, pendent ornaments at back of bishop's mitre.

**Infusion**, (pharm.) prod. of extraction of a drug with water, usu. boiling, but sometimes cold; (med.) injectn. of blood, saline, or glucose intravenously and occas. subcutaneously.

**Infusoria**, (zool.) division of the Protozoa, the members of which are all microscopic in size and found in contaminated water and infusions of plant or animal matter; they move by means of cilia.

**Inge**, William Ralph (1860- ), Eng. divine and metaphysician; Dean of St. Paul's 1911-33; noted for advanced views on social problems and criticisms of shortcomings of the working classes. *Outspoken Essays*, 1910; *Lay Thoughts of a Dean*, 1926; *The Church in the World: Collected Essays*, 1928.



Dean Inge

**Ingelow**, Jean (1820-97), Eng. poet and novelist; *Poems*, 1863; *Off the Skelligs*, 1872; *John Jerome*, 1886; *Mopsa the Fairy*, 1869.

**Ingersoll**, Robt. Green (1833-99), Amer. lawyer and agnostic lecturer; admitted to bar, 1854; colonel in cavalry regiment, 1861-63; attorney-gen. of Illinois, 1867-69; made name as public speaker in speech naming Jas. G. Blaine for Presidential candidate, 1876; counsel for defendants in *Star-Route Fraud* trials; gave number of public lectures attacking the Bible.

**Ingoldsby Legends**, collection of satirical tales in prose and verse by R. H. Barham (q.v.); early numbers publ. in *Bentley's Miscellany* and *New Monthly Magazine*; 1st series publ. collectively, 1840; 2nd and 3rd, 1847.

**Ingolstadt**, fortified tn., Bavaria, Germany, on Riv. Danube; pop., 26,650; 15th-cent. castle and church; univ. (1472); iron foundries.

**Ingot**, mass, lump, or bar of metal, esp. gold or silver, cast in a mould.

**Ingres**, Jean Dominique (1780-1867), Fr. painter: *Jeanne d'Arc*, 1854; *La Source*, 1856.

**Ingushetia**, auton. area in N. Caucasian area; c. 1,230 sq.m.; pop., c. 80,000 (90% Ingushetes). Literacy, 6% among men, 1% among women. Hill tribes barbarous; few considerable villages even in valleys; primitive customs survive.

**Ingvaonians**, or **Ingavonians**, one of 3 main branches of Teutonic race inhab. area betw. Baltic and Rhine in 1st cent. A.D.

**Inhabited House Duty**, obsolete Brit. tax on the annual value of a house; replaced the Window Tax, 1851; repealed, 1924. Not to be confounded with Income Tax Schedule A.

**Inhibition**, in eccles. law; commandment of bp. prohibiting a clergyman from taking any duty. See REPRESSION.

**In hoc signo vinces** (Lat.), "in this sign shalt thou conquer"; inscription seen by the emp. Constantine in the heavens; see CROSS, EXALTATION OF.

**Initial**, in bk. or MS., first letter of a chapt. or verse, often emphasised by enlargement, ornament, or colouring, espec. in illum. MSS., missals, etc.

**Initiation ceremonies**, common among primitive peoples. Gen. take place at or abt. puberty; special rites and ordeals induct the children into status of adulthood.

**Initiative**, introd. step or movement; power to start or develop new enterprises; in politics, people's right of petition; in U.S.A. right vested in some voters: 1) to present proposition wh., if carried by vote of *all*, becomes law; 2) to insist that measures to be adopted sh. be presented to voters for approval or rejection. See PLEBISCITE; REFERENDUM.

(abt. 11,000,000); JAINISM; ISLAM (abt. 60,000,000). **1. Territory**, large part of present State of Oklahoma (in S.E.); union of terr. and Oklahoma as one of the U.S.A., 1907; Indian pop., 93,000.

**Indiana** ("Hoosier State"), State, U.S.A. N. of the Ohio, with a shore-line of 50 m. on L. Michigan; 36,354 sq.m.; pop., 3,300,000; forests, pasture land; agric. and stock-breeding; mining; coal, iron; oil wells; cap., *Indianapolis*.

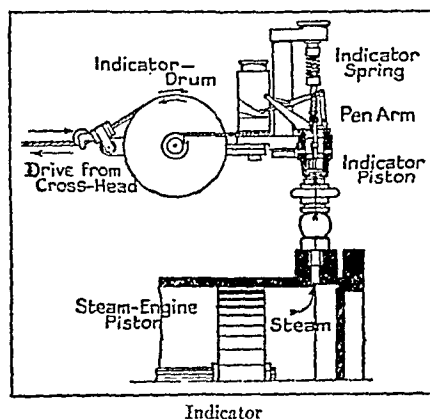
**Indianapolis**, cap., Indiana, U.S.A.; pop., 364,000; rly. centre; trade in grain and agric. produce; meat-packing; machinery.

**Indians**, inhab. of S. Asia, consisting of 4 distinct racial and linguistic groups: Aryan Hindu, Tibetan-Mongolian races; Kolarians in N.; Dravidians in Deccan. **American I.**, aborig. of Amer., Mongol in type, yellow-brown skin, aquiline nose, coarse, straight black hair, almost beardless. Linguistic and cultural groups: *N. America* (for most part still confined to Reservations, *q.v.*): Athabascan, Tlingit, Huron, Iroquois (Sioux); *Mexico*: Puebloan; *Central America*: Mayan (formerly in state of high cultural develop.), Aztec; *S. America*: Tupian, Guaranian, Araucan; on S. Pampas: Araucan, Patagonian, and Puelchean; in highlands: Alaculufans of Fuegia, Chibchans, and Quichuans. In all, abt. 10 mill. Dying out in N. Amer.; becoming racially mixed in S. America.

**Indicated (horse) power**, (phys.) power calculated from the indicator diagram without allowing for loss of power by friction.

**Indicative**, form of the verb wh. affirms.

**Indicator**, 1) (chem.) substance (*e.g.*, litmus) which shows, by a change of colour,



that a chemical reaction has taken place. 2) (Engin.) instr. for recording by a diagram amt. of pressure in a cylinder at diff. stages of piston-stroke.

**Indictment**, bill of accusation framed agst. a person for a crim. offence; first sub-

mitted to a Grand Jury (*see* JURY), wh. decides whether there is suff. case for accused to answer and either returns a "true bill" or throws it out.

**Indifferentism**, 1) (philos.) doctrine that existence in *thought* is absolutely identical with existence in *reality*, and vice versa; 2) (theol.) doctrine that differences of relig. faith are of no account.

**Indifferent waters**, natural warm springs differing little in chemical constituents from ordinary water, but possessing therapeutic value; *e.g.*, those at Buxton, England.

**Indigestion**, disturbance of the digestive functions, in wh. the gastric juice frequently contains too much acid; in some cases there may be insufficient acid present. Treated by dieting, supplemented by suitable medicines, *e.g.*, sodium bicarbonate, compounds of bismuth, etc.

**Indigo**, pure blue dye from an Indian plant, known to the ancients; in itself colourless (indigo-white), it is transformed into **I. blue** by oxidation in the air; prepared synthetically in 1880 by Baeyer (*q.v.*).

**Indigvika**, riv. (950 m.), E. Siberia, rises in Stanovoi range and falls into Arctic Ocean.

**Indirect election**, method by wh. voters elect cert. of their no., who then proceed with actual voting. Still practised in Fr. and Amer. in presidential elections.

**Indirect tax**, paid by importer or producer and passed on, as addition to price to consumer, *e.g.*, beer, tea, sugar duties, etc.

**Indium**, (chem.) sym. In; at. wt. 114.8; sp. gr. 7.12; rare metallic element, somewhat sim. to aluminium; found in assoc. with zinc.

**Individual**, that wh. cannot be split up or divided without loss of its essential character; loosely a person.

**Individualism**, polit. doct. equiv. to utilitarianism (*q.v.*); also polit. and econ. doct. that object best achieved by *laissez faire* (*q.v.*).

**Indo-China, Farther India**, penins. betw. Bay of Bengal and S. China Sea; comprises S.E. Bengal, S.E. Assam, Burma, Kgdms. of Siam, Malaya, Fr. Indo-China; c. 8,400,000 sq.m.; pop., 40,000,000, incl. Burmese, Siamese, Tonkinese, Annamites, Laos, Shans, Chins. Relig.: Mainly Buddhists, without ancestor-worship. Three mtn. chains run N. to S.E. to within 100 m. of Equator. Rivs. Irawadi, Menam, Mekong, Salween flow S. Forests of bamboo and teak. Cultivation of rice, silk, cotton, sugar-cane, tobacco, indigo, jute. **Indo-China, French:** *Indochine* FRENCH INDO-CHINA.

**Indo-Chinese:** *see* LANGUAGE SURVEY, *Austro-Asiatic Languages*.

**Indo-Germanic:** *see* LANGUAGE SURVEY. **Indo-Germans, or Indo-European**, collective name for race-groups of W. and S. Asia and greater part of Eur., whose

languages spring from common Indo-Germanic root; term Aryan now confined to Indians and Iranians.

**Indonesian:** *see* LANGUAGE SURVEY, *Malay-Polynesian Languages*.

**Indore, 1)** feudatory State, Centr. India; area 9,500 sq.m.; pop., 1,151,600. **2)** Cap. of State; pop., 127,400; cap. of Central India Agency; cotton, textiles.

**Indorsement:** *see* ENDORSEMENT.

**Indra**, one of the chief gods in the Hindu theocracy, probably representing Lightning.

**Indre**, dépt., centr. France; 2,664 sq.m.; pop., 247,912; forests; agric.; cap., *Châteauneuf*.

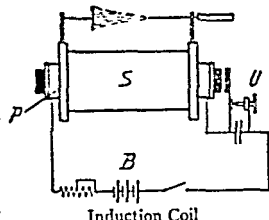
**Indre-et-Loire**, dépt., W. France; 2,377 sq.m.; pop., 355,226; agric., wine, fruit; quarries, metal indus.; woollens; cap., *Tours*.

**Indry**, member of the subfamily *Indrisinac* of the lemur branch of the Primates, native to Madagascar; soft woolly hair, long hind legs, very short (though in some species long) tails; live entirely in trees. Also called *Babacoote*.

**Ind. T.**, abbr. Indian Territory.

**In dubio** (Lat.), in case of doubt. **In dubio pro reo**, legal axiom that the prisoner should have the benefit of the doubt, where such exists.

**Induction, 1)** in logic, gen. conclus. drawn from a number of spec. instances (ant.: *deduction*). **2)** (Elec.) Produc. of elec. charge, magnetisation, or elec. current by action of neighbouring charges, magnets, or currents (in latter case, also by motion of magnet near conductor). *Electro-magnetic i.*, discv. by Faraday (1831), is basis of working of dynamo, transformer, motor, wireless transmission and reception, telephone, etc. **1. coil**, (elec.) accdg. to Rühmkorff, consists of primary coil P (thick wire with iron core) and secondary coil S, thin wire with many windings; current from battery B is continually being interrupted by oscillating movement of circuit breaker U; by means of I. a high-tension alternating current results, which gives strong spark discharge. Used for coil ignition in motor engines.



**Indulgence**, gratification, privilege; esp. R.C. plenary or partial remission of punishment due for sins, granted through the Ch., and effected by the merits of Christ and the Saints. **1. letters**, an abuse of the 16th cent., by which indulgences were sold for money. **Declaration of I.**, promise of relig. toleration proclaimed by Charles II (1672) and

James II (1687), annulling religious tests and penal laws agst. R.Cs. and Dissenters.

**Indus**, principal riv. N.W. India; rises in Himalayas (Tibet); flows through Kashmir into Punjab; receives Kabul Riv. at Attock and, in S. Punjab, the "five rivers" (Jhelum, Chenab, Ravi, Beas, Sutlej) through Panjnad Riv.; flows through Sind into Arabian Sea through delta of 13 mouths; length, 1,800 m.; navigable 1,000 m. (as far as Attock); irrigation by means of Sukkur Barrage.

**Industrial councils**, bodies composed of representatives from employers' associations and trade unions of various industries, formed mostly as result of the *Whitley Committee* reports (1917-18), for settlement of rates of wages, hours of work, etc. The *Indust. Council* of 1911, consisting of equal no. of representatives from employers and workers, was first of its kind in Gt. Brit. The *Nat. Indust. Council* (1920) consisting of 400 members, representing all employers' assoc. and tr. unions, was formed to deal with questions affecting industry as a whole.

**Industrial diseases:** *see* OCCUPATIONAL DISEASES.

**Industrial reserves**, (econ.) term app. by Marx to unemployed workers, crowded out of industry by mech. improvements, etc., and forming a reserve of labour to be drawn on or rejected as industry expanded or contracted.

**Industrial revolution**, name given to the grad. transformation of a mainly agric. to a mainly indust. community, as result of development in produc. and transport by mech. inventions; esp. in Eng. during late 18th and early 19th cents. Use of coal in blast-furnaces, mech. inventions for weaving and spinning, and application of steam power to industry and transport caused peasant population to flock to towns in order to reap benefits of indus. prosperity. Evils resulting (slums, scarcity of agric. labour, etc.), still affect social life.

**Industrial schools**, institutions for educ. and indust. training of vagrant children, or those convicted of minor offences; up to 14 yrs., limit of detention, age of 16. First *Indust. Sch. Act*, 1857; replaced by *Child. Act*, 1908.

**Industry**, (archaeol.), collection of objects of the same age, made and shaped by man at any given place; *see* ARTIFACT.

**Indy**, Paul Marie Théodore Vincent d' (1851-1932), Fr. composer. Symphonic trilogy, *Wallenstein*; *Le Chant de la Cloche*.

**Ine (Ina)** (d. c. 728), Kg. of Wessex, soldier and lawgiver; subjected Kent, Sussex, and E. Anglia, much extending his kgd.; fought agst. the Britons in Wales; blt. monasteries (inclgd. Glastonbury), and fndd. Bprie. of Sherborne; promulgated (c. 693) earliest collectn. (76) of W. Saxon laws; abd. 726 and retired to Rome, where he died.



**Inebriate**, habitual drunkard; described (Eng. law) under Inebriates Act (1879) as a person who, while not amenable to jurisdiction in lunacy, is "by reason of habitual intemperate drinking of intoxicating liquor at times dangerous to himself or to others, or incapable of managing his affairs"; under certain conditions court may order detention of inebriate; *see* ALCOHOLISM.

**Inertia**, (phys.) *Vis Inertiae*, resistance of a mass to every alteration of its state of motion. **Law of I.** (Newton, 1687): A body persists in a state of rest or uniform motion in a straight line unless acted upon by a force (*q.v.*). For diff. betw. inertial and gravitational mass *see* RELATIVITY, THEORY OF. **Moment of I.**, the resistance of a rotating body to any change in its speed of rotation.

**In esse** (Lat.), in being, essentially.

**In excelsis** (Lat.), in the highest.

**In extenso** (Lat.), in full, unabridged.

**In extremis** (Lat.), at the point of death; at the end of one's resources.

**Infallibility**, freedom from liability to error; Cath. doctrine that the teaching of the Ch. is an infallible rule of faith. **I. of Pope**, dogma laid down by Vatican Council (1870) that the Pope, when speaking *ex cathedra* in virtue of his office upon matters of faith, is as infallible as the Ch. herself.

**Infant**, in Eng. law, any person below age of 21. An infant is incapable of holding or disposing of property, and cannot make a will or bring action in his own name. A newborn I. should be abt. 19 in. long, and weigh abt. 7 lbs. Protection against ophthalmia is made by wiping eyes from nose outwards immediately head is born. Child should be given the breast 4 hrs. after birth. **I. Welfare**, organised care of young children and of mothers before and immed. after birth of child. I. W. centres in Grt. Brit. now administered by local authorities (county councils, bor. councils) under Ministry of Health and Board of Education. Centres in Eng. and Wales have increased from 90 (1910) to over 3,000 (1932).

**Infante, Infanta**, titles given to princes and princesses of the former royal houses of Spain and Portugal.

**Infantile convulsions**, mild convulsions in children caused by digestive trouble, partic. when teething. **I. paralysis**, anterior poliomyelitis, an infectious disease wh. occasionally becomes epidemic. Attacks the nervous system and leads to paralysis of the limbs or spinal muscles. Often leaves permanent disability. Children most liable to

attack, but young adults are also subject to the disease.

**Infantilism**, arrested development.

**Infantry** (from Span. *infante*, "boy" or "knaves"), foot soldiers. **Light I.**, in the 18th-19th cents., troops with lighter arms and equipment than grenadiers or fusiliers (*q.v.*); adapted for rapid movement. Name of various regiments, e.g., Somerset L.I. *See also* CHASSEURS, JAEGER, and RIFLES.

**Infants' school**, separate dept. of public elementary school for educ. of children from 5 to 8 yrs.; *cf.* NURSERY SCHOOL.

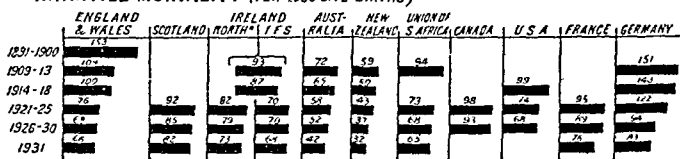
**Infection**, invasion of the body by disease germs; may occur through entrance of bacteria into intestines or respiratory tract by means of contaminated food, water, air, etc., or through the skin and wounds (as in tetanus). Some diseases (e.g., malaria) conveyed by insects. Contagious diseases differ from infectious diseases in that they are transmitted, by direct contact, from one person to another. *See* NOTIFIABLE DISEASES.

**Inferiority complex**, psychopathological state in wh. a person subconsciously, sometimes to a certain extent consciously, feels himself to be inferior to others and inadequate for whatever task he has in hand, and wh. he often seeks to combat by an exaggerated aggressiveness and self-assertiveness.

**Infernal machine**, powerful bomb fitted with clockwork, so that the explosion may occur at a prearranged time.

**Infiltration**, (med.) penetration of tissues by an abnormal substance, e.g., pus, or by excess of a normal substance. **I. anaesthesia**,

INFANTILE MORTALITY (PER 1000 LIVE BIRTHS)



Rate of infant mortality has fallen in the present century throughout the civilized world; New Zealand and Australia have the lowest death rates.

local anaesthesia following injection of local anaesthetic, e.g., cocaine.

**Infinitesimal calculus**, (maths.) collective name for the differential and integral calculi; concerned with quantities less than smallest finite value.

**Infinitive**, form of verb expressing action or condition without ref. to any person or statement, e.g., *to love*.

**In flagrante delicto** (Lat.), in the act; red-handed.

**Inflammation**, change occurring in any part of body as a response to injury or to invasion by bacteria; signs of I. are heat, redness, swelling, and pain.

**Inflation**, (finan.) expansion in quantity

of credit or currency beyond needs of community for normal conduct of business at price-levels obtaining. I. tends to raise prices, other things being equal, esp. in case of rapid currency I. where confidence in currency is weakened; e.g., in Ger., Austria, etc., when post-war I. caused prices of goods in everyday use to rise to 100 or 1,000 times above pre-war levels. Term *Reflation* recently come into use; it means actually I., but implies that *deflation* has prev. taken place, so that ensuing I. is *reflation* to original level; see DEFLATION; MONEY, QUANTITY THEORY OF.

**Inflexion**, variation in terminations of words, verbs, and nouns; expressing gram. relation; see CONJUGATION.

**Inflorescence**, (bot.) arr. of flowers on main vegetative axis; the flower cluster.

**Influence**, (phys.) in electrostatics, induction of a charge by a charged conductor. **I. machine** (Wimshurst, etc.), produces high-tension, low-quantity supply of electr. by rotating charged sectors on glass plates in opp. directions. Very sensitive to damp.

**Influenza**, general feverish infection wh. is epidemic, i.e., **Spanish I.**, of 1918. Light or severe attacks may end fatally.

**In formâ pauperis** (Lat.), in the condition of a pauper; as a poor man; see POOR PERSONS.

**Infra dignitatem** (Lat.), beneath one's dignity; often abbr. as *infra dig.*

**Infra-red radiation**, invisible radiation emitted by all bodies below red heat; longer wave-length than red. Has been shown to join on continuously to shortest Hertzian (electro-magnetic) waves. Photogr. plates can be sensitised to it, and photos. taken by it in dark. Also penetrates smoke, fog, and cloud, hence photos. of distant objects possible when obscured.

**Infula**, white woollen fillet worn by anc. Rom. as symbol of dedication. **Infulae**, pendent ornams. at back of bishop's mitre.

**Infusion**, (pharm.) prod. of extraction of a drug with water, usu. boiling, but sometimes cold; (med.) injectn. of blood, saline, or glucose intravenously and occas. subcutaneously.

**Infusoria**, (zool.) division of the Protozoa, the members of which are all microscopic in size and found in contaminated water and infusions of plant or animal matter; they move by means of cilia.

**Inge**, William Ralph (1860- ), Eng. divine and metaphysician; Dean of St. Paul's 1911-33; noted for advanced views on social problems and criticisms of shortcomings of the working classes. *Outspoken Essays*, 1919; *Lay Thoughts of a Dean*, 1926; *The Church in the World: Collected Essays*, 1928.



Dean Inge

**Ingelow**, Jean (1820-97), Eng. poet and novelist; *Poems*, 1863; *Off the Skelligs*, 1872; *John Jerome*, 1886; *Mopsa the Fairy*, 1869.

**Ingersoll**, Robt. Green (1833-99), Amer. lawyer and agnostic lecturer; admitted to bar, 1854; colonel in cavalry regiment, 1861-63; attorney-gen. of Illinois, 1867-69; made name as public speaker in speech naming Jas. G. Blaine for Presidential candidate, 1876; counsel for defendants in *Star-Route Fraud* trials; gave number of public lectures attacking the Bible.

**Ingoldsby Legends**, collection of satirical tales in prose and verse by R. H. Barham (q.v.); early numbers publ. in *Bentley's Miscellany* and *New Monthly Magazine*; 1st series publ. collectively, 1840; 2nd and 3rd, 1847.

**Ingolstadt**, fortified tn., Bavaria, Germany, on Riv. Danube; pop., 26,650; 15th-cent. castle and church; univ. (1472); iron foundries.

**Ingot**, mass, lump, or bar of metal, esp. gold or silver, cast in a mould.

**Ingres**, Jean Dominique (1780-1867), Fr. painter; *Jeanne d'Arc*, 1854; *La Source*, 1856.

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**I.N.J.**, abbr. *in nomine Jesu* (Lat.), in the name of Jesus.

**Injection**, introduction of medicaments: *subcutaneously* by a parenteral (*q.v.*) route or *hypodermically* under the skin; *intracutaneously*, into the skin; *intramuscularly*, into the muscles; *intravenously*, into a vein. **I. syringe or hypodermic syringe**, is a cylinder of nickel and glass, graduated, with a nickel piston and removable hollow needles (see **CANNULA**) of varying lengths and thicknesses.

**Injector**, (phys.) a jet of gas, steam, or liquid issuing at high velocity, crossing an open space, and entering a contracted orifice, thus creating suction. Steam thus used to suck water from supply and force it into boiler. **I. air-pump**: see **AIR-PUMP**.

**Injunction**, (law) order of a court either restraining a person from performing some act (**preventive I.**) or ordering him to do something (**mandatory I.**).

**Ink**, for writing, is gen. manuf. from galls or other tannin-yielding bodies combined with an iron salt (ferrous sulphate) and some gummy agent; logwood is also used as a basis of black inks. **Indian or Chinese I.** consists of lampblack combined with glutinous matter; **Coloured Is.** are prep. from Prussian blue, Brazil-wood, cochineal, etc., and aniline dyes. **Marking I.** for writing on textiles, made from nitrate of silver dissolved in ammonia, or from vegetable juices. **Sympathetic I.** forms characters visible only on application of heat or some chemical. **Copying I.** made by addition of gum arabic with sugar, glycerin, or dextrin, to ordinary ink. **Printing I.**, consists of a varnish comp. of linseed oil, rosin, and soap, to wh. pigment is added.

**Inkerman**, battle of (Crimea), 1854; Russians under Menshikov defeated by Eng. and Fr., near Sevastopol.

**Inland bill**, (finan.) bill of exch., drawer and drawee of wh. reside in same country. Ant.: *foreign bills*.

**Inland revenue**, so much of nat. tax revenue as is not comprised in customs and excise (*q.v.*). Specially income tax, stamp duties, death duties, collected and managed by commissioners of inland revenue with office in Somerset House, and inspectors and local offices throughout Gt. Britain.

**Inlaying**, method of decorating furniture by incising patterns in surface of wood and fitting the spaces with different woods, metal, ivory, etc.

**Inlet**, arm of sea; narrow creek in coast; something let in or inlaid.

**In limine** (Lat.), at the threshold.

**In loco parentis** (Lat.), in the place of a parent; applied to one in a position of legal or otherwise recognised guardianship of a person below the age of 21 or other specified age.

**In medias res** (Lat.), into the midst of things; into the heart of the matter.

**In memoriam** (Lat.), in remembrance.

**Inn**, riv., trib. of Danube; rises in canton of Grisons, Switzerland, flows through the Engadine, Austr. Tyrol, and Bavaria; joins Danube at Passau; length 315 miles.

**Inniskilling Fusiliers, Royal**, Brit. infantry regt.; old 27th Foot (raised 1689); forms one corps with Royal Irish Fusiliers (*q.v.*); depot, Omagh (N. Ire.), record office, Leith; 12 battalions in World War. **5th Inniskilling Dragoons**: see **DRAGOON**.

**Innocent**, name of 13 popes and 1 antipope, of whom the most important, historically, are: **I. II** (1130-43), condemned Abélard and Arnold of Brescia as heretics. **I. III** (1179-80), antip. **I. III** (1198-1216), made doctrine of Transubstantiation dogma at 4th Lateran Council; suppressed Albigenses through Inquisition. **I. IV** (1243-54), 1st to give red hat to Cardinals. **I. VI** (1352-62), caused Charles IV to be crowned Emp.; carried through Treaty of Brétigny, 1360. **I. VIII** (1484-92), apptd. Torquemada (*q.v.*), Grand Inquisitor of Spain. **I. X** (1644-55) condemned Jansenism (*q.v.*). **I. XI** (1676-89) condemned moral teaching of Jesuits; opposed claim of Louis XIV to appt. bps. (*Declaration of Gallican Liberties*).

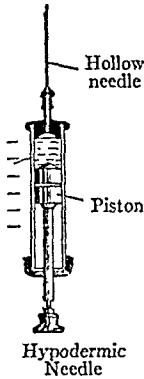
**Innocents, Holy, Feast of**, observed (Western Ch.) Dec. 28th, (Eastern Ch.) Dec. 29th, in commemoration of Herod's massacre of children (Matt. ii. 16).

**Innsbruck**, tn., Austria, cap. of the Tyrol, on Rivs. Inn and Silltal; alt. 1,880 ft.; pop., 68,000; church with monument to Maximilian I; univ. fndd. 1670; imperial castle; Ferdinandeum museum; tourist resort.

**Inns of court**, legal societies in London, from 13th cent., having sole power to "call to the bar" (appoint barristers); responsible for legal studies and examinations. *Inner and Middle Temple, Lincoln's Inn and Gray's Inn*.

**Ino**, (Gr. myth.) dau. of Cadmus and Harmonia; seized with madness, she threw herself and her son, Melicertes, into the sea, and both were transformed into marine deities (Leucothea and Palaemon).

**Inoculation**, injection under the skin, or application on a scarified area of skin of dead bacteria (e.g., typhoid inoculation) or of



Innsbruck

living virus (e.g., smallpox vaccination), in order to stimulate the formation of antibodies within the patient.

**Inowrazlaw, Hohensalza**, tn., Poland; pop., 24,300; salt and sulphur works, iron-founding, machinery, chemicals. Prussian, 1772-1918.

**In partibus infidelium** (Lat.), in the regions of unbelievers i.e., in non-R. C. countries; a bishop *in p. i.*, titular bp. in a country not Rom. Catholic.

**In perpetuum** (Lat.), in perpetuity; forever.

**In petto** (Ital.), within the breast; secretly; used of cardinals before the publication by the Pope of their names as such.

**In posse** (Lat.), potentially existent.

**In propria persona** (Lat.), in person, as dist. from, by proxy.

**In puris naturalibus** (Lat.), in a state of nature, i.e., naked.

**Inquest**, public inquiry held by a coroner, into death, treasure trove, or (city of Lon. and Southwark only) fires.

**Inquisition, The Holy Office**, name given to eccles. tribunal wh. grew out of various punitive measures taken by the Christian Church for correction of heresy and blasphemy. First Inquisitor-general was St. Dominic, apptd. by Innocent III, 1215. As regular institution I. took shape under Gregory IX, when it was establd. in Aragon (1233), Venice (1249), France (1255). Received by papal bull, 1478; re-inst. in Spain with Torquemada as Inqu.-gen., 1480. Inspired by bull *Summis desiderantes* (1484) and the book *Malleus Maleficarum*, written by 2 inquisitors, it conducted vigorous campaign agst. witchcraft. Its methods were at times very severe, and included torture and burning at the stake. It was long active in most Christian countries, but now remains only for suppression of heretical literature.

**In re** (Lat.), in the matter of. **In rerum natura**, in the nature of things.

**I.N.R.I.**, abbr., 1) *Iesus Nazarenus Rex Iudaeorum* (Lat.), Jesus of Nazareth, King of the Jews; 2) *Imperator Napoleon Rex Italiae* (Lat.), Emp. Napoleon, Kg. of Italy.

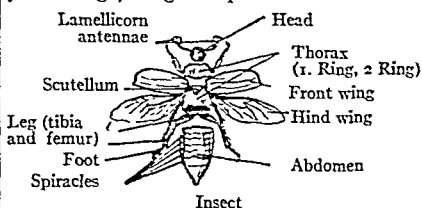
**In saecula saeculorum** (Lat.), to ages of ages; for ever and ever; final phrase of the Doxology (q.v.) and of the Lord's Prayer.

**Insanity**, mental disease usu. of uncertain origin (sometimes due to physical causes); madness; lunacy; I. is regarded as acquired and idiocy (q.v.) as natural. The certificate of two doctors is required to detain a patient for insanity, excp. in case of a pauper or vagrant.

**Insect flowers**, *pyrethrum* flowers; dried and powdered flower-heads of several var. of chrysanthemum, commercially usu. Dalmatian or Persian; kill insects infesting human person, houses, beds, etc.

**Insectivora**, order of small mammals, largely nocturnal in habit; including flying-lemur or cobego (q.v.), the tree-shrews, moles, hedgehogs, shrews, and tenrecs, all feeding, more or less, on insects, worms, fruit, and seeds. **Insectivorous plants**, those wh. catch insects by means of modified leaves and use them as nitrogenous food.

**Insects**, class of arthropods having the body divided into three parts: head, thorax, and abdomen; the head is provided with antennae and the thorax with three pairs of jointed legs; wings are present in one or two



pairs or may be absent. A vast number of species in all parts of the world, with habits varying according to environment. Metamorphosis (q.v.) is either complete (egg, larva, pupa, imago) or incomplete, having the pupal stage wanting (egg, nymph, or larva, imago). The chief orders are: *Thysanura* (silver-fish, bristle-tail, etc.); *Orthoptera* or straight-winged (cockroach, grasshopper, cricket, etc.); metamorphosis incomplete; *Neuroptera* or nerve-winged (lace-wing, alder-fly, snake-fly, etc.); metamorphosis complete; *Coloptera* or sheath-winged (beetles), metamorphosis complete; *Hemiptera* (bugs, aphids, scale-insect), metamorphosis incomplete; *Diptera* or two-winged (mosquitoes, house-flies), metamorphosis complete; *Hymenoptera*, pair-winged (sawflies, wasps, ants, bees), metamorphosis complete.

**Inshallah** (Arab.), if God will; equiv. to *Deo volente* (q.v.).

**Insignia**, symbols of authority or dignity, e.g., crown; sceptre.

**In situ** (Lat.), in its original place; at rest.

**Insolation**, 1) exposure to rays of sun; 2) (med.) sunstroke.

**Insolvency**, (finan.) state of inability to pay one's debts; an insolvent person may be proceeded agst. under *Bankruptcy* Acts, or may endeavour to reach an agreement with his creditors: see BANKRUPTCY; LIQUIDATION.

**Insomnia**, inability to sleep, usu. of nervous origin.

**Inspiration**, 1) intake of breath; 2) in-breathing or imparting of ideas or emotions, or mental and spiritual influences; the result of such influence; esp. divine influence on sacred writers by wh. they were qualified to impart truth with authority.

**I.N.S.T.**, abbr. *in nomine Sanctae Trinitatis* (Lat.), in the name of the Holy Trinity.

**Inst.**, abbr. instant, the current month.

**Installment business**, sale of goods to consumers, pymt. for wh. is made in specified periodic instalments. Interest is charged on the portion of purchase price remaining unpaid; also called hire purchase or *deferred payments*; long been important in the marketing of pianos; in recent years has become widespread in sale of many articles of household use, motorcars, industrial equipment, and even clothes; *see* HIRE PURCHASE.

**In statu pupillari** (Lat.), in the condition of a pupil (or ward); **in statu quo**, as it was before.

**Instinct**, inherited capacity or impulse, wh. makes effective action possible, without instruction or experience; natural aptitude or impulse, apart from unconscious reflex actions.

**Institut de France**, learned association in Paris for encouragement of science and literature, fndd. by Fr. Govt., 1795, and comprising 5 *Académies*: A. Française (language and lit.), A. des Inscriptions et Belles-Lettres, A. des Sciences, A. des Beaux-Arts, A. des Sciences Morales et Politiques; meets annually on Oct. 25th.

**Institutes**, part of *corpus juris* (q.v.), broad princ. of Rom. law wh. form introduc. part of Code of Justinian.

**Inst. N. A.**, abbr. Institute of Naval Architects.

**Instrumentation**, (mus.) method of writing for each individual instrument, *see* ORCHESTRATION.

**Insulation**, separation, isolation. Techn., forming a barrier (or barrier itself) to passage of anything, such as: sound ("sound-proof" materials, absorbers, resonators); moisture (damp courses, varnishes, etc.); heat (vacuum, light porous materials, highly reflecting surfaces); vibration (shock-absorbers, air or rubber damping, granular material); electricity (non-conducting material, mica, porcelain, ebonite, bakelite, rubber, paper, fibre, etc.). **Insulator**, substance suitable for any of the above purposes. In elec. eng. the variously shaped pieces of porcelain (bakelite, etc.) used for carrying bare elec. conductors overhead, along walls, etc. **Petticoat i.**, shaped so that rain cannot wet the whole surface.

**Insulin**, hormone, or substance secreted by the islets of Langerhans (q.v.) in the pancreas and passed into the blood-stream, which enables sugar (dextrose) to be made use of by the body. When the supply of I. is deficient, the subject becomes diabetic. He can be treated by injections of I. obtained from the pancreas of animals.

**Insurance**, contract by wh. the insurer as-

sumes a risk on condition of paymt. to him by insured of a premium. The ascertainment of the probability of damage is effected by the *actuary* (q.v.); princ. branches of I. are: endowment I., life I., employers' liability, accident I., fire I., motor I., marine and credit I. Insurers are: 1) *I. underwriters*, *see* LLOYD'S; 2) *I. companies*; 3) *mutual societies*, in which the insured persons collectively are responsible for losses of individuals; *see* FRIENDLY SOCIETIES; public I. Cos. are also sometimes on a 'mutual basis. *See also* HEALTH and UNEMPLOYMENT INSURANCE; OLD AGE PENSION.

**Insurgent**, one engaged in an insurrection.

**Intaglio**, gem with incised design; the opposite of cameo (q.v.).

**Integral**, whole, complete. (Math.) Pertaining to integers; function of variable that remains constant may be regarded as sum of differentials. **Definite I.**, integral whose summation extends only between definite limits. **Indef. I.**, in wh. summation has no limits. **Probability I.**, expressing area of probability curve. **I. calculus**, branch of higher mathematics, complementary to the differential calculus. Concerned with summation and hence with areas, volumes, and space of more than three dimensions.

**Integrator**, mathematical instrument for the calculation of integral, especially area of an irregular figure, e.g., planimeter.

**Intellectualism**, 1) theory that knowledge is derived wholly, or in part, through the exercise of pure reason, as opposed to *Sensationalism* and *Empiricism*, in wh. sensations and experience respectively are considered to be the sole or chief source of knowledge. 2) Tendency to over-estimate the rational and disregard other faculties of the human mind.

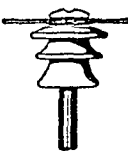
**Intelligence**, news, information; branch of the staff of an army whose duty it is to collect and distribute intelligence.

**Intensification**, (photog.) process by which weak negatives are increased in density and contrast. Various methods: 1) silver grains of image are combined with substances which increase opacity. 2) Colour of deposit of silver altered to render it less actinic. 3) Additions of further silver, mercury, chromium, uranium, lead, copper, and sulphur compounds are used for intensification.

**Intensity**, (phys.) factor of energy (q.v.), All forms of energy have *intensity* and *quantity*; I. in heat is temperature; in electr., voltage; in kinetic energy, velocity, etc.

**Intensive cultivation**, production of superior, or heavier, crops; methods: rotation of crops, treatment of ground (deep ploughing and manuring), use of hot-beds (q.v.), etc.

**Intentionalism**, philos. view that every action should be judged solely by the purpose inspiring it. "The end justifies the means."



Petticoat Insulator

**Inter** (Lat.), prefix, among, between. **I. alia**, among other things. **I. arma silēnt leges**, in time of war, laws are silent. **I. nos**, between ourselves.

**Intercostal neuralgia**, inflammatn. of the nerves betw. the ribs.

**Interdict**, prohibitive decree: ecclesiastical punishment debarring person(s) from certain rites of the Church.

**Interest**, (finan.) per cent. on capital paid (annually or otherwise) in return for its loan or deposit. **Rate of I.** varies accdg. to nature of investmt. **Compound I.** is reckoned on loans or deposits plus I. earned, i.e., lender returns I. to swell capital amount.

**Interference**, (phys.) reaction of waves on one anoth.; when 2 trains of waves of equal wave-length meet, they either give rise to a vibration in wh. their intensities are added (if they are in same *phase*, [q.v.]) or to one (may be zero) in wh. their intensities are subtracted (if in opposite phase). If the 2 waves are equally intense in the latter case, they annihilate one another. See also **DIFFRACTION**.

**Interim dividend**, dividend decided on at a gen. meeting of a co., payable to shareholders on 1st half of yr.'s working. **I.D.** often less than half of whole yr.'s dividend. **Final D.** is declared at end of yr. and balance betw. *final* and *interim* D. is then paid.

**Interior, Ministry of the**, name in some countries for dept. of govt. combining functions of Brit. Home Office and (former) Local Govt. Board (q.v.).

**Interlaken**, health resort, Switzerland, in Bernese Oberland, betw. lakes Thun and Brienz, on L. bank of Riv. Aar; pop., 4,000; tourist centre.

**Interlocking**, (rly.) inter-connection of rly. switches and signals, making their movements follow each other automatically; aims to ensure safety of trains passing through junctions, crossings, or stations.

**Interlocutory order**, made during progress of a legal action; does not finally dispose of rights of the parties.

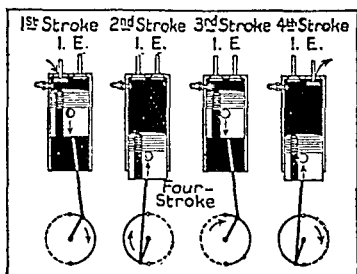
**Interludes**, species of dramatic performance forming trans. stage between *Miracle* and *Mystery* plays and drama proper; performed in intervals of banquets, etc.; didactic, but on variety of themes; e.g., Heywood's *Four P's*.

**Intermaxillary bone**, (anat.) small bone wh. receives the incisor teeth.

**Intermezzo**, "between the acts"; a short

opera; a piece inserted between the acts of a stage production, or at a time when the stage is unoccupied, as in *Cavalleria Rusticana*.

**Internal combustion engines**, 3 princ. varieties, gas engines; petrol and other light vapour motors; and Diesel (heavy oil) engines. In all mixture of air and gas or va-



Four-Stroke Internal Combustion Motor  
Stroke 1: Suck in Charge. 2: Compress and Explode. 3: Working Stroke. 4: Exhaust.  
I., Inlet; E., Exhaust.

pour is burnt in cylinder, producing pressure wh. propels piston. In gas and petrol E., charge (mixt. of gas and air) is sucked into cylinder on outward stroke, compressed on return stroke, exploded by elec. spark at beginning of 2nd outward stroke (see **TWO-STROKE MOTOR** for another cycle). In Diesel E., air only is compressed, but so strongly as to exceed ignition temp.; fuel oil is then sprayed in and ignites. For petrol a *carburettor* (q.v.) is required. All engines req. heavy flywheels, as drive is very uneven.

**International** (*Internat. Working Men's Ass.*). 1st I. fndd. 1864 in London by internat. congress, organised trade unions and workers' parties in West. Eur., in later years much under Marx's influence; Anarchist-Socialist split, Hague conference 1872; extinct 1876. 2nd I., fndd. 1889, fedrtn. of Nat. Socialist Parties, paralysed by outbreak of war, 1914; re-formed as *Lab. and Soc. Int.*, 1919. 3rd I. fndd. Moscow 1919, close-knit orgn. of Communist Parties. In 1933, on victory of Hitler, negotiations opened for alliance between 2nd and 3rd Internationals.

**International Chamber of Commerce**, fndd. 1920; a developmt. organistn. incldg., 1) *active members*: bank syndicates, indus. associatns., chambers of commerce (q.v.), etc.; 2) *individ. members*: leading commercial firms, banks, etc. *Object*, furtherance of world trade; has organised the *Commercial Court of Arbitration* for settling disputes betw. traders of diff. nationalities.

**International date-line**, meridian or hypothetical line on each side of wh. the date of the day differs, moving one day forward if the line be crossed from the East, one day backward if from the West. It follows the 180th merid. of longitude, with minor devia-

tions for taking in or excluding certain Pacific islands. *See* map, PACIFIC OCEAN: TIME CHART.

**International Federation of Trade Unions**, formed in 1913, in place of *I.T.U. Secretariat*, fndd. 1901; ceased to operate 1914 owing to World War; re-establd. after Congress at Amsterdam (1919); 24 countries now affiliated.

**International Labour Organisation** (I.L.O.), set up in 1919 by Versailles Treaty (*q.v.*), under Article xiii of constit. of League of Nations, to ensure, in all countries, workers' right of association, reasonable standard of wages, 8-hour day, and 6-day week, abolition of child-labour, equal remun. for men and women, and State inspection to enforce regs. for protection of employees. Governing body is the Exec. Bd. of Management, consisting of representatives of employers and workers from Belgium, Canada, France, Ger., Gt. Brit., India, It., and Japan.

**International law**, 1) *Public*: rules of conduct observed by civilised States governing relations betw. them. 2) *Private*: rules adopted by nations for dealing with conflict of nat. laws in cases arising betw. individuals.

**International Postal Union**, agreement betw. nearly all civilised countries for regulation of postal relations; largely due to efforts of German postal reformer Von Stephan; first treaty, 1875.

**International Trade Associations**, formed, as result of increasing internat. intercourse, for world-wide regulation of industry and indus. conditions, either on econ. or humanitarian grounds. I.T.A.s have been formed in recent years in connection with agriculture, air navigation, shipping, cotton-spinning, etc.

**Internode**, (bot.) space betw. 2 joints or nodes of a plant.

**Inter-parliamentary Union**, founded 1888, union of parliaments of various countries for interchange of ideas at conferences; promotes internat. arbitration.

**Interpellation**, parliamentary term, not in Eng. usage, for right of a member to question Government. *See* QUESTION; MOTION.

**Interpolation**, 1) Insertion in books, or texts, of words or phrases (*to interpolate*). 2) (Math.) Calculation of the dimension required betw. two given values. Anti.: *extrapolation*, calculation of a dimension outside a given number of values; based on assumption that the given points can be adequately represented by a continuous function, wh. can be calculated, of form  $y = f(x)$ , so that, the function being known, the value of  $y$  for any given val. of  $x$ , or *vice versa*, can be determined, *i.e.*, assumed that partic. value required is a point on the curve representing this function. Interpolation is used largely in chronological series and for subtabulation; extrapolation for forecasting.

**Interregnum**, period betw. death of a ruler

and accession of his successor, esp. applied to interval betw. d. of the Emp. Conrad IV (1254) and the election of Rudolf of Habsburg (1273); also to that betw. executn. of Charles I of Eng. and restoratn. of Charles II.

**Interrupter**, (elec.) appar. for quick autom. interruption of direct current. **Hammer I.**, *see* INDUCTION COIL. **Mercury I.**, a jet of mercury carrying current is interrupted by an insulating piece driven at high speed by an elec. motor.

**Inter-type composing machine**: *see* TYPE COMPOSING MACHINES.

**Interval**, (mus.) the relation between notes of different pitch.

**Intestacy**, (Eng. law) fact, or result of a person possessed of property having died without making a will. In Administration of Estates Act (1925) proportionate distribution of property among next of kin is laid down; Legitimacy Act (1926) provides that where the mother of illegitimate child dies intestate and without legit. issue, the child shall have same interest in her estate as though legitimate.

**Intestinal juice**, digestive fluid, secreted by glands of the intestine. **I. obstruction**, complete cessation of passage of faeces on account of blocking of the interior of the intestine; may be due to twisting of small intestine, to strangulation of intestine in a hernia (*q.v.*), etc. **I. paralysis**, inhibition of movements of intestine (peristalsis); may occur in peritonitis, or after abdominal operations. **I. ulcer**, ulcer of mucous membrane of intestine. **Duodenal ulcer** is fnd. in first part of small intestine; in typhoid, ulcers are fnd. in small intestine; in I. tuberculosis they may occur in small and larger intestine; in dysentery in large intestine.

**Intestinal tube**, soft rubber tube, abt. 10 in. long, and abt. the thickness of little finger, employed by passing it into the rectum (*q.v.*), to remove intestinal gases, or to wash out the intestine.

**Intestine**, that part of alimentary canal extending from stomach to anus. 1) **Small I.**, 23 ft. long, divided into 3 parts: from above downwards, duodenum, jejunum and ileum. 2) **Large I.**, 6 ft. long, divided into 3 parts: caecum, colon, and rectum. Digestion, wh. begins in stomach, is continued in I., the indigestible matter being secreted as faeces (stools). Rhythmic movement of muscles of I. (*see* PERISTALSIS) drives contents onward. I. fills greater part of abdominal cavity with its numerous coils.

**In toto** (Lat.), totally, entirely.

**Intrados** (bldg.): *see* SOFFIT.

**Intra muros** (Lat.), within the walls.

**Introit** (Lat.), entrance, anthem sung as priest goes up to altar to celebrate Mass.

**Intrusion**, (geol.) rock-vein which has been forced in molten condition into other rocks.

**Intuition**, instinctive mental perception derived without conscious reasoning. **Intuitionism**, philosophic view that the sense of good and evil is inherent.

**Inunction**, (med.) application of an ointment or oily substance to the skin; congenital syphilis in babies is often treated by mercurial inunction.

**In utrumque paratus** (Lat.), prepared for either alternative.

**Inv.**, abbr. *invenit* (q.v.).

**Invalides, Hôtel des**, building in Paris on l. bank of Seine; fndd., 1670, by Louis XIV as a refuge for aged or disabled soldiers; façade is 690 ft. wide, and the bldg. as a whole covers 16 acres; part is now used as barracks and part as military museum. The church of St. Louis on S. side of main courtyard was built by Jules Mansard, c. 1706; under the dome is the sarcophagus of Napoleon I, whose remains were removed from St. Helena and placed in this chapel in 1840; present tomb was made by order of Louis Philippe, 1841.

**Invar**, an alloy containing 64.3% steel and 35.7% nickel, of very small thermal expansion, and therefore used for pendulums and balances in clocks, and for various scientific instruments.

**Invenit** (Lat.), he (or she) designed it; abbr. *inv.*, often placed after the name of the original artist on copies of paintings, engravings, etc.

**Inveraray**, royal burgh, Argyllsh., Scot., on Loch Fyne; vill. and anc. castle; pop., 450.

**Invercargill**, tn. on S. coast S. Island, N. Zealand, on New River Harbour; pop., 24,100; centre of grazing and farming dist.; sawmills, breweries, foundries.

**Inveresk**, vill. on Firth of Forth, Midlothian, Scotland, 6½ m. S.E. Edinburgh, nr. battlefield of Pinkie. Paper manufacture.

**Invergordon**, police burgh and seapt., Ross and Cromarty, Scotland, on N. shore, Cromarty Firth; pop., 1,400; naval base in World War.

**Inverness-shire**, largest co. in Scot., area, 4,088 sq. m.; pop., 82,100; includes all the Outer Hebrides, except Lewis. Mountainous highlands (*Ben Nevis*, 4,406 ft.), deer forests, grouse moors, wooded country.

**Inverness**, co. tn., "capital of Highlands," on the Ness, at N. end of the Caledonian Canal; pop., 22,600; woollen industries, tourist centre.

**Inversion**, (chem.) conversion of a dextro-rotatory (q.v.), into a laevo-rotatory compound.

**Invertebrates**, (zool.) animals with no spinal column, e.g., insects, snails, worms.

**Invert sugar**, mixture of glucose (q.v.) and fructose, two simple sugars produced by heating cane-sugar with dilute acid. So called because the mixture is laevo-rotatory, whilst orig. cane-sugar is dextro-rotatory to plane of polarised light. See **POLARISATION**.

**Investiture**, formal bestowal of an office, benefice, etc., with the insignia, etc., pertaining to it; esp. (hist.) that of a bp., dispute as to which, betw. pope and emp., was adjusted by Concordat of Worms (1122), which settled that a bp. shd. be invested with spiritual power (by virtue of his ring and crozier) by pope, and with temporal power (by virtue of his sceptre) by the emperor.

**Investment**, (finan.) amt. of capital (cash or other securities) contribtd. by a person to a co. through purchase of shares or debentures (U.S. stocks or bonds); also applied to purchase of real estate, etc. **I. trust company**, finan. co. investing its capital in a large no. of diverse concerns and Govt. loans, affording best and safest rates of interest. Dividends are pd. out of income from invstmnts.; in Gt. Brit. income from turnover of invstmnts. is *not* distribtd. as dividends, but re-invested and goes to increase *hidden reserve* (q.v.). Amer. I.T.'s do not keep to this rule. See **FINANCIAL TRUSTS**.

**In vino veritas** (Lat.), "in wine is truth"; a drunken man shows his true self.

**Invisible exports and imports**: see **BALANCE OF INTERNATIONAL PAYMENTS**.

**Invoice**, statement concerning shipment of goods, incl. specifications, quantities, price, charges, discounts, method of transport, etc.

**Consular I.**, reqd. by U.S. Govt. for goods imported; verified by consul for purposes of *ad valorem* duty assessment. **Preferential Tariff I.**, or *Certificate of Origin* (q.v.), special form of I. used to obtn. pref. duty for Empire goods shipped to certain dominions, e.g., Canada, Australia.

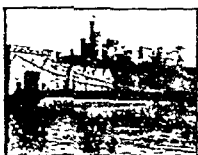
**Involution**, (med.) return of an organ to its orig. form and size after deformation due to physiol. causes, e.g., I. of uterus after childbirth.

**Io**, (Gr. myth.) a maiden beloved of Zeus; changed into a white heifer by Hera, who sent a gadfly to torment her.

**Iodine**, (chem.) element of halogen group (q.v.), sym. I.; at. wt. 126.932; sp.gr. 4.95; present in sea water, seaweeds, and Chile saltpetre (q.v.). A weak solution in alcohol (*tincture of I.*) widely used as antiseptic; thyroid gland (q.v.) secretes thyroxin, a hormone contng. iodine. *Potassium iodide* used in treatment of goitre. **Iodides** widely used in photography.

**Iodine State**: see **SOUTH CAROLINA**.

**Iodoform**, crystalline compound of iodine; yellow solid with peculiar, strong odour (CHI<sub>3</sub>); used as dry antiseptic for dressing wounds, etc.



Inverness Castle



**I.O.F.**, abbr. Independent Order of Foresters.

**I. of M.**, abbr. Isle of Man.

**I.O.G.T.**, abbr. Independent Order of Good Templars.

**Ion**, (chem.) an atom or group of atoms with an electric charge. May be present in gases or liquids, poss. also in solids. Ions formed in gases by 1) action of ultra-violet  $\alpha$  — or  $\gamma$  — rays; (2)  $\alpha$  — and  $\beta$  — rays from radio-active substances (*q.v.*); 3) action of powerful electric field upon a few Ions causes these to move very rapidly, and ionise neutral gas molecules by collision; 4) spontaneous ionisation by collision of gas molecules. Ionised gas is electrically conducting, and continues to conduct if voltage applied is sufficient to produce new ions continuously by collision. Hence phenomena of gas discharge tubes and electric arc. Ions in liquids are produced by spontaneous splitting up of dissolved substances. See **IONIC THEORY**.

**Iona**, isl., Argyllsh., Scot., Inner Hebrides, 3 m. by 10; cathed. (1203); landing-place St. Columba in 563; pop. 175.

**Ionia**, (anc. geogr.) dist., W. coast of Asia Minor; c. 9½ m. N. to S.; bounded on E. by Lydia; watered by Rivs. Hermus (Gediz-Chai), Cayster (Kutchuk Mendere), and Macander (Menderes Chai); colonised by Ionians (*q.v.*). In historical times, formed a league of 12 cities, incl. Miletus, Ephesus, and the isls. and cities of Samos and Chios; joined c. 700 B.C. by Smyrna (orig. Aeolic). Its common sanctuary (Panionium) stood on headland of Mycale, opp. Samos. Produced Ionian schools of philosophy and of art.

**Ionian Islands**, group of seven Gr. isls. off W. and S. coast of Greece; comprising Corfu, Cephalonia, Levkas (Santa Maura), Ithaca, Zante (Zakynthos), Paxos, and Cythera; area 1,090 sq.m.; pop., 264,500; mountainous (*Mt. Nero*, in Cephalonia, 5,311 ft.); wine, olives, fruit; marble, salt, sulphur; freq. earthquakes. Brit., 1815–1863.

**Ionian philosophy**, oldest Gr. school of natural philos. (Thales, Anaximander, Anaximenes, 5th and 6th cents. B.C.), wh. explained existence of universe in terms of matter, movement, and energy.

**Ionians**, one of the main divns. of the Gr. people. Trad. home N.E. Peloponnesus, whence they were expelled by Achaeans, migrating to Attica (Athens). Thence fndd. Gr. cities of Ionia (*q.v.*). Ionians of Asia Minor conquered by Lydians under Croesus (c. 560 B.C.); subject to Persians (after 546). *Ionian Revolt*, led by Miletus (500), and assisted by Athens and Eretria, brought about Persian Wars with Greece (490, 480). Indept. after 479. After invasion of Alexander the Great (334), subject to Macedonia until Rom. conquest of Asia Minor (190).

**Ionian Sea**, betw. W. Greece and S.E. Italy.

**Ionic order**: see COLUMN.

**Ionic theory**, theory formulated by Clausius and Arrhenius to effect that all acids, alkalis, and salts are split up (dissociated) when dissolved in water (and some other liq.) into *ions*, elec. charged atoms, or atomic groups; positively charged groups (metals, hydrogen, basic radicles such as ammonium) called *kations* (*q.v.*); negatively charged (acid radicles or non-met. elements), *anions* (*q.v.*). Charge on monovalent iron =  $156 \times 10^{-13}$  Coulomb; double this, etc., for divalent, etc. For *migration of ions* on passage of elec. current, see **ELECTROLYSIS**.

**Ionisation**, 1) (chem.) splitting up of a chem. substance into ions (*q.v.*); solutions in water, gases. Heaviside layer (see **WIRELESS TELEGRAPHY**) due to I. of air. 2) (Med.) The introduction of medicaments in the form of ions (zinc, mercury, quinine, etc.) into the body by passing an elec. current thr. a solution and the body.

**I.O.O.F.**, abbr. International Order of Odd Fellows.

**I.O.U.**, abbr. I owe you.

**I. of W.**, abbr. Isle of Wight.

**Iowa**, ("Hawkeye") State, U.S.A., betw. Mississippi and Missouri rivs.; 56,147 sq.m.; pop., 2,500,000; maize, wheat, potatoes, etc.; stock-breeding; coal-mining; cap., *Des Moines*.

**I.P.D.**, abbr. *in praesentia Dominorum* (Lat.), in the presence of the Lords (of Session—Scotland).

**Ipecacuanha**, plant indigenous to Brazil, also cultivated in Malaya. From root the well-known emetic (*I. wine*) is prepared. Chief active princ. is emetine.

**Iphigenia**, (Gr. myth.) dau. of Agamemnon and Clytaemnestra, offered as a sacrifice at Aulis when unfavourable winds hindered Greeks from setting out for Troy; rescued by Artemis and made priestess at Tauris, where her brother Orestes discovered her. **I. in Aulis**, and **I. in Tauris**, tragedies by Euripides (*q.v.*).

**I.P.I.**, abbr. *in partibus infidelium* (Lat.), in the regions of the unbelievers.

**Ipsambul**: see **ABU SIMBEL**.

**Ipsé dixit** (Lat.), he said it himself; phrase applied to a statement emanating from an authoritative source.

**Ipsissimis verbis** (Lat.), in these very words.

**Ipsso facto** (Lat.), by the fact itself; self-evident.

**Ipswich**, 1) co. tn., Suffolk, Eng., on Riv. Orwell; pop., 87,600; birthplace Card. Wolsey; agric. machinery, breweries. 2) River port, Mass., U.S.A.; pop., 6,000. 3) River port, Queensland, Australia; pop., 26,000.

**Iquique**, cap. prov. of Tarapacá, Chile, on Pacific Ocean; pop., 36,600; exports salt-petre, iodine; freq. earthquakes.

**I.R.**, abbr. Inland Revenue.

**Ir**, chem. symbol of Iridium.

**I.R.A.**, abbr. Irish Republican Army.

**Iran**, Asiatic plateau (alt. 450 ft.), bounded N. by Caspian Sea and Lowlands of Turkestan, S. by Persian Gulf and Arabian Sea, E. by *Hindu-Kush* and *Sulciman Mtns.*, and W. by Tigris Valley. **Eastern I.**, Afghanistan and Baluchistan; **Western I.**, Persia. See PERSIA.

**Iranian**: see LANGUAGE SURVEY, *Indian*, B group.

**Iraq**, independent Arab kgd., comprising Lower Mesopotamia and S. Kurdistan; bordered E. by Persia, N. by Turkey; N.W. by Syria, W. by Trans-Jordan, and S. by Arabian Desert; narrow seaboard at head of Persian Gulf; watered by Rivs. Tigris and Euphrates; under Brit. mandate until admission to League of Nations in 1932; divided into vilayets of Basra, Bagdad, and Mosul; area, 116,000 sq.m.; pop., 2,849,300 (1,494,000 Shiite Mohammedans, 1,146,700 Sunni Mohammedans). Soil, where irrigated, very fertile (cotton, dates, cereals); important oil wells; carpets and rugs; cap., Bagdad; other tns., Mosul, Basra (port on Persian Gulf); rly. from Basra to Bagdad. **I. Arabi**, lower Iraq; **I. Ajemi**, dist. centr. Persia.

**I.R.B.**, abbr. Irish Republican Brotherhood.

**Ire.**, abbr. Ireland.

**Ireland**, John (1879- ), Eng. composer; *The Forgotten Rite*, 1913. Four Preludes for pianoforte, 1915.

**Ireland**, westernmost and 2nd. largest of Brit. Isles, 31,836 sq.m.; divid. polit. into *Irish Free State* and *Northern Ireland*. Great Centr. Plain, surrounded by isolated mtn. ranges: N., *Sperrin Mtns.* (2,240 ft.) in Co. Tyrone; *Derryveagh Mtns.* (2,470 ft.) in Co. Donegal; W., *Connemara Mtns.* (2,695 ft.) in Co. Galway; S.W., *McGillivuddy's Reeks* (Carrantuohill, 3,414 ft., highest peak in Ire.) in Co. Kerry; S., *Galtee Mtns.* (3,000 ft.) in Co. Tipperary, *Knockmealdown* (2,609 ft.) and *Comeragh Mtns.* (2,470 ft.) in Co. Waterford; S.E., *Wicklow Mtns.* (3,039 ft.) in Co. Wicklow; N.E. *Mtns. of Mourne* (2,796 ft.) in Co. Down. Many rivers (Shannon longest riv. in British Isles, 240 m.); lakes or Loughs (Lough Neagh largest in British Isles, 150



sq.m.), incl. the famous *Lakes of Killarney*; much bog and peat-land. Coast, esp. on W., is deeply indented. The extensive rainfall is said to be cause of verdure of I. ("the Green Isle of Erin.") Little forest-land; few coalfields. In S. and W. much grassland (stock-breeding); agric. in N. and E. (oats, flax, and potatoes); linen industry in Belfast; valuable fisheries; brewing and distilling. Rlys. 3,750 m.; canals, 850 miles. **Irish Free State** (I.F.S.), estab. 1922, co-equal member of Brit. Commonwealth of Nations, consists of provs. of Leinster, Munster, and Connaught, with 3 counties of Ulster, viz., Cavan, Donegal, and Monaghan; area 26,600 sq. m.; pop., 2,952,000; cap., *Dublin*. Exports to Gt. Brit.: cattle, butter, eggs. Emigration in 1927, 27,150. **Northern Ireland**, popularly known as Ulster; six N. counties of Ire. forming part of the United Kingdom; area, 5,236 sq.m.; pop., 1,256,600; cap. *Belfast*. Emigration 1926, 12,844.

**HISTORY**: inhabitants orig. Celtic, converted to Christianity 5th cent. (St. Patrick). 9th to 11th cents. invasions by Danes, defeated by Brian Boru at Clontarf, 1014; afterwards by Anglo-Normans. Henry II declared Lord of Ireland, 1172 (title changed to Kg. by Henry VIII). Struggles betw. natives and colonists from 12th to 17th cents., culminating in rising of 1641. Repressive measures by Cromwell, 1649. Rising in favour of James II, 1688, put down by William III. Legislative independence granted, 1782; United Irish rebellion, 1798. Legislative union with Gt. Brit. 1800; Cath. emancipation, 1829; great famine, 1846; disestablishment of Anglican Church in Ireland, 1869. Demands for Home Rule both in Parliament, and with violence by Fenians and Land League. First Home Rule bill, 1886; second, 1893; third, 1912. Threats of rebellion in Ulster interrupted by World War. Rebellion in Dublin, 1916, mainly organised by Sinn Fein (*q.v.*). Dominion self-government granted to S. Ireland, 1922. Cosgrave, President; succeeded, 1932, by De Valera, a republican and separatist.

**Irenæus**, St., Bp. of Lyons, Father of the Ch.; mart. c. 202; *Contra Hæreticos*, prob. c. 180.

**Ireton**, H. (1611-51), Eng. parliamentary gen. and regicide; Cromwell's son-in-law; a prime mover in Pride's Purge (*q.v.*); Lord Deputy in Irel. 1650; d. at Siege of Limerick.

**Iridescence**, sheen having delicate tints of the spectrum, e.g., floating oil, mother-of-pearl, etc., caused by interference (*q.v.*).

**Iridium**, (chem.) sym. Ir; at. wt. 193.1; sp.gr. 22.41; m.p. 2350°C.; hard silvery metallic element; alloy with platinum used to



very freq. prescribed in med. as a tonic, as it is a constituent of haemoglobin, the red colouring matter of the blood. **Salts of I.**, two series of salts formed by I.: ferrous (divalent) and ferric (trivalent). Ferrous salts are oxidised, when moist, by air. Ferrous sulphate,  $\text{FeSO}_4$ , green vitriol, extensively used in the arts. Ferric chloride,  $\text{FeCl}_3$ , used in medicine, in treatment of anaemia. **I. mould**, stains on textiles produced by iron-rust or ink; may be removed by applying weak solution of salts of lemon in hot water, and immed. washing in cold water. **I. ores**, minerals containing iron; chief varieties: *magnetite* or loadstone, *haematite*, *limonite*, wh. are oxides of iron; *siderite* or spathic iron ore, a carbonate of iron; *iron pyrites*, sulphide of iron. **I. oxides**, compounds of iron and oxygen; ferrous oxide,  $\text{FeO}$ , black powder, catches fire spontaneously in air. Ferric oxide,  $\text{Fe}_2\text{O}_3$ , red powder common mineral (and ore of iron) haematite, artif. product known as "rouge" and "Venetian red," used

as an abrasive and polishing material, as a protective paint for iron-work, also as red colouring agent for paper, rubber, and pottery. Magnetic oxide,  $\text{Fe}_3\text{O}_4$ , mineral lodestone (*q.v.*), black; formed by action of steam on red-hot iron. Used as electrode material and as pigment in printing. Strongly magnetic.

**Iron Age**, term for prehistoric era in Eur. and W. Asia following on Bronze Age (c. 1000 B.C.). So called from fact that iron replaced bronze as metal commonly used for weapons, tools, and ornaments. Principal divns.: *Hallstatt* and *La Tène* periods (*qq.v.*).

**Ironbridge**, tn., Salop, in par. of Madeley, adjoining Coalbrookdale; iron bridge (1779) across Riv. Severn; pop., 3,000.

**Ironclad**, 1) former name for ship of war. 2) **I. magnet**, electro-magnet with coil surrounded by iron.

**Iron Cross**, Pruss. milit. decoratn., inst. 1813, revived in 1870 and 1914; 2 classes; also Grand Cross, Gold Star (awarded only to Blücher and Hindenburg).

**Iron crown**, royal crown of Lombardy, used for imperial coronatns. from Henry VII (1312) till Napoleon I (1804); the iron fillet (covered with gold and jewels) said to be a nail from the true Cross; restored to Italy, 1866, and now preserved at Monza; see *Illus.*, CROWN.

**Iron Gates**, 1) defile Riv. Danube, betw. Orsova and Torno Severin. 2) Narrows, Vardar Vall., nr. Strumitza.

**Iron law of wages**, (econ.) theory origntd. by *Physiocratic school* (*q.v.*), and develpd. by Ricardo, Malthus, and Lassalle, that as wages depend on supply and demand of labourers, a

rise in wages leading to increase of labouring population will be followed by fall of wages, so that condition of working classes cannot be permanently improved under capitalist system. It was taken as axiomatic that increase of wages must be followed by increase of population, though Malthus saw the possibility of "moral restraint."

**Iron Mask**, Man in the, unknown polit. prisoner in the Bastille from 1698 until his death in 1703. Many theories as to his identity have been propounded.

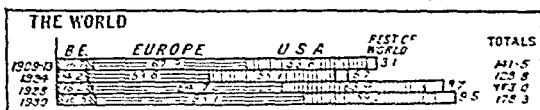
**Ironside**, Edmund, see EDMUND 2).

**Ironside**, Sir Wm. Edmund (1880– ), Brit. gen.; c-in-c., Allied Forces, Archangel, N. Russ., 1918–19.

**Ironsides**, name given to Parliamentary soldiers in Eng. civil wars.

**Iron wood**, timber of a particularly hard kind obtained from a variety of American, African, Australian, and Asiatic trees.

**Irony**, subtle or covert sarcasm, the speaker conveying a meaning opposite from



Iron-Ore Production

the literal meaning and thereby expressing ridicule, contempt, or dissent.

**Iroquoian**: see LANGUAGE SURVEY, Amer. languages.

**Iroquois**, group of native tribes of N. Amer., formerly very warlike; now numbering only abt. 17,000; semi-agricultural.

**Irradiation**, (med.) exposure to rays from a lamp, most commonly to ultra-violet light from carbon-arc or mercury-vapour lamp. Causes browning of the skin, similar to sun-tan, and leads to formation of vitamin D in the body; used in treatment of rickets. Other kinds of light rays, e.g., infra-red, are also used, but are not of proved scientific value.

**Irrational**, incompatible with reason.

**I. numbers**, (math.) those numbers wh. cannot be repr. by vulgar fractions but are expressed by incommensurable decimal fraction, e.g.,  $\sqrt{2} = 1.41421 \dots$ . **Irrationalism**, philos. view that understanding and reason alone cannot lead to knowledge, but require the aid of emotion.

**Irrawaddy**, **Irawadi**, chief riv., Burma; formed by union of two streams in N.; flows past principal cities of Burma, incl. Mandalay, into wide delta (12 mouths: only Rangoon Riv. and Bassein Riv. navigable); principal artery of traffic in country; length c. 1,100 m.; navigable to Bhamo (600 m.).

**Irredenta**, *Italia Irredenta* ("unredeemed Italy"), polit. society fndd. 1878 to promote union of all Ital-speaking territories (e.g., Trentino, Trieste) with It.; in a gen.



Iron Cross

sense, used to denote all territories polit. separated from States to wh. race or language affiliates them.

**Irregulars**, *irregular troops*, forces outside the regular milit. establishment.

**Irrigation**, process by which land is supplied with water for agricultural purposes. In *basin* system, land is surrounded by banks and flooded; in *perennial* system, water, derived either from rivers or pumped from wells, is distributed by a system of canals. Water storage by building dams across rivers (e.g., Aswan and Sukkur dams) often enables vast tracts of desert country to be rendered fertile.

**Irrigator**, (med.) vessel from wh. fluid is made to flow at varying pressure through a tube. For injection and continuous washing, e.g., of surface of a wound.

**Irtish**, riv. (c. 2,600 m.), Russia, trib. of Riv. Ob; flows from *Altai Mtns.*, near Mongolia, through W. Siberia; navig. for c. 2,000 m. to Semipalatinsk.

**Irvine**, royal burgh and seapt., Ayrsh., Scotland, on Firth of Clyde, at mouth Riv. Irvine (29 m.; flows past Kilmarnock); pop., 12,050; shipb., brewing, chemicals.

**Irving, Edward** (1792-1834), Scot. divine; fnder. of Cath. Apostolic Church (q.v.); schoolmaster at Kirkcaldy, 1812; friend of Carlyle; minister at Hatton Garden chapel, 1822; famous as preacher; blt. new church at Regent Square, London; gave enthusiastic support to phenomenon of "speaking with unknown tongues"; incurred charge of heresy from tract *The Orthodoxy and Catholic Doctrine of Our Lord's Human Nature*, 1830; prosec. failed, but he was removed from his church; condemned for heresy concerning the sinlessness of Christ by Presbytery of Annan, 1833. **I., Sir Henry** (1838-1905), Brit. actor; 1st actor knighted (1895); originally named John Brodribb; buried in Westminster Abbey. **I., Wash- ington** (1783-1859), Amer. auth., satirist, and humorist; *The Sketch Book of Geoffrey Crayon, Gent.*, 1820.



Sir Henry Irving

**Irvingites**, members of the Catholic-Apostolic Church, visionary sect founded c. 1831 by Edward Irving (q.v.).

**Irwell**, riv. (30 m.), E. Lancs; rises nr. Burnley; flows S. to Manchester, thence W. or S.W. to Irlam, where it joins Riv. Mersey and is connected with Manchester Ship Canal.

**Irwin**, Edw. Fredk. Lindley Wood, 1st bn. (1881- ), Brit. politician; son of 2nd Halifax; M.P., 1910-25; Under-Sec.

of State for Colonies, 1921; pres. of Board of Education, 1922-24; Minister of Agriculture and Fisheries, 1924; Viceroy of India, 1926-31; secured temporary accommodation with Gandhi (q.v.) leading to 1st Round Table conference.

**Isaac**, (O.T.) Hebr. patriarch, son of Abraham and Sarah; m. Rebecca; father of Jacob and Esau (Gen. xv-xxxv).

**Isabel** (1370-1435), wife of Charles VI of Fr.; with Burgundians, concluded Treaty of Troyes, 1420, whereby Henry V of Eng. was to be Kg. of Fr. on death of Charles.

**Isabella**, three Eng. qns. consort: **1. of Angoulême** (d. 1246), dau. of Aymer, Ct. of Angoulême; m. Kg. John, 1200. **1. of France** (1292-1358), dau. of Philip the Fair; m. Edw. II, 1308; aided by Roger Mortimer, obtained deposition of the kg. and ruled Eng. during minority of Edward III. **1. of France** (1389-1409), dau. of Charles VI; m. Richard II of Eng., 1396.

**Isabella: 1) I. of Castile** (1451-1504), *the Catholic*, Qn. of Castile; unified Spain by her m. with Ferdinand of Aragon, 1479; assisted Columbus, 1492. **2) Isabella II** (1830-1904), Qn. of Sp., deposed, 1868.

**Isaiah**, (O.T.) greatest of Hebr. prophets whose writings are extant (late 8th cent. B.C.); venerated by rabbis as 2nd only to Moses. **Bk. of I.**, believed to be composite work of 2 authors of different periods; chaps. i-xxxix relate to hist. of Israelites; chaps. xl-lxvi (Deutero-Isaiah) foretell coming of Messiah.

**Isar**, riv., Bavaria, trib. of Danube; rises in Tyrolean Alps, at alt. of 5,845 ft.; length 183 m., passes through Munich, joining Danube below Deggendorf; electric power stations.

**I.S.C.**, abbr. Indian Staff Corps.

**Ischia**, volcanic isl., Gulf of Naples, Italy; area, 26 sq.m.; warm springs; orchards, vineyards; cap., *Ischia* (pop., 30,000).

**Ischium**, (anat.) under-part of hip-bone.

**Ischl**, watering-place in the Salzkammergut (Upper Austria), salt and sulphur springs; winter sports centre; pop., 2,400.

**Isère**, 1) dépt., France; area, 3,180 sq.m.; pop., 584,000; minerals include silver, iron, copper, lead, coal; glove-making; cap., *Grenoble*. 2) Riv. in dépt., left trib. of Riv. Rhone.

**Ishii**, Kikujiro, Visct. (1866- ), Jap. diplomat; concluded *Gentlemen's Agreement* with U.S.A., 1907; pres. of Council League of Nations 1923, and acting pres. of Assembly (1926).

**Ishmael**, (O.T.) son of Abraham by Hagar (Gen. xvi).

**Ishtar, Astarte**, Babylonian and Assy. goddess of Love and Fertility. **1. Gate**, Babylon, built by Kg. Nebuchadnezzar (605-562 B.C.); now in Berlin.

**Isidore of Seville** (c. 560-636), Span. historian and schol.; abp. of Seville; *De Fide Catholica contra Judaeos*, ed. by K. Weinhold, 1874; *Originum sive Etymologiarum* ed. W.M. Lindsay, 1911.

**Isidorian decretals:** cf. FALSE DECRETALS.

**Isinglass**, high quality of gelatine made from air-bladders of fish, esp. of sturgeon fam.; best obt'd. from Russia and Brazil; inferior qualities made from hides.

**Isis**, anc. Egypt. goddess, consort of Osiris (q.v.), represented with cow's horns and the solar disk; in Graeco-Rom. art, holding a cornucopia and sistrum (q.v.).

**Isis**, local name of Riv. Thames at Oxford.

**Islam** (Arab., "renunciation"), Mohammedanism, the most recent of the great religions of the world; belief in one God (*Allah*), in the prophetic office of its founder, *Mohammed* (c. A.D. 570-630), in the holy men of God (including Jesus and John), in paradise, angels and the day of judgment; the ordained conversion of all unbelievers to I. led to its spread over N. Africa, S. Europe, and S. Asia by means of Holy Wars; teaching contained in the *Koran*; precepts and rites in *Sunna* and *Hadith* (tradition); *Caliphs*, successors of Mohammed; Believers (*Moslems*) split up into orthodox *Sunni* (c. 210 mill.), the *Shi'ah* (c. 10 mill.), and the *Khawarij* sect; reform movement initiated by *Wahabis* (1691-1765; revived after Gt. War, now occupy Mecca and other Holy Places); principal feast, *Bairam*; fast in month *Ramadan*; prayer made 5 times daily in direction of Mecca, the Holy City containing the *Kaaba* (q.v.), to which pilgrimages are made.

**Islay**, isl. (235 sq.m.), Argyllsh., Scot., W. of Jura, southernmost of Inner Hebrides.

**Isleworth**, par. S.W. Middx., on Riv. Thames, 10 m. W.S.W. London; pop., 40,000; part of Greater London. Contains Syon House (Duke of Northumberland) on site of Brigittine Convent (fndd. 1415).

**Islington**, met. bor., N. London, Eng.; pop., 321,700; Agricultural Hall; horse and cattle and other shows and exhibitions.

**Ismail**, tn., Bessarabia, Rumania, on Chilia arm of Riv. Danube; pop., 38,100; corn trade.

**Ismailia**, tn., Egypt, on Lake Timsah (Suez Canal); rly. junc.; headqrs. Canal administration; pop., 16,000.

**Ismail Pasha** (1830-63-95), Khedive of Egypt; forced to abdicate, and succ. by his s. Tewfik Pasha, 1879.

**Ismid** (anc. *Nicomedia*), tn., Asia Minor, on Gulf of Ismid; pop., 15,050; fruit-growing; apricots, olives (gardens); fisheries; shipping.



Isis

**Isnik**, Turkish tn., Asia Minor, on the Lake of I.; pop., 11,300.

**Isobar**, line on map joining places at wh. barometric pressure is same on an average for a given period, or at a specified time.

**Isochromatic**, or **orthochromatic**, having correct colour value. **Isochromatic plate**, special photographic plate wh., by addition of aniline dyes, is made as sensitive to colour as the human eye and hence gives results showing correct distribution of light. Non-I. plates are more sensitive to blue than to red.

**Isochronous**, of equal duration. **Isoclinic**, **isogonic**, terms applied to lines on map joining respectively places where magnetic needle has same inclination, and places where the dip or declination of magn. needle is the same. **Isohyct**, **isohyp**, lines on map connecting respectively places with equal rainfall during given period, and places of equal elevation.

**Isocrates** (430-338 B.C.), Gr. orator and teacher.

**Isolating languages**, term appl'd. by W. v. Humboldt to langs. formed by addit. of particles with their own form and meaning to uninflected root-sylls., e.g., Chinese.

**Isolde**, in Celtic legend, beloved of Tristan, wife of Kg. Mark of Cornwall.

**Isomers**, substances wh., though composed of same number of same atoms, possess diff. chem. characters and properties, owing to atoms being differently arranged. **Isomerism**, power of forming isomers.

**Isometric projection**, projection of three-dimensional objects upon plane surface (drawing paper) by parallel lines, so that effect of perspective view is obtained, but without convergence of parallel lines in object to vanishing points.

**Isonzo**, riv., Upper Italy, rises Julian Alps, and flows into Gulf of Trieste by two mouths, Sdobba and Isonzato; length 81 m. Scene severe fighting in World War betw. Italians and Austrians.

**Isoprene**, (chem.),  $C_5H_8$ , b.p.  $37^\circ C$ .; volatile liquid obt'd. from turpentine and by destructive distillation of pure rubber; changes by polymerisation, on heating with metallic sodium, into substance closely resembling natural rubber.

**Isotherm**, line on map joining places wh. have same mean temperature for a given time or period.

**Isotopes**, (chem.) atoms having same chem. properties but diff. atomic weights (q.v.). Actual elements are mostly mixtures of diff. isotopes, at. wts. of wh. are nearly whole numbers. Mixture generally in constant proportions, hence constancy of ordinary at. wt. Lead (q.v.) is an exception, that formed by radio-active decay of uranium having at. wt. 206, and of thorium 208, while

common lead = 207.2. By means of radio-active I. of common elements their chemical changes can be followed with extreme delicacy, since small trace of radio-active I. always follows bulk of element.

**Ispahan, Isfahan**, tn., prov. of Iraq-Ajemi, Persia, on Riv. Zaindeh; pop., 81,200; mosque, palaces, ruins, gardens, orchards; leather, gold and silver work.

**Isparta**, tn., W. Anatolia, Turkey; pop., 15,860; textiles.

**Israel**, (O.T.) 1) Name given to Jacob, progenitor of 12 tribes of Israel, after his struggle with the angel (Gen. xxxii. 28). 2) Name of the kgdm. of the 10 north. tribes who separated from south. tribes (10th cent. B.C.); kgdm. ended (722 B.C.) when these tribes were carried into captivity. **I. in Egypt**, oratorio by Handel (q.v.), 1739.

**Israel von Meckenem**, (c. 1440-1503), Dut. etcher.

**Israels**, Josef (1824-1911), Dut. painter: *The Silent House*, 1858; *Shipwrecked*, 1862.

**Issachar**, (O.T.), patriarch, son of Jacob and Leah; fndd. one of 12 tribes.

**Issue of securities**, (Stk. Exch.) floating of loans; placing of loans in hands of investing public. **I. price**, price at wh. shares or debentures are issued (or floated) to public; may vary slightly from nominal price.

**Issuing banks**, banking concerns having right to issue bk. notes. Central bks. are always I.B., sometimes having sole right to note issue; I.B. usu. give discount and Lombard loans (q.v.) and pay sum credtd. in bk. notes. If gold standard is in operation they are obliged to change bk. notes on demand for gold or silver coin or bullion. Object of I.B. is adaptatn. of circultn. of coin, notes, and credit. to reqmts. of community without undue inflation of money, or cramping trade by shortage of money to pay for goods (deflation). In Gt. Brit. gold backing is reqd. for all notes issued except for a legal specifd. amt., called the *fiduciary issue*; amt. of fiduciary issue was fixed by Currency Note Act (1928) at £260,000,000; since suspension of gold standard, amt. temporarily incrd. to £275,000,000. Many issuing bks. organised accdg. to ratio system wh. places no highest limit for issuing of bk. notes, and establishes a ratio btw. gold backing and issue of bk. notes; in some countries legislt. imposes taxes on bk. notes issued beyond a cert. total. In Gt. Brit., B. of Eng. is I.B., and a few bks. in Scot. have limited issuing powers; in France, Banque de France; in Ger., Reichsbank and a few other bks. with limited issuing powers; privileged centr. I.B. in most Europ. countries; in U.S.A. national bks. and Federal Reserve banks (qq.v.) hold right of issuing notes. **I. house**, financial firm doing business of issuing shares or Govt. loans to public on behalf of the borrowers. I.H. guarantees

that whole issue will be taken up, usu. arranging for underwriting (q.v.). Underwriters charge a fee, and if full loan is not subscribed take up their share of it. I.H. may charge furth. *over-riding* fee, also paid by borrower as part of expenses of *flotation*. In U.S.A. shares are taken up by the I.H.s, who retail or sell them to the public through banks, bond salesmen, etc.

**Issyk-kul, Tuz-kul**, lake in Tien Shan Mtns.; alt. 5,300 ft.; area, 1,950 sq.m.

**Istanbul**, offic. Turk. name of Constantinople (q.v.).

**Isthmian games**, one of the four great festivals of anc. Greece (Olympic, Pythian, Isthmian, Nemean games), held every two years on Isthmus of Corinth. Independence of Greece proclaimed at games of 196 B.C. by Flamininus, and again in A.D. 67 by Nero.

**Isthmus**, narrow neck of land connecting 2 large parts, as continents (*I. of Panama*), or a penins. with mainland (*I. of Corinth*).

**Istria**, rocky penins., N. Adriatic; numerous harbours; cap., *Pola*. Austrian till 1919; now Italian.

**Isvolsky**, Alexander Petrovich (1856-1919), Russ. diplomat; Ambassador at Paris, 1910-17.

**I.T.**, abbr. Idaho Territory.

**Itacolumite**, a variety of laminated sandstone found on Mt. Itacolumi in Brazil.

**Italia**, Ital. state shipping co., formed 1932 by amalg. of other cos.; holds (Aug. 1933) with *Rex* (50,100 tons) the Blue Riband of the Atlantic (Gibraltar-New York, 3788 m.; 4 d. 13 hr. 50 m.).

**Italian**: see LANGUAGE SURVEY, *Romance languages, Group A*. **I. reed**, *Arundo donax*, plant cultivd. for ornamental use. **I. salad**, meat, fish, veg. and spices, with dressing.

**Italy**, kgdm., S. Europe, comprising the centr. and smallest of the three S. European peninsulas. Projects into the N. Mediterranean, dividing it into Adriatic Sea (E.) and Ligurian and Tyrrhenian seas (W.). Separated on N.W. from France by W. Alps; on N. from Switzerland by W. and Centr. Alps, and from Austria by E. Alps; and on N.E. by a less well defined frontier from Yugoslavia. Ital. territory includes isls. of Sicily (sep. fr. mainland by Str. of Messina) and Sardinia (Tyrrhenian Sea), as well as abt. 70 smaller isls. (Elba, Pantellaria, Lipari Isls., Aegadean Isls., etc.) and the enclave of Zara on the Dalmatian coast. Area, 120,650 sq.m.; pop., 42,120,000. Coast-line fairly uniform, esp. on east. In S. the Gulf of Taranto cuts into mainland, forming penins. of Lecce (E., at the narrowest part of the Adriatic or Str. of Otranto) and Calabria (W.), respectively the "heel" and "toe" of Italy.

N. Italy comprises the basis of the Po



(longest riv.) and Adige, with innumerable tribs. flowing from the Alpine barrier: Monte Rosa (15,200 ft.), highest mtn., partly in Switzerland. From Ital. Riviera the long range of the Apennines extends E., then S.E., shutting off N. Italy from the penins. section. On the Swiss frontier is the region of the Ital. lakes (Maggiore, Como, Lugano). L. Garda, largest N. Ital. lake, is S.E. of these. The rich alluvial soil of N. Italy, sheltered from northerly winds, well watered by Alpine streams, and extensively (7,700 sq.m.) irrigated, is favourable to agriculture (two ann. crops, chf. wheat and maize). Utilisation of hydro-electric power has made the Po Valley Italy's greatest industrial region (four-fifths of all Ital. factories); manuf. include silk, artificial silk, cotton, woollens, gloves, hats, hosiery, footwear, machinery, motorcars; chf. tns.: Milan (indust. cap. of Italy), Turin, and Venice.

Centr. and S. Italy may be regarded as three distinct regions. The *Apennines*, extending for 750 m. to Str. of Messina and reappearing in Sicily, form the backbone of It.; soft limestone, much disintegrated; water scarce; largely deforested. In the W. are small parallel ranges, occasionally volcanic (only *Vesuvius* active); region given over to cattle- and sheep-breeding; fauna include foxes, wolves, bears, and wild boars. In extreme S. of Calabria climate is subtropical.

The *W. Coastal Plain*, reaching to the foot of the Apennines, has a mild and equable climate; rich volcanic soil watered by mtn. streams; chf. agric. products, oranges, lemons, olives, dates, figs, vines, pomegranates, sugar cane; unhealthy Campagna being reclaimed for cultivation; fisheries (tunny, sardine, anchovy); marble quarries at Carrara; few manufactures; flourishing hotel trade; chf. tns.: Rome (cap. of Italy), Naples, Genoa, Leghorn.

The *E. Coastal Plain*, on the Adriatic, is warm in summer but exposed in winter to N.E. winds from the Balkans; soil fertile and well watered; chf. tns. (ports) Ancona and Brindisi.

Northern Italy is divided into seven regional divisions: Piedmont, Liguria, Lombardy, Veneto (Venezia Euganea), Venezia Tridentina, Venezia Giulia (incl. Zara), and Emilia;

centr. and S. Italy into 9: Tuscany, Marches, Umbria, Latium, Abruzzi e Molise, Campania, Apulia, Basilicata, and Calabria; Sicily and Sardinia bring the total up to 18. Overseas possessions: *Eritrea*, on Red Sea coast; *Ital. Somaliland*, on Indian Ocean; *Libya* (Tripolitania and Cyrenaica), N. Africa; *Rhodes* and *Dodecanese*; see separate articles.

**CONSTITUTION:** amended 1928. Kg. head of govt.; Benito Mussolini (g.v.) virtual dictator; legislation by Senate (appointed by kg.) and Chamber of Deputies (elected by universal suffrage, subject to certain qualifications); executive power vested in Grand Fascist Council, appointed and controlled by Mussolini.

**HISTORY** (anc.; see **ROME**): on extinction of



W. Empire in 476, It. became the kgdm. of Odoacer (cap., Ravenna); Odoacer defeated by Ostrogoth kg. (Theodoric), 488; Ostrogoths deposed by Justinian, 553, with assistance of Lombard mercenaries, who ruled harshly from Pavia. Intervention of Franks and alliance with the Pope, 756. Charlemagne crowned emperor at Rome in 800. In 9th-10th cents. the Saracens ravaged S. Italy and the Huns and Magyars the N. Otto of Saxony started line of Ger. emperors. 961. Norman conquest of Sicily c. 1100. Investiture reforms of Gregory VII (Hildebrand), 1075, caused controversy, settled by Concordat of Worms, 1122. Rise of city re-



publics, Genoa, Florence, Milan, Venice, Bologna, Pisa, Rome, continually at war with one another. Barbarossa (q.v.) invaded Italy 5 times. His g.s., Frederick II, reduced city states, which revolted against his harsh rule, 1250. Factions of Guelph *versus* Ghibelline. In 1260 the Pope obtained intervention of Charles of Anjou. Revolt of Sicily, 1282. Rudolph of Habsburg granted the Pope territory later known as the Papal States, 1278. Transfer of papacy to Avignon ("Babylonian Captivity"), 1303. Rule of inept despots in 14th century. By mid. 15th cent. It. divided into Milan, Venice, Florence, Naples, and Papal States (Papacy re-established in It. by Nicholas V, 1447). Renaissance c. 1350-1550 (q.v.). In 15th-16th cents. It. several times invaded by the French; sack of Rome by imperial troops, 1527; and in 1530 Charles V conquered Florentine repub. (subsequently grand-duchy under Medicis). Whole of It. became dependent on Spain except Papal States, which steadily grew in size and importance. Philip II of Spain became ruler of Italy 1559. After War of Span. Succession (ended 1713) Austria secured Milan, Naples, and Sardinia. Following War of Polish Succession (1738), Span. Bourbons on throne of kgdm. of Two Sicilies. Italy again redivided after War of Austr. Succession (1748); period of peace, reform, and prosperity. Fr. invasion, 1792; Napoleon fndd. Cisalpine and Ligurian repubs., 1796, and crowned himself kg. of It. at Milan, 1805. Fr. dominion extended to Naples, 1808, and to Papal States, 1810. Introduction of *Code Napoléon* paved the way for Ital. unity. By Congress of Vienna, 1815, Naples incorporated with Sicily under Ferdinand I, Papal States restored to the Pope, Lombardy and Venetia to Austria, Piedmont, Sardinia, Savoy and Nice to Victor Emmanuel I, and various minor states in N. to their former Bourbon owners. Repressive policy followed by unsuccessful revolts in 1848 and 1849 (Milan, Venice, Rome; Rom. Republic headed by Mazzini). Treaty of Paris, 1856, provided that France, in return for helping Sardinia expel Austrians from It., should receive Savoy and Nice. France and Sardinia defeated Austria at Magenta and Solferino, 1859, expelling Austria from Lombardy. Garibaldi took Sicily and Naples for It. 1861, and in 1862 made abortive attack on Rome. Kgdm. of United It. (cap. Florence) 1861. It. allied with Prussia agst. Austria in Austro-Prussian war, 1866, and obtained Venetia from Austria. In 1870 Victor Emmanuel occupied Rome and completed Ital. unity. Joined Germany and Austria in Triple Alliance, 1882 (renewed 1891 and 1902). Establd. protectorate in Abyssinia and founded colony of Eritrea, 1890; war with Turkey, 1911, and annexation

of Tripolitania and Cyrenaica. Joined Triple Entente, 1915, and at Peace of Versailles, 1919, obtained S. Tyrol as far as Brenner Pass, Trieste, Istria, Dalmatian islands, and Fiume. Fascist coup d'état 1922 (dictatorship under Mussolini in 1922 (trans. on Rome). Concordat with Vatican 1929).

**Itch, The:** see SCABIES.

**Item,** 1) sep. article or entry in an account; 2) (archaic) likewise; used to introduce enumeration.

**Ithaca, Thiaki,** 1) one of Ionian Is. (q.v.), trad. home of Ulysses (but see LEROS); area 45 sq.m.; cap., *Ithaca*; pop., 2,500. 2) Tn., New York, U.S.A.; univ.; pop. 20,000.

**Ito, Hirobumi,** Pr. (1841-1909), Jap. statesman; drafted Jap. Constitution (1888); formed Anglo-Jap. Alliance, 1902; Res. Gen., Korea, 1905-09; assassinated.

**Ivan IV, the Terrible** (1530-84), Grand Duke of Muscovy; crowned Czar of Russia, 1547; 1st to assume title.

**Ivanhoe,** historical novel by Scott (q.v.). 1820; scene laid in Eng. during reign of Richard Cœur de Lion.

**Ivanovo-Voznesensk, tn.,** Russian S.F.S.R., centre of adminis. prov., (c. 48,000 sq.m.; pop., 372,810), 155 m. N.E. of Moscow; pop., 162,275. Important cotton and linen factories. Communist univ. for training Marxist propagandists, 1929.

**Iveagh, Edward Cecil Guinness, 1st E.** (1847-1927), Brit. brewer and philanthropist; gave £250,000 towards housing of poor in London and Dublin; another £250,000 towards clearing slum area in Dublin, and a further £250,000 for Lister Institute for Preventive Medicine, London; completed purchase of Ken Wood for nation, 1925; created bn. 1891; visct., 1905; earl, 1926; succ. by his son, **Rupert Edw. Cecil Lee Guinness, 2nd Earl of I.** (1874- ), M.P. 1908-10, 1912-27.

**Ivinghoe, vill. in the Chilterns, Bucks,** 9 m. E. Aylesbury; *Ivinghoe Beacon* (811 ft.) Nat. Trust property. Suggested name of "Ivanhoe" to Scott.

**Ivory,** material formg. tusk of elephant grtr. pt. imported into Eur. fr. Africa; chief distrib. marts Lond. and Antwerp; *I. carving* at its best in 13th century. **I.-black,** animal charcoal, prepared as pigment.

**I. nut:** see COROZO PALM.

**Ivory Coast,** coastal region, Upper Guinea, W. Africa; many lagoons; mainly Fr. colony (*Côte d'Ivoire*). 125,070 sq.m.; pop., 1,866,000; cap., *Abidjan*.

**Ivy, Hedera,** climbing evergreen plant; many varieties. Common ivy is *H. helix*; yellowish flowers and black berries. *Polka*



ivy, *Rhus toxicodendron*, is a woody vine; green flowers, cream-coloured fruit.

**I.X.**, abbr. *Iesus Christus*.

**Ixion**, (Gr. myth.) Kg. of the Lapiths (q.v.), father of Pirithous. Became, by a phantom of Hera, father of a Centaur. Punished for ingratitude to Zeus by being attached to a perpetually rolling wheel.

**I.Z.**, abbr. I Zingari (cricket club).

**Izarra**, Span. liqueur sim. to yellow Chartreuse (q.v.).

**Izhevsk**, chf. tn. of Votjak, autono. Russian area, betw. Viatka and Urals; pop., 63,200; steel foundries; arsenal.

**Izmir**, offic. Turk. name of Smyrna (q.v.).

**Izzet Pasha** (1870- ), Turk. statesm. and gen. during World War; Min. of Int., 1920.

**J.**, abbr. judge.

**J.A.**, judge advocate.

**Jabiru**, large bird of stork family, native of tropical America.

**Jablunka**, mtn. range on Czech-Polish frontier, continuing the W. Beskid chain of the Carpathians. *J. Pass* (1,840 ft.) crossed by railway.

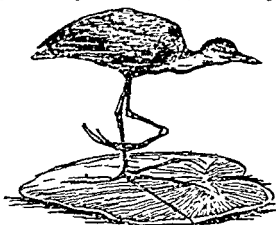
**Jaborandi**, *Pilocarpus pennatifolius*, shrub of S. Amer. from dried leaves of wh. a medicinal drug is obtained.

**Jabot**, lace ruff or pleated cravat, used in 18th cent. on men's shirts; now worn only by women.

**Jac.**, abbr. *Jacobus* (Lat.) James.

**Jacamar**, S. Amer. bird, abt. 20 species; green plumage; resembling kingfisher.

**Jacanã**, brilliantly coloured bird; shield on forehead, very elongated toes; mainly found in S. Amer. and India.



Jacanã

**J'accuse** (Fr. I accuse), title of Zola's open letter in favour of Dreyfus, 1898; also of anti-German book written during the World War by Dr. Richard Grelling, trans. from the German, 1921.

**Jack**, name for various machines and contrivances: 1) Turning-spit formerly used in roasting meat. 2) Device for lifting heavy weights, e.g., motor car, usu. screw or rack-and-pinion. 3) (Elec.) Socket adapted to receive a plug connector. 4) (Sport) In bowls, ball used as mark. 5) (Zool.) Young pike.

**Jackal**, carnivorous wolf-like mammal. Many species in S. Asia, S.E. Europe, and Africa. Nocturnal, rarely hunting in packs, living on carrion and the remains of animals killed by lions and tigers; cowardly.



Jackal

**Jackdaw**, bird of the crow tribe found throughout Britain, Europe, and in parts of Asia and Africa; sociable in habit, feeding and travelling in flocks; nests in hollows in cliffs, trees, church towers, and ruins; feeds on insects, worms, and seeds.

**Jackson, Andrew** (1767-1845), 7th Pres. U.S.A., 1829-37; of Irish parentage; fought against Eng., 1812-14; subdued Seminole Indians, 1818. **J., Hon. Sir Francis Stanley** (1870- ), Brit. politician; cricketer; M.P., 1915-26; financial sec. to War Office, 1922-23; chairman of Unionist party, 1923-26; Gov. of Bengal, 1927-32. **J., Sir Barry Vincent** (1879- ), Eng. theatrical manager, producer, and playwright; fndd. Birmingham Repertory Theatre; *Fifinella*; *The Christmas Party*. **J., Thos. Jonathan**, "Stonewall" (1824-63), Amer. Confederate Gen.; commdd. rt. wing, Fredericksburg, 1862; accidentally shot by own men at Chancellorsville.

**Jackson**, cap., Mississippi, U.S.A., on Pearl Riv.; pop., 48,300; cotton, iron-foundries, agric. products.

**Jacksonville**, tn., Florida, U.S.A. on St. John's Riv.; pop., 129,550; commerc. centre; lumber, naval stores, phosphates.

**Jacob**, (O.T.) patriarch, son of Isaac and Rebecca; his 12 sons were fndrs. of Tribes of Israel. **J.'s ladder**, (bot.) blue-flowered herb, *Polemonium*, with ladder-like arrangement of leaves; (naut.) rope-ladder with wooden rungs. **J.'s staff**, obsolete instrument for measurement of astronomical angles; also 3 bright stars in belt of Orion (*q.v.*).

**Jacobi**, Frederick (1891- ), Amer. composer.

**Jacobins**, named after their place of assembly, the former monastery of St. James in Paris, a famous polit. club, founded 1789 at Versailles; from 1791 determined the radical trend of Fr. Rev.; dissolved after fall of Robespierre (*q.v.*).



Jacobin  
Cap of Liberty

**Jacobin Cap**, Cap of Liberty, Phrygian Cap, originally the headdress of the galley slaves of Marseilles, after their liberation in 1792 became the symbol of the Revolution.

**Jacobites**, supporters of House of Stuart after their expulsion from Gt. Brit. in 1688. Rebel. in Scot., under Old Pretender 1715; and under Young Pretender 1745.

**Jacobs**, Wm. Wymark (1863- ), Brit. short-story writer and novelist; *Many Cor- goes*, 1896; *The Lady of the Barge*, 1902; *The Castaways*, 1916; *Sea Whispers*, 1926.

**Jacobsen**, Jens Peter (1847-85), Dan. auth.: *Marie Grubbe*, 1876; *Niels Lyhne*, 1880.

**Jaconet**, 1) soft white cotton fabric of medium thickness; 2) dyed cotton cloth, glazed on one side, used for linings.

**Jacquard**, Joseph (1752-1834), Fr. weaver; inv. *Jacquard loom*, by wh. cert. processes hitherto performed by hand were carried out mechanically.

**Jacquerie** (1358), a Fr. peasants' rising after the invasion of Edward III; crushed, but attended by great devastation and slaughter.

**Jade, Jahde**, deep bay of N. Sea, Oldenburg, Ger.; area, 73 sq.m.; on W. side is port of Wilhelmshaven (*q.v.*).

**Jade**, hard, fibrous nephrite (*q.v.*), silicate, varying in colour from white to green; cut and polished for ornaments.

**Jaeger**, Light Infantry or Rifle Regts. (*q.v.*) in the Ger. and Aus. armies. **J. clothing**, trade name for hygienic clothing made of sheep's wool, introd. by zoologist, Gustav Jaeger.

**Jaffa, Joppa**, seapt., Palestine; pop.,



Jaffa Harbour

47,900; exports wine, oranges; railway to Jerusalem. Occupied by Brit. forces under Allenby, 16 Nov., 1917.

**Jaffna**, cap. of N. prov. of Ceylon, on N.W. Coast, pop., 42,510; exports rubber, copra, tea.

**J.A.G.**, abbr. judge-advocate-general.

**Jagellons**, Pol. dyn., 1386-1572, fndd. by Jagello. See LADISLAUS.

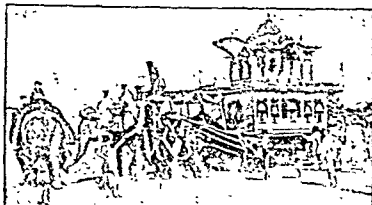
**Jagersfontein**, tn., Orange Free State, 65 m. S.W. Bloemfontein; pop., 4,000; diamond mines; "Excelsior" diamond (971 carats) found here, 1893.

**Jaguar**, member of cat family, resembling in size and markings a large leopard; confined to tropical S. and Centr. America. Strongest and fiercest of American carnivores; inhabits outskirts of forests and wooded banks of lakes and rivers; also a black variety.

**Jainism**, ascetic religious system reputedly fndd. by Mahavira, a contemp. of Buddha (*q.v.*); offshoot from Brahmanism, and intermediate betw. this and Buddhism;

gave to India many of her most ancient monuments. Divided into 2 parties: *Digambaras* (Sky-clad Ones) and *Swetambaras* (White-robed Ones); latter can be traced back only to 5th cent. A.D.; former probably as old as 6th cent. B.C.

**Jaipur, Jeypore**, 1) native State, Rajputana, India; area, 15,580 sq.m.; pop., 2,632,000; centre of State a sandy plateau;



Maharaja of Jaipur's State Carriage

salt, marble, gold wares, textiles. 2) Cap. of State; pop., 144,100; coll.; observatory; fine gardens.

**Jalap**, dried tubercles of *Ipomoea purga*, climbing Mexican plant; used in medicine as a powerful purgative.

**Jaluit**, principal isl. of the Marshall Group, in the Pacific; area, 66 sq.m.; pop., 9,675; copra and sugar exports.

**Jamaica**, largest Brit. isl. in the W. Indies, one of the Greater Antilles; area, 4,455 sq.m.; pop., 955,000 (15,000 whites, 700,000 Negroes); surface mountainous (*Blue Mtns.*, 7,388 ft.); climate tropical; exports bananas, coconuts, oranges, sugar, rum, coffee; cap., *Kingston*.

**James, St.**, 1) son of Zebedee, brother of John; apostle; martyred A.D. 44; patron St. of Spain; day, July 25th. 2)

**J. the Less**, one of the 4 brothers of Jesus, also known as *J. the Just*; 1st Bp. of Jerusalem; martyred A.D. 62; day, May 1st.

**James, Kings of 1) Engl.:**

**J. I** (1566-1603-1625), see J. VI OF SCOTLAND. His g.s., **J. II**, and s. of Charles I,

(1633-1685-1701), fled to Fr. 1688; d. at St. Germain. 2) *Scotland: J. I* (1394-1406-

37), s. of Robert III; in captivity in Eng., 1406-23; m. Jane Beaufort, dau. of E. of Somerset; wrote two poems, *Kings Quair* and *Good Counsel*; murdered at Perth by E. of Atholl and Sir Robert Graham; his s., **J. II** (1430-37-60), m. Mary of Gueldres, 1449; accidentally killed at siege of Roxburgh Castle; his s., **J. III** (1451-60-88), m.



James I of England  
(James VI of Scotland)



James II of England

Margaret of Denmark, 1469; murdered after battle of Sauchieburn, where roy. troops were deftd. by rebel force led by kg.'s s., **J. IV** (1473-88-1513), m. Margaret, dau. of Henry VII of Eng., 1502; deftd. and slain at Flodden Field; his s., **J. V** (1512-13-42), m. Madeleine, dau. of Francis I of Fr., 1537, and, after her death, Mary of Guise, 1538; d. shortly after defeat by Eng. at Solway Moss; his g.s., **J. VI** (1566-67-1625), s. of Mary Qn. of Scots and Lord Darnley; procl. kg. on Mary's abdication, 1567; succ. to throne of Eng. as **James I** (q.v.), 1603.

**James, Henry** (1843-1916), Anglo-Amer. novelist and critic; *Daisy Miller*, 1878; *The Bostonians*, 1886; *Princess Casamassima*, 1886, etc. **J.,**

**Montague Rhodes** (1862- ), Brit. scholar, bibliographer, and writer; provost of Eton, 1918; Trustee of Brit. Mus.; F.B.A., 1927; *Ghost Stories of an Antiquary*, 1905. **J.,**

**William** (1842-1910), bro. of Henry; Amer. philos.; fndd. Pragmatism (q.v.); *Varieties of Religious Experience*, 1902; *A Pluralistic Universe*, 1909.

**James**, riv. (450 m.) Virginia, U.S.A.; rises in W. of State; flows generally E., past Richmond, into Chesapeake Bay through Hampton Roads (q.v.).

**James, Epistle of**, (N.T.) addressed, prob. by J. the Less, to Hebr. Christians outside Palestine.

**James Francis Edward Stuart**, the *Old Pretender* (1688-1758), son of James II of Eng. Landed in Scot. in attempt to regain throne (1715), but ret'd. to Fr. within a month.

**James Ross Island**, ice-bound island in the Antarctic; highest point 7,050 ft.

**Jameson**, Sir Leander Starr, 1st Bt. (1853-1917), Brit. physician; joined Cecil Rhodes (q.v.); administ. of Rhodesia, 1891. Leader of **J. Raid**, an invasion of the Transvaal Dec. 29, 1895, to Jan. 2, 1896, by a small force of Britishers for purpose of assisting Uitlanders in Johannesburg to overthrow Boer Government. The raid was ill-timed and ended in defeat at Doornkop and capture of Jameson, who was tried and convicted in London 1896 under Foreign Enlistment Act; Pr. Min., Cape Colony, 1904; promoter of union of S. A. States.

**Jammes**, Francis (1868- ), Fr. poet and novelist; *Ma France Poétique*, 1926.

**Jammu and Kashmir**, native state, Himalayas, N.W. India; area, 84,000 sq.m.; pop., 3,645,300 (Mohammedans); high mtns. and fertile valls. (*Vale of Kashmir*, or valley of Upper Jhelum, 106 m. long, 37-44 m. wide); fruit, rice, cattle, Kashmir goats (see CASHMERE); cap., *Srinagar*. Includes prov.

of Ladakh and Baltistan and claims suzerainty over prov. of Gilgit (q.v.).

**Jamtland**, prov. N. Sweden; 22,000 sq.m.; pop., 134,450; wooded hills; nomadic Laplanders and reindeer in mtns.; only tn., *Östersund* (pop., 14,450); timber trade.

**Jane Eyre**, novel by Charlotte Brontë (q.v.), 1847; partly autobiographical.

**Janiculum**, hill in Rome, on right bank Riv. Tiber.

**Janina**: see YANNINA.

**Janissaries**, guards of the Sultan, orig. formed from Christian captives, c. 1335; obtained great power but disbanded 1826.

**Janissary music**, Turk. milit. music.

**Jan Mayen**, volcanic isl., N. Polar Sea, betw. Spitsbergen and Norway, 143 sq.m.; highest pk., *Beerenberg* (8,365 ft.); seal and whale fisheries; meteorol. and wireless station. Annexed by Norway, May 8, 1929.

**Jansen**, Cornelius (1585-1638), Dut. theologian; Bp. of Ypres; fndd. *Jansenism*, based on teachings of St. Augustine; *The Augustinus*, pub. posth., 1640.

**Jansenism**, theol. system orig. by Jansen, Bp. of Ypres (1585-1638, aiming to restore primitive doctrine and discipline to the R.C. Ch. from within, and closely resembling Calvinism; declared heretical by R.C.Ch. (Clement XI's bull, *Unigenitus*, 1713); survives in Ch. of Holland.

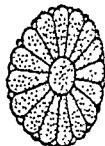
**Januarius**, St., patron st. of Naples; said to have been Bp. of Benevento; martyred c. 305; his head and two phials of his blood are in Naples cathed.; the coagulated blood liquefies when brought near the head; commem. Sept. 19th.

**January**, 1st month, of 31 days, named after Rom. "two-faced" deity, Janus.

**Janus**, anc. Rom. god of the Four Seasons and of gates, represented with two faces, looking different ways; temple in the Forum, the gates of wh. were closed in peace, open during war.

**Japan, Nippon**, isl. empire, E. Asia, betw. Sea of Japan and Pacific Ocean; comprises four main isls., *Hokkaido* (*Yezo*), *Hondo* (Honshu, or Nippon), *Shikoku*, and *Kyushu*; penins. of Korea, on N. coast of China; isl. of Formosa, S. part of isl. of Sakhalin; Kuriles betw. Hokkaido and Kamchatka; Ryukyu Isls., S. of Kyushu; Pescadores Isls., W. of Formosa; and over 4,000 small islands. Terr. of Kwantung, S. Manchuria, leased by China to Japan. In addition: *Mandates*, Marianas or Ladrões, Caroline and Marshall Islands (Pacific group). Area (excluding Kwantung and mandated terr.) 260,600 sq.m.; pop., c. 90 million (Shintoists and Buddhists).

Coast-line irregular; many natural harbours; Inland Sea betw. Hondo, Kyushu,

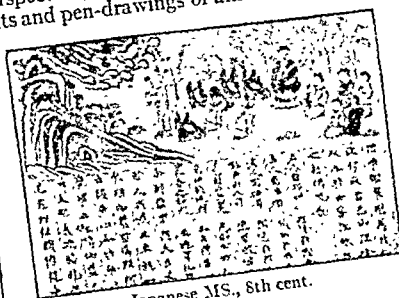


JAPAN

and Shikoku; surface mountainous, with dormant (*Fujiyama*, 12,400 ft.) and active volcanoes; subject to earthquakes and tidal waves; many short rivs. (none navigable). lakes and waterfalls. Climate temp. in N. subject to monsoons, subtropical in S. (typhoons). In N. are found deciduous trees, and soya beans, rice, wheat, millet, hemp, and tea are cultivated; in S. are palm, bamboo, camphor, lacquer and mulberry trees. A feature of Jap. scenery is the profusion of camellias, wistarias, and plum, cherry, and peach blossoms. Fauna include alpine hares, deer, and bears in N., and monkeys and giant salamanders in S. Minerals: coal, copper, antimony, sulphur. Japan now a great mfg. country: iron and

account of reefs, sandbanks, currents, and typhoons; cold N. current along China coast; warm S. current along Japanese coast.

**Japanese art and literature**, art, esp. architecture, orig. under Chin. influence; plastic art developed most strongly in masks for theatre; painting without shading or perspective; no oil painting; coloured woodcuts and pen-drawings of animals, plants, and



Japanese MS., 8th cent.



steel works, ship., etc. Fishing important. Exports: porcelain, tea, silk, copper. Chf. tns. *Tokio* (cap.), Osaka, Nagoya, Kobe, Kyoto, and Yokohama. *Constitution*: Constitutional monarchy under emperor; Upper and Lower Houses; Privy Council.

**HISTORY**: Japan received religion and culture from China c. 600 B.C.; warfare of feudal rulers and court officials during Mid. Ages; discovered for Eur. by Mendes Pinto, 1542; autocracy in 17th cent.; evolution of constitutional govt.; policy of isolation until 19th cent. when J. became most powerful Asiatic State in politics; U.S.A. enforced opening of certain ports to foreigners, 1853; adoption of Eur. culture and industry; 1894-95, successful war against China (annexation of Formosa); 1902, Anglo-Japanese treaties. Victorious in Russo-Jap. War of 1904-05; took S. Sakhalin and leased Kwantung from China. Annexed Korea, 1910. Joined Allies in World War, occupying Kiaochow (q.v.) and Ger. Pacific Is. In 1932 war with China, attacked Shanghai; erected semi-indept. state of Manchukuo (Manchuria); occupd. prov. of Jehol. J. now a first-class Power. **Sea of J.**, sea betw. N. China and Japan, dangerous on

genre-studies; leading master, Hokusai (1760-1849); applied art, porcelain, lacquer, enamel, carved ivory. *Literature*, from 8th cent. A.D. orig. lyrical; *Songs of the Geisha*, 14th cent. The Nô dramas were played with masks; they include mysteries, plays of chivalry, farces (Kyôgi) and popular drama (Kabuki); followed later by developmt. of puppet-theatre in prose, *The Book of Tea*, by Okakura Kakuzo. **J. language**: see LANGUAGE SURVEY, Altaic Languages. **J. religion**, pre-hist., ancestor- and nature-worship; in-hist., ancestor- and nature-worship; incorporated (6th cent.) with Buddhism and (18th cent.) Shintoism; in a purified form; principal gods: Izanagi the Creator, Amaterasu (goddess of the sun), Juari (god of pro-duce), and many local deities; the emperor and prominent men also deified. See SHINTOISM; BUDDHISM. **J. rose**: see KERRIA.

**Japheth**, (O.T.) son of Noah, tradit. ancestor of Aryan races (Gen. v).

**Japonica**, *Pyrus* or *Cydonia* J., Japanese quince; shrub bearing white or red flowers wh. blossom in winter or early spring.

**Jardinière** (Fr.), ornamental flower stand. **À la Jardinière**, meat dish served with vegetables.

**Jargon**, debased speech employed for partic. interests and pursuits, e.g., financial jargon, sporting jargon.

**Jargoon**, transparent variety of zircon (q.v.).

**Jarl**, chieftain in early Norway and Denmark. Cf. EARL.

**Jarrah**, hard, heavy, close-grained wood of species of eucalyptus, found in W. Australia; largely used for shipbuilding.

**Jarrow-on-Tyne**, munic. bor., Durham, Eng., 6 m. E. Newcastle; shipb., iron, lead, and copper works; ruins Saxon monastery; pop., 32,000.

**Jas.**, abbr. **r. James.**

**Jasher**, Bk. of, collection of old Hebr. ioned twice in O. Testament.

**Jasmine**, *Jasminum officinale*, or *J. grandiflorum*, East Indian plant, producing fragrant white blossoms from which perfume is extracted. Cultivated in S. of France and other warm regions.



Jasmine

**Jason**, in Gr. myth., hero, sailed with the Argonauts to Colchis, where he stole the Golden Fleece with help of Medea, whom he wedded.

**Jasper**, opaque red, yellow, or brown variety of quartz; a semi-precious stone cut as a gem.

**Jassy**, Jasi, tn., Rumania, cap. dept. on Riv. Pruth; pop., 185,000 (two-thirds Jews); Gr. Orthodox and Rom. Cath. bps.; trading centre (cereals, petroleum, cattle, wine).

**Jastrow**, Morris (1861-1921), Amer. orientalist; native of Poland; prof. of Semitic langs. at Pennsylvania Univ., 1885; pubd. *The Civilization of Babylonia and Assyria*, 1915; *The Eastern Question and its Solution*, 1920.

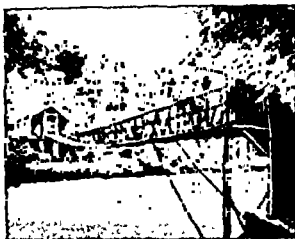
**Jaundice**, condition in wh. skin assumes a greenish-yellow tint owing to presence of bile in the blood; a symptom occurring in various diseases of the liver, gall-bladder, and blood.

**Jaunting car**, Irish two-wheeled open seats set sideways, back to back.

**Jaurès**, Jean (1859-1914), Fr. politic. and historian; unified Fr. Socialist Party; strong pacifist; murdered on outbreak of World War; *His Oeuvre Social. de la Reconn. Française* (8 vols.).

**Java**, Isl., Malay Archipelago, Dut. E. Indies; area, incl. Mal.

50,800 sq. m.; pop., 37,433,760 Mal. Euro-Asians; mountainous throughout; 46 volcanoes, many active; Java (Ser. Kra-12,140 ft.; Sunda Strait); N.W. coast marshy; katua in S. luxuriant; extensive cultivation of rice, coffee, tea, tobacco, spices, sugar, india-rubber, copra, tapioca, indigo, sumac, iodine; native indus., batik, tin, petroleum; cap. Batavia. **J. Sea**, shallow sea betw. S.E. Sumatra, Java, and Borneo; numerous islands.



Javanese Hanging Bridge

**Javelin**, a light spear. **J.-throwing** and **J. skull**: see PITHECANTHROPUS.

**Javelin**, a light spear. **J.-throwing** and **J. skull**: see PITHECANTHROPUS.

throw, 239 ft. 3 1/4 in. by Jaervinen (Finland), 1930.

**Jaw**, bones of the face in wh. the teeth are set. *Upper jaw-bone* is fixed, the *lower* is movable, sideways as well as towards and away from upper jaw. Latter is hollow above the gums. **J.-crusher**, machine for breaking large lumps of hard material, granite, operating by pair of jaws which open and close, material being crushed and, finally, falling betw. them.

**Jay**, bird of crow tribe; *Eur. J.* is most brightly plumaged of the British *Corvidae*, common in woodland country; has a harsh and strident call, but sometimes imitates notes of other birds; feeds on insects, seeds, berries, and occasionally the eggs and young of other birds. American species are the *Canada (Whisky-jack)* and the *blue jay*.

**Jazz**, technique of rhythm and stress peculiar to American-Negro dance music. See RAGTIME; SYNCOPATION.

**J.C.**, abbr. 1) Jesus Christ; 2) Julius Caesar; 3) *Juris-Consultus* (jurisconsult).

**J.C.D.**, abbr. *Juris Civilis Doctor* (Lat.), Doctor of Civil Law.

**J.D.**, abbr. *Juris Doctor* (Lat.), Doctor of Law.

**Jean Paul**: see RICHTER, J. P. FRED.

**Jean**, Sir James (1877- ), Brit. physicist and astronomer; *The Universe Around Us*, 1929.

**Jebel**, Arab. term for mountain or mtn. range.

**Jebeil**: see BYBLOS, 1).

**Jedburgh**, co. tn. and royal burgh, Roxburgh, Scotland; pop., 3,100; abbey ruins (1118). See JEDDART JUSTICE.

**Jedda, Jidda**, port, Hejaz; on Red Sea; pop., 25,000; exports: spices, mother-of-pearl, henna, rubber, wool.

**Jeddart justice**, proverbial expression for summary justice of hanging culprit first and trying the case afterwards; said to be derived from an incident at Jedburgh, Scotland, temp. James VI. Cf. LYDFORD LAW.

**Jefferies**, (John) Richd. (1848-87), Eng. writer; known chiefly for his description of nature; *The Gamekeeper at Home*, 1878; *Wild Life in a Southern County*, 1879; *Life of the Fields*, 1884; *Amaryllis at the Fair*, 1884.

**Jefferson**, Thos. (1743-1826), 3rd Pres. of U.S.A. (1801-9); fndd. Democratic-Republican party; Louisiana Purchase (1803).

**Jefferson City**, cap., Missouri, U.S.A., on Missouri Riv., pop., 21,600; State capital with statue of Thomas Jefferson; Lincoln Univ. for Negroes (fndd. 1866); rly. workshops, clothing, tiles; airport.

**Jeffreys**, Geo., 1st Bn. J. of Wem (1648-



Jeans

89), Eng. judge; Ld. Chanc. (1685); notoriously harsh (see BLOODY ASSIZES); d. in Tower of London, where he had been imprisoned after attempted escape with James II.

**Jehad** (Arab.), sacred war, waged by Moslems agst. nations of another creed; (fig.) campaign agst. a doctrine or policy.

**Jehoram, Joram**, (O.T.) 1) Kg. of Israel (896-884 B.C.); killed in revolt of Jehu; 2) Son of Jehoshaphat; Kg. of Judah (849-841 B.C.).

**Jehoshaphat**, (O.T.) Kg. of Judah (914-889 B.C.); defeated, with Ahab (q.v.), at Ramoth-Gilead, by Kg. of Syria (II Chron., xvii-xx).

**Jehovah**, Hebr. designation of God; mispronunciation of *Yahweh*. **Jehovistic**, portions of *Pentateuch*, those in wh. God is known as Jehovah.

**Jehu**, (O.T.) 1) Kg. of Israel (842-815 B.C.); caused Jezebel to be killed. 2) Son of Mimshi who "driveth furiously" (II Kings, ix, 20); name hence applied to reckless driver.

**Jehuda Leone**: see HE-BRÄUS.

**Jellicoe** of Scapa, John Rushworth J., 1st E. (1859- ), Brit. adm.; c-in-c. Grand Fleet, 1914; 1st Sea Ld., 1916; Gov. New Zealand, 1920-24; *The Crisis of the Naval War*, 1920.

**Jelly**, gelatinous or glutinous substance; juice of fruit boiled with sugar; congealed gravy obtained from bones.

**Jellyfish**, free-swimming Scyphomedusa, with large, generally umbrella-shaped disk, and 4 long arms, which surround and hang down from the edge of the mouth, for the capture of prey. The common jellyfish (*Aurelia*) is a typical example.

**Jemadar**, native officer of the Ind. Army = 2nd lieutenant.

**Jemappes**, tn., prov. of Hainault, Belgium; pop., 15,500; coal, iron. Scene of defeat of Austrians by Fr. Revolutionary troops under Dumouriez, 1792.

**Jena**, tn., Thuringia, Germany, on Riv. Saale; pop., 53,000; univ. (1558); optical works (Zeiss); school of optics; centre seismological research. Scene of Prussian defeat by Napoleon, 1806.

**Je ne sais quoi** (Fr.), I know not what; applied to some quality felt to exist, but indefinable.

**Jenghis Khan, Temuchin** (1155-1227),



Jellicoe



Jenghis Khan

Mongol Emp.; created empire stretching from China Sea to Dnieper River.

**Jenkins' Ear, War of**, (Gt. Brit. and Sp.) in 1739. Its immediate cause was the allegation of an Eng. mariner, Robert Jenkins, that his ear had bn. chopped off by the Spaniards.

**Jenner**, Edward (1749-1823), Eng. physician; first successfully to practice vaccination (q.v.), 1796; *Inquiry into the Cause and Effects of the Variolae Vaccinae*, 1798.



Jenner

**Jenny**, (text.) first mechanical spinning machine, known as Hargreaves' spinning j., based on spinning wheel. Invtd. by James Hargreaves, 1760.

**Jensen, Adolf** (1837-79), Ger. composer. **J., Wilhelm** (1837-1911), Ger. novelist. **J., Johannes Vilhelm** (1873- ), Dan. novelist.

**Jenson, Janson** (d. c. 1481) Nicolas, Fr. printer; first to use roman type.

**Jephtha**, oratorio by Handel (q.v.), 1752.

**Jephthah**, judge of Israel (12th cent. B.C.); defeated Ammonites; sacrificed his only daughter to fulfil a vow (Jud. xi).



Jerboa

**Jerboa**, small rodent ranging from Algeria thr. Egypt, N. Arabia, to E. Persia and Centr. Asia. Long tail and very long hind legs with which it jumps; essentially desert-haunting animal.

**Jeremiah**, (O.T.) prophet (c. 650 B.C.); fl. during reign of Josiah and his sons. **Bk. of J.**, hist. of Judah until after destruction of Jerusalem in 586; foretells duration of Captivity and fall of Babylon. **J., Lamentations of**: see LAMENTATIONS. **Jeremiad**, lamentation, mournful complaint.

**Jeremy, Epistle of**, (O.T.) name given to 6th chap. of Bk. of Baruch (q.v.) purporting to be written by Jeremiah to exiles in Babylon; date uncertain.

**Jerez de la Frontera, Xeres**, tn., Cadiz, Sp.; pop., 64,900; vineyards (sherry); traces of Moorish occupation. Scene of Arab victory over Visigoths (711), resulting in conquest of Spain.

**Jericho**, vill., Palestine, nr. Riv., Jordan and Dead Sea; pop., 1,000; in time of Christ, "city of palms," with fine buildings; destroyed during Crusades; captured by Brit. in World War, 21 Feb., 1918.

**Jerkin**, short, close-fitting jacket worn over the doublet; buff leather J. worn by soldiers in 16th and 17th centuries.

**Jeroboam**, (O.T.) son of Nebat; 1st kg. (10th cent. B.C.) of 10 seceded tribes of



Israel; countenanced idolatry. **J. II** (8th cent. B.C.), son of Joash.

**Jerome, St.** (c. 340-420), Father of the Church; trans. O.T. into Latin by order of Damasus I; see VULGATE.

**Jérôme** (1784-1860), bro. of Napoleon I; Kg. of Westphalia, 1807-13; see BONA-PARTE.

**Jerome**, Jerome K., (1859-1927), English humorous auth.: *Three Men in a Boat*.

**Jerrold**, Douglas Wm., (1803-57), Brit. dramatist, humorist and satirist; son of actor, Saml. Jerrold; midshipman, 1813-15; unsuccessful in management of Strand Theatre, 1836; constant contributor to *Punch*. Comedy: *More Frightened than Hurt*, 1821; *Mrs. Caudle's Curtain Lectures*, 1846.

**Jersey**, largest of Channel Isls., 14 m. from coast of Normandy; 45 sq.m.; pop., 50,500; mkt.-gardening (potatoes, tomatoes); Jersey cows; fisheries; cap., *St. Helier*.

**Jersey City**, tn., New Jersey, U.S.A., on Hudson Riv., opposite New York; pop., 316,715; iron and steel works, machinery; meat packing.

**Jerusalem** (Heb. *Jerushalayim*; Arab. *Kuds-al-Sherif*), walled cap. of Palestine; pop., 93,000 (57,000 Jews, 18,500 Christians, 18,000 Moslems); situated on plateau betw. Vall. of Kedron and Vall. of Hinnom; city has



Gate in Jerusalem

four anc. quarters: Mohammedan (with Mosque of Omar) and Christian (with Ch. of Holy Sepulchre) in N., Armenian and Jewish in S. J. occupies two rocky ridges, the E. ridge or Lower Town (City of David) being 2,250 ft. and the W. ridge, or Upper Town, 2,600 ft. abv. the sea. Rom. Cath., Anglican, Gr. Orthodox, and Armenian catheds.; Hebr. univ.; rlys., to Jaffa and Egypt. In 585 B.C. J. was sacked by the Chaldeans; rebuilt, 445; destroyed by the Syrians, 168; freed by the Maccabees; became Roman in 63 B.C.; destroyed in 70 A.D. by Titus (revolt of the Jews); Christian under Constantine the Great; captured by the Arabs in 633; 1099-1187, cap. of independent Latin Christian kgdm.; Turkish, 1517; entered by Brit. troops on 9 Dec., 1917; now cap. Brit. mandated territory (see PALESTINE). **Synod of J.** (1672,) promulgated vital statement of faith of Orth. Gr. Ch.; rejected Calvinistic views of Predestination and Justification by faith alone, also the Filioque Clause).

**artichoke**, var. of *Helianthus* (SUNFLOWER), cultivd. for its edible

tubers. *Jerusalem* is a corruption of "girasole" (Ital. sunflower).

**Jervaulx Abbey** (pron. "Jarvis"), 12th-cent. Cistercian ruin, N. Riding, Yorks, 5 m. S.E. Leyburn.

**Jester**, orig. a minstrel, later a buffoon, attached to princely courts down to 18th century.

**Jesuats**, relig. congregation founded by St. John Colombini and confirmed (1367) by Urban V; later called "Aquavita Fathers" from their distillation of alcoholic liquor.

**Jesuits**, the Society of Jesus, R.C. religious order, founded by Ignatius Loyola in 1539, whose members are designed to mix continually with the world "that they may overcome its evil"; rapidly grew into an important international factor; because of their alleged or actual interference in politics have been expelled from many countries. No foundation for pop. impression that they act independently of the Pope, to whom they acknowledge complete obedience, though under immediate control of their own "General" (the "Black Pope").

**Jesus Christ**, (N.T.) founder of Christianity; material for biog. contained in 4 canonical gospels, esp. 3 *Synoptic Gs.* (*q.v.*); b. in reign of Herod the Great (c. 4 B.C.) at Nazareth or Bethlehem; son of the Virgin Mary (Joseph's wife), in direct line of descent from David, and, in Christian theol., incarnate Son of God; baptised by John the Baptist; preached in Galilee and Judaea from age of 30; gathered a considerable following, including the 12 *Apostles* (*q.v.*); acquired popular fame through miracles; his teaching aroused bitter hostility of Jewish priests and Pharisees, as subversive of the law and blasphemous; betrayed to priests by Judas Iscariot; tried before Pontius Pilate; crucified (A.D. 29-30); rose from dead after 3 days; ascended into heaven 40 days later.

**Jesus College**, 1) *Cambridge*; fndd. 1496 by John Alcock, Bp. of Ely; Cranmer and S.T. Coleridge among its alumni. 2) *Oxford*; fndd. 1571 by Qn. Elizabeth and endowed by Hugh ap Rice of Brecon. Scholarships largely confined to natives of Wales and Channel Islands. Fam. known as "Jaggers."

**Jet**, hard black lignite (*q.v.*), taking a high polish; used for ornaments.

**Jethro**, (O.T.), priest of Midian; father-in-law of Moses; ancestor of Rechabites (*q.v.*).

**Jetsam**: see FLOTSAM.

**Jeunesse dorée** (Fr.), gilded youth; term applied to rich, light-minded youths.

**Jevons**, Wm. Stanley (1835-82), Eng. economist and logician; assayer to the mint, Sydney, Australia, 1853-59; prof. of logic and political economy, Owens Coll., Manchester, 1866; prof. of polit. econ., Univ. Coll., Lon-



Jerusalem Artichoke

don, 1876-80. *Pure Logic, or the Logic of Quality apart from Quantity*, 1864; *Theory of Political Economy*, 1871; *Principles of Science*, 1874.

**Jew**, member of the Hebraic branch of the Semitic peoples; one of this race or of any race (cf. KHAZARS) professing Judaism (*q.v.*). Separate nationality generally considered to have been lost on the Roman conquest of Palestine (their fatherland), A.D. 135, but many Jews (esp. in E. Europe and Moslem countries, and, latterly, with partial success thr. the activities of the Zionist movement, *q.v.*) cling to the nationalistic idea though recognising the govts. of, and accepted as full members by, most of the States in wh. they live. Early hist. related in O.T., Apoc., and by Josephus (*q.v.*). The Temple of Jerusalem (centre of relig. organistn.) destroyed by Romans under Titus, A.D. 70, efforts of priestly caste to maintain nationality finally crushed by Hadrian, 135, and many survivors sold as slaves. In Medieval Europe (under Pope as spiritual and Emperor as civil ruler), Jews were in a special position: they were excluded from citizenship and from productive occupations, except trade and money-lending; confined to own quarters, known as Ghettos. Condt. improved (esp. in Netherlands and Eng.) aft. Religious Wars of 17th cent., but full civil equality not accorded till end of 18th cent. (France), 19th cent. (rest of W. Eur.), and after World War (E. Eur.). In Ger., on the Nazi victory in 1933, a strong anti-Semitic policy was enforced, Jews being dismissed from all govt. services, educational bodies, etc., and a boycott of Jewish shops and factories being instituted.

First recorded appearance in Eng. at time of Conquest (1066); engaged in financial operations under royal protection, as eccles. authorities would not countenance money-dealings by Christians; banished, 1290, and until official re-admission by Cromwell (1657) could not openly practise their religion; Parlmnt. opened to them, 1858; Jews now eligible for any political office, exc. that of Lord Chancellor. It is estimated that there are rather over 16,000,000 Jews in the world, of whom abt. 4,225,000 are resident in the U.S.A., and 550,000 in the Brit. Emp. (Gt. Brit., 300,000).

The cities with the largest Jewish pop. are:

	<i>Approx.</i>		<i>Approx.</i>
New York	1,765,000	Moscow	131,000
Chicago	325,000	Boston	90,000
Warsaw	309,000	Leningrad	84,500
Philadelphia	270,000	Amsterdam	67,250
Buda-Pest	217,000	Jerusalem	53,500
Vienna	201,000	Bagdad	50,000
London	175,000	Manchester	32,000
Łódź	155,000	Leeds	25,000

The chief Jewish pop. of other countries are:

	<i>Approx.</i>		<i>Approx.</i>
Poland	2,545,000	U.S.S.R.	2,673,000

	<i>Approx.</i>		<i>Approx.</i>
Ukraine	1,575,000	Austria	250,000
Rumania	920,000	Argentina	200,000
Germany	564,000	Palestine	162,000
France (and poss.)	538,000	Lithuania	155,000
Hungary	476,000	Algeria	100,000
Czechoslov.	400,000	Latvia	94,400
		Iraq	87,500

**Jewels of the Madonna**, opera by Wolf-Ferrari (*q.v.*), 1912.

**Jewish Calendar**, time computation based on the division of the tropical year into 12 (or in "embolismic" years, 13) lunar months; 12-month year has mean length of 354 days, and 13-month year 384 days; in each lunar cycle of 19 years there are twelve 12-month and seven 13-month years (the 3rd, 6th, 8th, 11th, 14th, 17th, and 19th of the cycle), thus giving a mean length of 365½ days. The months are: Tishri, Marheshvan, Kislev, Tebet, Shebat, Adar (We-Adar, in 13-month years), Nisan, Iyyar, Sivan, Tam-muz, Ab, Ellul; the era is computed from 3761 B.C., the year 1033 of the Christian Era corresponding to Jewish years 5693-5694.

**Jewish cap**, pointed yellow hat, wh. the Jews were compelled to wear in Mid. Ages.

**J. literature:** see HEBREW LITERATURE. **J. religion:** see JUDAISM.

**Jews' harp**, primitive musical instrument consisting of steel reed fixed in small metal frame, which is pressed against teeth; reed is plucked, and the mouth forms a resonance cavity.

**Jew Süß**, name given to Joseph Oppenheimer (1692-1738), treasurer and adviser to Alexander, Duke of Württemberg; novel by L. Feuchtwanger, 1925.

**Jezabel**, (O.T.), a Phœnician princess, wife of Ahab, Kg. of Israel; introd. worship of Baal and Astarte into Israel; killed by order of Jehu (II Kings, ix); (*fig.*) a vicious or abandoned woman.

**Jhelum, Jehlam**, 1) riv. N.W. India; rises Kashmir, flows through Punjab (one of the "five rivers"), joins Riv. Chenab to become affluent of Riv. Indus; course 450 m. 2) Dist., Punjab, India; area, 2,770 sq.m.; pop., 477,000. 3) Cap. of dist., on Riv. Jhelum; pop., 18,000.

**Jib**, (naut.) foremost sail of ship, a triang. stay-sail, extended from outer end of jib-boom toward fore topmast; in sloops J. is on bowsprit and extends toward lower masthead.

**J.-boom**, spar run out in front of bowsprit of sailing vessel to hold triang. jib.

**Jig**, solo Ir. nat. dance, in 3 time or 2 time with 3 subdivisions.

**Jigsaw**, puzzle, consisting of many pieces of thin wood cut in diff. shapes wh., when correctly fitted together, form a complete picture.

**Jingoism**, extreme nationalism; term wh. became popular during Russo-Turk. War (1877) from music-hall song: "we don't

want to fight, but, by Jingo, if we do." Cf. CHAUVINISM.

**Jin-ricksha:** see RICKSHA.

**Jiu-jitsu:** see JIJITSU.

**Jno.,** abbr. John.

**Joab,** (O.T.) commander of David's forces; slayer of Absalom. Disloyal to David; killed by order of Solomon.

**Joachim,** St., husband of St. Anne and father of the Virgin Mary.

**Joachim,** Joseph (1831-1907), Hung. violinist and composer; Hungarian Concerto.

**Joan,** legendary female pope (**John**

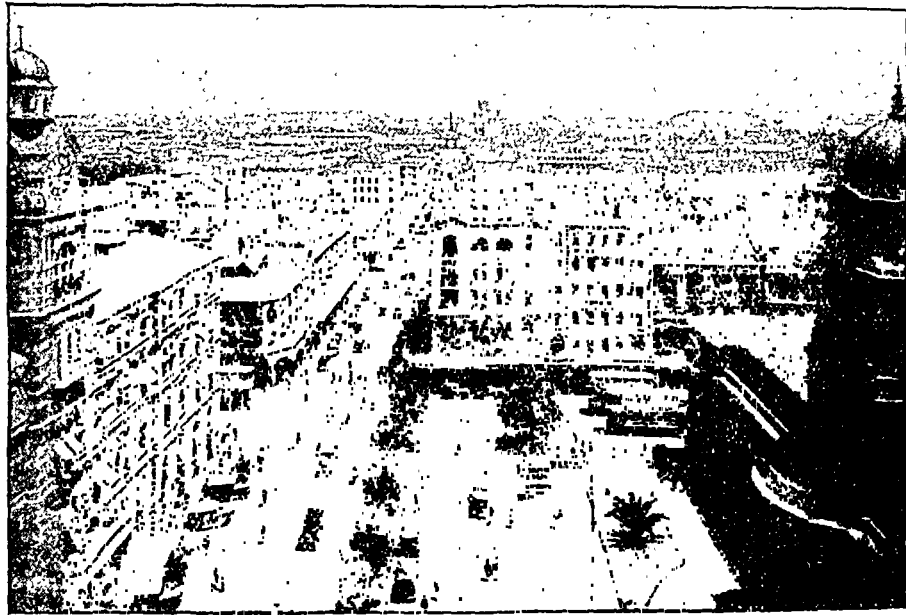
diff. betw. buying and selling prices. He usu. specializes in a partic. type of security. **J., jobbing-press** (typog.) see PLATEN-PRESS.

**Jocasta,** (Gr. myth.) mother, aftwds. wife, of Oedipus (*q.v.*).

**Jockey,** professional rider in horse-races.

**J. Club,** organisation (fndd. 1750) for reg. of horse-racing on the flat in Gt. Britain.

**J. pulley,** a loose-running pulley attached to end of a lever, by wh. it can be pressed agst. a driving belt, increasing tension in same and / or wrapping it farther round the working pulleys.



By Courtesy of the High Commissioner for South Africa  
Johannesburg

**VIII**) in 9th cent. **J. of Arc** (*Jeanne d'Arc*) St. (1412-31), peasant girl of Domrémy; led Fr. army and recovered crown for Charles VII; capt. and sold to Eng.; tried by eccles. court; burnt at stake, Rouen; canonized, 1919. **J. of Castile** (1479-1555), the "Mad"; mother of Charles V.

**Joash, Jehoash,** (O.T.) 1) Kg. of Judah (878-838 B.C.), revived idolatry. 2) Kg. of Israel (840-825 B.C.); sacked Jerusalem and carried Temple treasures to Samaria.

**Job, Bk. of,** (O.T.) poetical allegory (c. 5th cent. B.C.) upon problem of unmerited suffering; date and author uncertain; centr. character, Job, serves as type of patience. **J.'s comforter,** one who aggravates person's distress under pretext of comforting him.

**Jobber,** member of Stk. Exch. dealing only with brokers and other Js. and not with public. J. buys and sells securities; his profit, or the *J.'s turn* lies in

**Jodhpur, Marwar,** 1) native State, Rajputana, India; area, 35,000 sq.m.; pop., 1,841,500. 2) Cap. of State; pop., 73,500.

**Joel,** (O.T.) prophet, prob. post-exilic. **Bk. of J.** exhorts Israel to repentance and reform.

**Joënsuu,** tn. in Finnish Karelia; pop., 5,380; timber.

**Joffre,** Jos. Jacques Césaire (1852-1931), Marshal of Fr.; c.-in-c., 1914; supreme com. of all Fr. armies, 1915; consulting member of War Committee, 1916, retaining title of c.-in-c.

**Johannesburg,** city (alt. 5,500 ft.), Transvaal, largest in Union of S. Africa; pop., c. 350,000 (203,300 whites); gold-mining centre (Witwatersand Reef); univ.; fine public buildings; printing, brewing, tobacco, iron, and brass.

**Johanngeorgenstadt,** manuf. tn., Sax-



Joffre

ony, in Erzgebirge; pop., 7,000; mines (bismuth, uranium ore).

**Johannisberger**, white Rhine wine.

**Johannisburg**, tn., E. Prussia; pop., 5,000; besieged by Russian forces 1914 to Feb., 1915. To W. lies *Johannisburger Herd*, largest forest in Prussia (373 sq.m.).

**John, St., J. the Baptist**, son of Zacharias and Elizabeth, forerunner of Jesus, whom he baptised in Jordan; executd. by Herod Antipas (day, June 24th). **St. J. the Evan-**



St. John the Evangelist

**gelist**, apostle, son of Zebedee, brother of James and cousin of Jesus, "the beloved disciple"; d. at Ephesus at an advanced age (day, Dec. 27th). Gospel of St. J., Epistles, Apocalypse, all attribtd. to him. **J., Epistles of (N.T.):** see CATHOLIC EPISTLES. **J., Gospel of (N.T.):** see GOSPELS. **J. of Damascus, St. (c., A.D. 700-750)**, Father of the Ch., and writer; *Summary of the Orthodox Faith*. **J. of the Cross, St. (1543-97)**, Span. mystic, theologian, and poet.

**John**, Popes, numbered from I to XXIII, of whom the following are, historically, the most important: **J. I** (523-26), ambassador for Theodoric to Emp. Justin to obtain toleration for Arians, 525. **J. IV** (640-42), condemned Monothelite heresy. **J. XXII** (1316-34), at Avignon; constant struggle with Emp. Louis IV; revolt of Spiritual Franciscans. **J. XXIII** (1410, abdicated and deposed, 1415), convoked Council of Constance, 1414.

**John**, Emperors of East Roman Empire:

1) **J. I, Zimisces** (925-69-76), usurped throne of his uncle, Nicephorus Phocas; drove Russ. from Thrace; attacked Abbasid dynasty. 2) **J. II, Comnenus** (1088-1118-43), killed during wild-boar hunt on Mt. Taurus. 3) **J. III, Valatzes, Ducas** (1193-1222-54), chosen to succeed father-in-law, Theodore I. Lascaris; re-organised East Rom. Empire; frontier agreement with Turks; secured supremacy over Thessalonica and Epirus. 4) **J. IV, Lascaris** (c. 1250-58-1300), dethroned and blinded by Michael Palaeologus, 1261. 5) **J. V or VI, Palaeologus** (1332-41-91), gradual dissolution of imperial power; re-

billion of son, Andronicus; forced to acknowledge himself tributary to the Ottomans. 6) **J. VI or V, Cantacuzene** (c. 1292-47-83), shared sovereignty with 5) above; superseded him, 1347-85; retired to monastery, assuming name of Joasaph Christodulus. 7) **J. VI or VII, Palaeologus** (1390-1425-48), consented to union of Gr. and Rom. churches, 1439; retained possession of Constantinople.

**John**, Kings of—1) **Aragon: J. II** (1397-1479), deprived his son Charles of Viana (q.v.) of kgdm. of Navarre, and of right to act as lieut.-gen. of Aragon; war with Louis XI of Fr. 2) **Bohemia: J. the Blind** (1296-1310-46), Count of Luxemburg, 1309; fought at battle of Mühldorf, 1322; killed at battle of Crécy. 3) **England: J. Lackland** (1167-99-1216), youngest son of Hy. II; joined, with bro. Rich. and Phil. Aug. of Fr., in conspiracy, 1189; attempted to seize throne during Richard's absence on crusade; succeeded on Richard's death; alienated lords of Maine, Touraine, and Anjou by murder of nephew, Arthur; Eng. put under interdict, 1208-12; forced to sign Magna Carta, 1215. 4) **France: J. II, the Good** (1319-50-64), taken prisoner by Black Prince (q.v.) at Poitiers, 1356; impris. Savoy Palace, Windsor, Tower; freed by Peace of Brétigny, 1360. 5) **Poland: J. II, Casimir** (1619-48-72), succeeded step-bro., Ladislaus; waged war with Sweden and Russia; Peace of Oliva, 1660, Peace of Andrussov, 1667; abdicated, 1668. **J. III, Sobieski** (1624-74-96), deftd. Turks and saved Vienna, 1683; overran Moldavia and Wallachia; attempted, unsuccessfully, to estab. absolute monarchy in Poland. 6) **Portugal: J. I** (1357-85-1433), became grand-master of Aviz, 1364; elected to succeed bro., Ferdinand I, to exclusion of latter's daughter Beatrice, wife of J. of Castile; deftd. J. of Castile at Aljubarrota, 1385. **J. II, the Perfect** (1455-81-95), curtailed excessive power of nobles; executed Duke of Braganza; murdered Duke of Viseu; Cape of Good Hope disc. by Bartholomeu Diaz, 1488. **J. III** (1502-21-57), ordered Lisbon Inquisition, 1526; sent Xavier to Japan, 1542. **J. IV, the Fortunate** (1603-40-56), succeeded to dukedom of Braganza, 1630; raised to throne by unanimous popular vote at revolution agnst. Philip IV of Spain; fndd. Braganza dynasty. **J. V** (1689-1706-50). **J. VI** (1769-1816-26), Pr. of Brazil, 1788; govd. for insane mother, Qn. Mary I, from 1792; regent, 1799-1816; fled from French to Brazil, 1807; continued to reside there; returned to Portugal, 1820; suppressed rebellions led by son, Dom Miguel. 7) **Saxony: J. Nepomuk Maria Joseph** (1801-54-73), succeeded bro., Fred., Aug. II; supported Austria in Austro-Prussian War, 1866; joined N. German Confederation;

became member of Ger. Empire, 1871. **J.**, the *Fearless* (c. 1370-1404-19), Duke of Burgundy, succeeded his father, Philip "the Bold"; ordered assass. of Duke of Orleans; assass. by dauphin's escort at Montereau. **J.**, the *Steadfast* (1467-1525-32), elector of Saxony; defended Lutherism.

**John, Augustus** (1878- ), Brit. portrait painter; R.A., 1928. **J., Sir Wm. Goscombe** (1860- ), Brit. sculptor; R.A., 1909; memorials to the Coldstream Guards and war correspondents, St. Paul's Cathed.; *The Boy at Play*; *Morpheus*; *St. John the Baptist*.

**John of Austria, Don** (1545-78), natural s. of Emp. Charles V and Barbara Blomberg; won great victory over Turks at Lepanto (q.v.); apptd. Gov.-Gen. of Netherlands, 1576; died of fever. **J. of Gaunt** (1340-99), Duke of Lancaster; 4th son of Edw. III; m., 1st, Blanche, dau. of Hy. of Lancaster; fought in France and Spain; assisted Pedro to regain throne of Castile; m., 2nd, Pedro's dau. Constance; took prominent part in national affairs during reign of Rich. II; became extremely unpopular; m., 3rd, Catherine Swynford; protected Wyclif; father of Henry IV and of the Beauforts. **J. of Leyden** (c. 1510-36), pop. name of Johann Buckholdt, Dut. Anabaptist and fanatic; executed.

**John Barleycorn**, humorous personification of malt liquor. **J. Bull**, Eng. nation personified; prob. taken from the charact. in the tale of *John Bull* by John Arbuthnot (1667-1735).

**John Dory**, bony fish, best known representative of the family *Zeidae*, and distinguished by its deep and highly compressed body and coloured dorsal fins.

**J. Gilpin**, ballad by Cowper (q.v.), 1785.

**John o' Groat's House**, site of house built by John de Groot, a Dut. settler, c. 1515, 2 m. W. of Duncansby Head, Caithness, Scot.; popularly, though erroneously, regarded as extreme N. of Scotland; see DUNNET HEAD.

**Johnson, Amy** (1903- ) Brit. aviator, wife of J. A. Mollison (q.v.); performed first woman's solo flight Eng. to Australia (May, 1930) in 19 days, establishing record by reaching Karachi in 6 days; C.B.E. (1930); flew to Japan, Aug. 1931, and solo to Cape Town, 1932. See AVIATION: RECORDS.

**Johnson, Andrew** (1808-75), 17th Pres. U.S.A., succ. Lincoln 1865; impeached for high crimes and misdemeanours; narrowly acquitted. **J., Samuel** (1709-84), Eng. auth. and lexicographer; conversationalist; *Dictionary*, 1755; *Rasselas*, 1759; *Rambler*, 1750-52; *Lives of the Poets*, 1779-81.

**Johnston, Sir Harry Hamilton** (1858-

1927), Br. explorer and administrator; expd. to Angola, 1882; to Mt. Kilimanjaro, 1884; held consular offices in Africa, 1885-1902; pictures exhbd. at R. Academy; pub. *The Opening Up of Africa*, 1911; *The Story of My Life*, 1923; etc.

**Johore**, largest of unfederated Malay States (q.v.), S. coast, Malay Penins.; area, 7,700 sq.m.; pop., 505,300 (Chin., 215,000); rubber, coconuts; cap., *Johore Bahru* (pop., 21,400); joined by causeway and railway to isl. of Singapore. Territory abounds in big game.

**Joint**, (anat.) articulation, the connection betw. 2 or more bones. J. is enclosed in a capsule of strong connective tissue and lined by synovial membrane, which contains the synovial fluid. Js. are divided into 2 main classes: movable and immovable. **J.-mice**, free processes which may occur in joints, due to breaking of cartilage; J.-m. move about and may cause pain and limit action of movement. For **Js. of meat** see MEAT.

**Joint estate, joint tenancy**, occurs when same property is held by several persons simultaneously. When one J. tenant dies, his share vests in the survivors. See TENANCY IN COMMON.

**Joint Industrial Council:** see WHITLEY COUNCIL.

**Joint-stock banks:** see DEPOSIT BANKS.

**J.-s. company**, comb. of pers. for carrying on bus. having a common stock of capital, with either limited or unlimited liability; see LIMITED COMPANIES.

**Joinville**, Jean de (1224-1319), Fr. chronicler; with Louis IX on 7th crusade; in Egypt and Syria, 1248-54; drew up articles of religious belief, 1250 (revised 1287); *Histoire de Saint Louis*.

**Jokai**, Maurus (1825-1904), Hung. novelist; *A Hungarian Nabob*, 1854.

**Joker**, (cards) extra card wh., in cert. games, may duplicate any other in the pack.

**Jokjakarta**, residency, Java, Dut. E. Indies; pop., 1,350,000; coffee, sugar, tobacco; cap., *Jokjakarta* (pop., 107,625).

**Jolly**, Philip von (1809-84), Ger. physicist; invntr. of *Jolly Balance*, device for ascertaining sp. gr. of solids or liquids.

**Jolly-boat**, small ship's boat for rowing or sailing.

**Jonah**, (O.T.) prophet (c. 9th cent. B.C.) sent on divine mission to Nineveh; miraculously delivered after being swallowed by whale; (fig.) one whose presence brings misfortune. **Bk. of J.**, (O.T.) records events of J.'s life; authorship unknown.

**Jonas**, Justus (1493-1555), Ger. Reformer; friend of Luther.

**Jonathan**, (O.T.) eldest son of Saul (q.v.), friend of David (q.v.); killed with Saul in battle of Gilboa agst. Philistines (I Sam. xxxi).



Amy Johnson

**Jonathan**, *Brother Jonathan*, nickname for people of U.S.A. collectively; prob. fr. Jonathan Trumbull, spoken of thus by Washington.

**Jones, Harold Spencer**, (1890- ), Brit. astron.; Astronomer Royal at Cape of Good Hope, 1923-33; Astron. Royal at Greenwich, 1933. **J., Henry Arthur** (1851-1929), Eng. dramatist; *The Silver King* (melodrama), 1882; *The Liars*, 1897; *The Pacifists*, 1917; and auth. of works on the drama, *Patriotism*, and *Popular Education*, 1918; *My Dear Wells*, 1921; etc. **J., Henry ("Cavendish")** (1831-99), Brit. writer; leading authority on games,

esp. cards: *Principles of Whist*, 1862. **J., Inigo** (c. 1572-1652), Eng. architect designed palace of Whitehall and restored W. front of old St. Paul's. **J., Paul** (1747-92), Amer. sailor of Scot. birth; com. in Amer. Navy in War of Indep.; adm. in Russ. Navy, 1781. **J., Robert Tyre** (1901- ), Amer. golfer; won Brit. prof., Brit. amat., Amer. prof., and Amer. amat. championships, 1930. **J., Sir William** (1746-94), Eng. orientalist.

**Jonescu**, Take (1858-1922), Rumanian statesman; For. Min., 1920; took leading part in format. of the Little Entente (q.v.).

**Jongleurs** (Fr.), caste of wandering entertainers (minstrels), in mediaeval Europe. Hence the *juggler* of modern times, a performer of feats of balance and skill.

**Jönköping**, tn., dist. of J., Sweden, at S.E. end of L. Wetter; pop., 29,185; matches, paper, carpets.

**Jonquil**, a bulbous plant of the narcissus family, having lily-like leaves and very fragrant yellow flowers; native to Algeria and S. Europe; there are both single- and double-flowered varieties.

**Jonson**, Ben (1573-1637), Eng. dramatist; *Volpone*, 1607; *The Alchemist*, 1610.

**Joppa**: see JAFFA.

**Jordaens**, Jacob (1593-1678), Flem. painter; hist. and genre subjects.

**Jordan**, Wilhelm (1819-1904), Ger. auth. and poet; *Demiurgos* (3 vols., 1853-4).

**Jordan**, Riv., Palestine, rises in *Mt. Hermon*, flows through the Sea of Galilee and the vall. of El-Ghor to Dead Sea; length 220 miles.

**Jordans**: see CHALFONT ST. GILES.

**Joseph**, 1) (O.T.) elder son of Jacob and Rachel (c. 1900 B.C.), sold by bros. to Potiphar in Egypt; became chf. minister to

Pharaoh; progenitor of tribes of Ephraim and Manasseh. 2) (N.T.) husband of Mary, mother of Jesus; a carpenter. 3) **J. of Arimathaea**, (N.T.) member of the Sanhedrin (q.v.); performed last offices to body of Jesus.

**Joseph**, Rom. emperors: **J. I** (1678-1711), emp. 1705; deftd. Louis XIV of Fr. in War of Sp. Succession. **J. II** (1741-90), emp. 1765; from 1780 introd. reforms wh. led to rebellion and wh. he rescinded 3 wks. before his death.

**Josephine** (1763-1814), 1st. wife of Napoleon I, née de la Pagerie, b. in Martinique; m. 1) Visct. de Beauharnais (1779) and 2) Napoleon (1796), who divorced her (1809) after becoming Emperor, on account of her childlessness.

**Josephus**, Flavius (A.D. 37-100), Jewish historian: *The Jewish War*.

**Joshua**, (O.T.) succeeded Moses as leader of Israelites. **Bk. of Joshua** (c. 5th cent. B.C.), continues narrative of Pentateuch (q.v.); records settlement of Israelites in Canaan.

**Josiah**, (O.T.) Kg. of Judah (639-609 B.C.), great relig. reformer; killed in battle (II Kings).

**Jostedalsbræe**, plateau (480 sq.m.) in Norweg. highlands, forming largest glacial region in Europe, N. of Sogne Fjord, with nearly 300 glaciers.

**Jota**, nat. dance of Aragon; lively but dignified; form of waltz in 3-time.

**Jotunheim**, **J. Fjelde**, mountainous tract, S.E. Norway, E. of Sogne Fjord; area, c. 950 sq.m.; with Galdhøpiggen (8,398 ft.), highest pk. of N. Europe.

**Joubert**, Barthélemy Catherine (1769-99), Fr. gen.; fought in Italian Campaign, 1796; invad. Austria, 1797; deft. and killed at Novi.

**Joule**, James Prescott (1818-99), Eng. physicist, determined the mechanical equivalent of heat (q.v.), also relation betw. heat and electric energy; the unit of work, called after him the Joule (contracted to J.) = 10<sup>7</sup> ergs.

**Journeyman**, qualified artisan, working for another by the day, for wages. In Mid. Ages the J. was one who, after serving his apprenticeship (q.v.), worked for some years for a master before being himself admitted as a master-craftsman on payment of a fee and presentation of a "masterpiece" to prove efficiency. Later, J. tended to be organised in separate sections of the guilds, or in separate guilds as promotion to master class became increasingly difficult.



Joseph II



Inigo Jones



Ben Jonson

**Jowett**, Benjamin (1817-93), Eng. theologian and classical scholar; regius prof. of Gk., Oxford Univ., 1855; master of Balliol College, 1870; vice-chancellor of Oxford Univ., 1882; works incl. theological and other essays and important translations of Plato, Thucydides, and Aristotle.

**Joyce**, James (1882- ), Irish auth. and poet: *Ulysses*, 1922.

**Joynson-Hicks**, Wm.: see BRENTFORD.

**Joy-stick**: see CONTROL COLUMN.

**J.P.**, abbr. Justice of the Peace.

**J.R.**, abbr. *Jacobus Rex* (Lat.), King James.

**Jr.**, abbr. *junior* (Lat.), the younger.

**Juan Fernández Isls.**, volcanic group (270 sq.m.) Pacific, belonging to Chile; chf. isl., *Más-a-tierra* (37 sq.m.; pop., 300), is Robinson Crusoe's island (inhab. by Alexander Selkirk, 1704-09).

**Jubaland**, former prov. of Kenya, E. Africa; c. 36,000 sq.m.; ceded to Italy (Ital. Somaliland), 1925.

**Jubbulpore**, **Jabalpur**, tn., Centr. Provs., India, cap. division and dist. of J., on Riv. Nerbada; pop., 124,500; textiles, carpets, pottery.

**Jubilee** (Heb., *yōbēl*, ram's horn), 1) year anciently celebrated by Jews after every 49 years, from promulgation of Mosaic law until dispersion; intended (Lev. xxv) as yr. of freedom, in wh. all property should revert to orig. owner, slaves should be freed, and all sowing and reaping should cease, so that the land might rest. 2) In R.C.Ch., occurs (since 1300) orig. every 33, now every 25 yrs., when R.C.'s who visit certain chs. in Rome or perform other equivalent pious works may obtain exceptional indulgences and other spiritual benefits. 3) Celebration of 50th anniv. of any import. event. e.g., monarch's accession, opening of cathed., etc.; 60th anniv. is known as **Diamond Jubilee**. **Bk. of Js.**, non-canonical bk. of O.T., not in Apocr.; re-editing, from Pharisaic point of view, of Heb. hist. from Creation to promulgation of Law at Sinai.

**J.U.D.**, abbr. *Juris utriusque Doctor* (Lat.) Doctor of both Civil and Canon Law.

**Judaea**, name given in antiquity to S. part of Palestine; see JUDAH, KINGDOM OF.

**Judah**, (O.T.) 4th son of Jacob and Leah; progenitor of most powerful of the 12 Tribes. **Judah, Kingdm. of**, southern kgdm. of the Jews, from wh. the northern kgdm. seceded (see ISRAEL); overthrown by Nebuchadnezzar (586 B.C.).

**Judaism**, strictly monotheistic relig.; stresses direct responsibility of each individual to the Deity—without any intermediary—and the equality of all before God. Worship in synagogue and home and the numerous ceremonies and restrictions (esp. those connected with the Sabbath, Holy days, and

food prohibition) based on Biblical records as interpreted and expanded in the Talmud (q.v.) and codified in the Shulhan Arukh. The various schools of Jewish thought range from the ultra-conservative through the "Traditional" (main body) to the "Reformers" and "Liberals." The Reformers (early 19th cent.) have revised the regulations in light of modern experience, but on historical lines; the Liberals (20th cent.) pay less regard to historical continuity in their services and question the authority of tradition.

**Judas Iscariot**, (N.T.) of Kerioth in Judah, apostle and betrayer of Jesus; hanged himself after the Crucifixion. **J. Macabaeus**, 1) (Apoc.) son of Mattathias; freed Jews from Syrian yoke; slain 160 B.C. 2) (mus.) Oratorio by Handel, 1747. **J. Thaddaeus**, (N.T.) one of the 12 Apostles (Luke vi).

**Judas tree**, name given to small trees of the genus *Cercis*, growing in Asia and elsewhere; the pink flowers appear before the leaves.

**Jud. Com. P. C.**, abbr. Judicial Committee of the Privy Council.

**Jude, Epistle of**, (N.T.) written either by Judas Thaddaeus (q.v.) or Judas, brother of Jesus; but placed by Eusebius among *Disputed Bks.* (Antilegomena).

**Judge** (in Eng. law), of High Court or County Court, apptd. by kg. from practising members of the Bar. J. of High Court is removable only by petition of both Hses. of Parliament.

**Judges**, (O.T.) Israelitish leaders in times of crisis during settlement in Canaan. **Bk. of J.**, conts. the hist. of Israel from death of Joshua (q.v.) to time of Eli (q.v.).

**Judgment, Day of, Last Day**, following 2nd Coming of Christ, when God shall judge the living and the dead.

**Judica Sunday**, Passion Sunday (q.v.), from the introit "Judge me, O Lord."

**Judicature**, function of State dealing with the dispensing of justice. **J. acts** deal with organis. and powers of the courts.

**Judicial Committee of the Privy Council**, ctce. of all privy councillors who hold or have held judic. office. Acts as final court of appeal for Brit. Emp., except Gt. Brit. and N. Ireland.

**Judith**, (Apoc.) Jewess, slew Holofernes (q.v.); heroine of apocryphal *Bk. of J.* (c. 1st cent. B.C.).

**Jugged hare**, method of cooking hare by baking in oven after frying until brown with veg., to wh. are added cloves, lemon juice, peppercorns, *bouquet garni* (q.v.), and condiments.

**Juggernaut**, form of Hindu god Vishnu (q.v.), whose image at Puri in Orissa is carried in a car from his temple to his country house in June or July. Rare accidental deaths

have occurred during this ceremony, but no foundation for error. belief that devotees hurled themselves under the car to be crushed to death; name used figuratively of any irresistible, relentless force which destroys all that comes in its way.

**Juggler**, entertainer who performs feats of skill in tossing balls, plates, knives, etc.

**Jugoslavia**, *Kraljevina Jugoslavije*, kgdm. in N.W. Balkan Penins., bounded N. by Austria and Hungary, E. by Rumania

(8,429 ft.). Bosnia, Hercegovina, Montenegro, and S. Serbia are all mountainous (up to 8,250 ft.); flat basin of the Danube (in N.) is fertile; wheat, maize, barley, oats; mtn. valls. of S. Serbia and Montenegro grow fruit, vines, and tobacco. Cattle, sheep, and pigs are raised. Forests (29,200 sq.m.) of oak, beech, and fir. Minerals (undeveloped) include coal and iron and copper ore. Climate continental. Chf. rivs.: Danube and its tribs., Drave, Save, Drina,



and Bulgaria, S. by Albania and Greece, and W. by It. and the Adriatic. Formed in 1918 by the union of Serbia, Montenegro, Slovenia, Croatia, Dalmatia, and Bosnia. Area 96,136 sq.m.; pop., 13,500,000 (Serbs 46%; Croats 28.5%; Slovenes 8.5%; religions: Orthodox 49%; R.C. 39%; Moslems 11%). Coast-line (Dalmatia) deeply indented, with numerous isls. and penins.; in the N. is the Ital. port of Zara; Jugoslav ports include, Sibenik (Sebenico), Split (Spalato), Dubrovnik (Ragusa), Bar (Antivari), Kotor (Cattaro). In the interior, parallel to the coast, are the *Dinaric Alps* (10,170 ft.); on Ital. frontier are *Julian Alps* (9,347 ft.), on Austr. frontier *Karawanken*



and Morava; and Vardar (flowing S. through Macedonia into the Gulf of Salonika). Industries include timber, flour-milling, brewing, distilling, textiles, and carpets. Rlys., 5,730 miles. Divided into nine *Banorinas* (depts. or counties) of Drava, Drina (Bosnia), Dunavska (Danube), Morava, Primorska (Dalmatian coast), Sava, Vardar, Vrbaska, Zetska (Montenegro), and the admin. dist. of Belgrade. Chf. ins.: Belgrade (cap.), Zagreb, Subotica, Sarajevo, Skoplje, Novi Sad. Constitution (3 Oct., 1931). Reigning kg. Alexander I (House of Karageorgevitch); Senate (half the members selected by the kg.), Skupshtina (305 members). Name of Triune Kgd. of the Serbs, Croats, and Slovenes (1918), changed in 1929 to Jugo-, or Yugoslavia.



**Jugurtha**, Kg. of Numidia, conq. by Rom. 104 B.C.

**Jujitsu, Jujutsu**, form of wrestling based on anatomical knowledge, practised by the Japanese, prob. since 7th cent. B.C., and to some extent adopted by the Western nations. Orig. known only to the privileged classes, but now taught generally; consists of special grips, blows, etc., delivered at such points as will make opponent incapable of resistance; combined with sudden yieldings to opponent's force which react on its user.

**Julian**, dynasty of Julius Caesar, emps. of Rome 31 B.C.-A.D. 68.

**Julian the Apostate** (331-63), Rom. emp. 361; re-established Rom. rule in Gaul, 355-58; d. during campaign against Persia.

**Julian Alps**, S.E. chain of the E. Eur. Alps, extending from N.E. borders of Italy, through Jugoslavia to Karst plateau; *Triglav*, 9,347 ft.

**Julian Calendar**, the Roman Calendar (*q.v.*) as revised in 46 B.C. by Julius Caesar. After one year of 445 days to correct existing errors, each year was given 365 days, with an intercalary day inserted every fourth year (*see* LEAP YEAR). It has been thought that originally 31 days were allotted to the 1st, 3rd, 5th, 7th, 9th, and 11th months, and 30 days to the rest (*exc.* Feb.), but that this simple arrangement was confused by Augustus Caesar, who insisted that his month, August, should have as many days as that of Julius Caesar, July. This calendar was used throughout Western civilisation until its almost universal rejection in favour of the Gregorian Calendar (*q.v.*); it was until 1923 retained, for religious purposes, by those nations adhering to the Eastern Churches (*q.v.*).

**Jülich**, tn., Prussia, prov. of Aachen, on Riv. Roer; pop., 8,700.

**Jülich-Cleves succession dispute** (1609-66), betw. Saxony, Brandenburg, and Pfalz-Neuberg; partition 1614 (Treaty of Xanten).

**Julienne soup**, soup made with stock and finely divided, or desiccated vegetables. **J. soups**, veg. soups.

**Julius**, name of 3 popes: **J. I** (337-52), supported Athanasius (*q.v.*) agnst. Arians. **J. II** (1503-13), laid fndtn. stone of St. Peter's, 1506; fndd. Vatican Museum; patron of art (Bramante, Raphael, Michelangelo). **J. III** (1550-55),



Julian the Apostate



Pope Julius II, after Raphael

re-assembled council of Trent, 1551; readmitted Engl. into Rom. communion, 1554.

**Julius Caesar**, *see* CAESAR.

**Julius Tower**, citadel of Spandau, Prussia, where Ger. kept 5,000,000 l. in coin (part of indemnity from France in 1871) for use in the event of war.

**July**, 7th month of 31 days; orig. *Quintilis*, 5th mo. of Rom. Calendar; named after Julius Caesar. **J. Revolution**, revol. in Paris 27-29th July, 1830, wh. led to abdic. of Charles X and succession of Louis Philippe (Duke of Orleans) to throne of France.

**Jumna**, riv., N. India; rises in Himalayas; flows past Delhi and Agra; joins Ganges at Allahabad; length 870 m.; not navigable.

**Jumping-hare, Spring haas**, rodent of S. Africa allied to the jerboas (*q.v.*); frequents desert or open country, progressing by long leaps. Ranges from the Cape to Angola and Mozambique. **J.-mouse**, mouse-like rodent, *Zapus hudsonius*, of N. Amer. and N. W. China, having long hind legs, with which they jump remarkable distances. **J.-shrew**, name given to various species of African insectivora, with long hind legs.

**Jun.**, abbr. *junior* (Lat.), the younger.

**June**, 6th month, of 30 days; named after Rom. gens. *Junius*.

**Juneau**, cap. Alaska; gold-mining, fishing; pop., 3,100.

**Jung, Carl** (1875- ), Swiss psychologist; at first disciple of Freud, but later disagreed with many of his theories; fndd. school of psychol. with Maeder at Zurich, 1911; divides mankind into introverted and extroverted types, with 4 primary functions of the mind: thinking, feeling, sensation, and intuition. **J. (Stilling), Heinrich** (1740-1817), Ger. physician and writer; *Heinrich Stillings Jugend*, 1777.

**Jungfrau**, mtn., Bernese Oberland, Oberland, Switzerland; 13,658 ft.; *Jungfrau-Firn* in E. part of Aletsch glacier; elec. rly. from Scheidegg to *Jungfrau-joch* (11,375 ft.).

**Jungle**, uncultivated land (*usu.* in tropics), overgrown with forest, brushwood, etc.

**J. fowl**, name of several species of the genus *Gallus*; 1) red J.F., common in India, ancestor of all domestic fowls; 2) grey J.F., found in South of Indian penins.; 3) Sinhalese J.F., found only in Ceylon.

*See* POULTRY.

**Junior**, 1) the younger partner in an undertaking; 2) in U.S., rank of an undergraduate.

**Juniper**, (bot.) shrub-like conifer; berries of *Juniperus communis* are used to flavour gin, and oil is used in med. as a stimulating diuretic.



Juniper

**Junius, Letters of**, a series of anonymous letters appearing in the London *Public Advertiser* from 1768 to 1772, directed agst. Brit. Ministry. Prob. by Sir Philip Francis (1740-1818).

**Junk**, (naut.) flat-bottomed, high-sterned vessel with matting lug-sails, used in Chinese and Malay seas; sails of lateen type.

**Junker**, member of noble, land-owning class of Prussia, or of a party representing such class in Germany; also (derisively), a young German noble or aristocrat.

**Junkers**, Hugo (1859- ), Ger. aeroplane-builder and heating engineer. **J's. calorimeter**, apparatus for determining the heat-value of liquid and gaseous fuels.

**Junket**, curds and cream sweetened and seasoned.

**Juno** (Gr. *Hera*), Rom. goddess, sister and consort of Jupiter, patroness of marriage; her sacred geese were revered in the Capitol at Rome.

**Junot, Andoche**, duc d'Abrantès (1771-1813), Fr. gen.; served in early Napoleonic campaigns; gen. of division, 1800; Gov. of Paris, 1806; comm. of army in Portugal, 1807; captured Lisbon, created duc d'Abrantès and Governor of Portugal; defeated by Wellesley (Wellington) at Vimeiro, 1808; in disastrous Russian campaign; committed suicide.

**Junta**, Span. administrative committee; name given to small group which, 1862-72, controlled Brit. trade-union policy and structure.

**Jupiter**, 1) father of Rom. gods; Gr., *Zeus*. 2) (Astron.) 1st of outer planets; sign ♃; for statistics, see Table, *Planets*; 9 satellites. **Belts of J.**, darker streaks crossing lighter background in direction parallel to J.'s equator, due to atmospheric conditions of the planet and giving great variety to its appearance.

**Jura**, dépt. E. France (Swiss frontier); 1,951 sq.m.; pop., 229,109; cattle-breeding, forestry, watch-making; cap., *Lons-le-Saunier*.

**Jura**, mtns. of centr. Europe, extending from L. of Geneva to Fichtelgebirge; give name to geol. formation (*Jurassic*); surface water is scanty owing to the numerous rock

fissures (numerous subterranean caves), and population is therefore sparse. **Swiss J.**, from L. of Geneva to Rhine, with mtn. plateaux in the N. (*Crêt de la Neige*, 5,653 ft.; *Dôle*, 5,505 ft.); source of Riv. Doubs. **Swabian J.** or Swabian Alps, high undulating plateau in Württemberg, extending to Altmühl (deep ravines); slopes steeply to the Neckar, more gently to the Danube (*Leimbach*, 3,330 ft.). **Franconian J.**, in Bavaria, most N. offshoot (*Hesselberg*, 2,264 feet.).

**Jura**, isl. (146 sq.m.), Argyllsh., Scot., one of Inner Hebrides: mountainous (Paps of J., 2,570 feet.).

**Jurassic system**, geol. strata formed betw. the Triassic and Cretaceous; named from the Jura Mtns. in which it is well developed; see GEOLOGICAL FORMATIONS.

**Jure divino** (Lat.), by Divine right.

**Jurisconsult**, a master of the law who, in Rom. system, gave learned opinions on disputed points.

**Jurisprudence**, science that deals with formulation of principles of law and their scient. examination.

**Jury**, body of persons sworn to deliver a verdict in criminal, and in certain civil, cases, on evidence delivered before the court. **Grand J.**, (Brit. law) body composed of not less than 12 or more than 23 persons from a county, summoned by the sheriff to every Session of the Peace to inquire into all things laid before them. The judge charged them with regard to indictments (*q.v.*); abolished, 1933.

**Juscanonicum**, (Lat.), canon law (*q.v.*); **j. gentium**, law of nations; **j. gladii**, right of the sword; **J. primæ noctis**, see DROIT DU SEIGNEUR.

**Jusserand**, Jean A. A. J. (1855-1932), Fr. diplomat and writer on Eng. life and literature; ambass. at Washington, 1902-25; *English Wayfaring Life in the Middle Ages*, 1889, etc.

**Justaucorps**, tight-fitting coat worn by men, later also by women, in 17th and 18th centuries.

**Juste milieu** (Fr.), golden mean, compromise. Used to describe the timid moderation of the Fr. Govt. after the July Revolution, 1830.

**Justices of the Peace** (J.P.), unpaid magistrates apptd. by Crown, thr. Lord Chanc., with summary jurisdic. in small cases and power to imprison up to 6 months. They have various administ. duties in local govt. See PETTY SESSIONS: QUARTER SESSIONS.

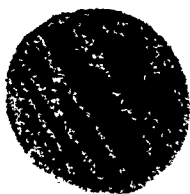
**Justification**, 1) state or act of being justified; that wh. justifies, vindication. 2) (Relig.) Divergent doctrines regarding the J. (*e.g.*, by Faith, or by Works) of sinners before



Junk



Jupiter



Jupiter

God, one of the main grounds of relig. dis-  
sension, and a chief  
subject of contention  
betw. Catholics and  
Protestants at time of  
the Reformation. 3)  
(Typog.) Spacing out  
of type.

**Justin the Martyr,**  
**St.** (mart. 165), Father  
of the Church; *Apol-*  
*ogia*.

**Justinian I** (483-  
565), Emp. of the E.  
Rom. Emp., 527; ordered codification of law  
(*Corpus Juris*); blt. Ch. of St. Sophia; his  
gens., Belisarius and Narses,  
destr. Vandals in Africa and  
Gothic Emp. in Italy.

**Justitia**, Rom. goddess  
of Justice, represented as a  
blindfolded woman holding  
evenly balanced scales.

**Jute**, fibrous material  
from stems of Indian flax  
(*Corchorus capsularis*) used  
for coarse textiles, some-  
times with mixture of cot-  
ton, linen, hemp or wool; for  
girths, sacks, floor cover-  
ings, tickings. Important  
for packing bulky com-  
modities (e.g., corn, ce-  
ment). **J.-spinning**, fibre,  
up to 7 ft. in length, worked  
up by heating, soaking in  
oil, pressure, then spun;  
often mixed with hemp.

**Jutes**, Teutonic tribe of invaders of



Justinian I



Justitia

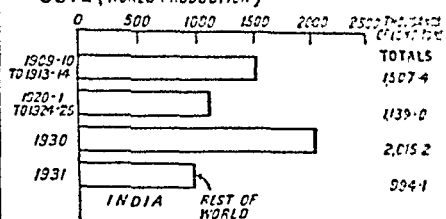


Jute

Brit. in 5th cent. A.D.; prob. from Jutland  
(Denmark); settled in Kent, Hants, and Isle  
of Wight.

**Jutland**, penins. betw. North Sea and  
Cattagat, forming prov. of Denmark; 11,400

#### JUTE (WORLD PRODUCTION)



India almost sole source of supply; 1931 prodn. less  
than half that of 1930. Indian prodn. of cloth has  
incr. considerably since World War, exports having  
almost doubled in 1930 as compared with 1913, raw  
jute exports showing no very significant advance.  
This increased prodn. is cause of reduced prodn. of  
cloth in U. K.

sq.m.; pop., 1,575,550; hilly in S.E., waste  
land in N., fertile in W.; large tns. and har-  
bours in E., thinly populated in W.; fruit  
growing, agric., and dairy-farming. **Battle  
of J.**, naval battle, 31 May, 1916, betw. Brit.  
Grand Fleet under Jellicoe and Ger. High  
Seas Fleet under Scheer. Although the  
Brit. losses were higher than the Ger., the  
effect of the battle was seen in the surrender,  
in 1918, of the Ger. fleet; see WORLD WAR.

**Juvenal** (c. 60-140), Rom. poet and satir-  
ist; the *Satires*, in five books (c. 100-28).

**J'y suis, j'y restel** (Fr.: "Here I am, here  
I stay"); Marshal MacMahon's reply when  
urged to retire from the Malakoff Redoubt  
captured by the French during Crimean  
War, 1855.

# K

**K**, chem. symbol potassium (*Kalium*); solar constant (astron.); capacity (elec.).

**K.**, abbr. carat (assaying).

**k**, Gauss's constant (astron.); cumulus (meteor.).

**Ka.**, in electricity, cathode.

**Ka'aba**, temple of *Mecca* to which devout Moslems make pilgrimages; the *Black Stone* (meteoric) built into the eastern corner is an object of special veneration.

**Kabinda**, 1) Portug. maritime territ., W. Africa, N. of mouth of Riv. Congo; area, c. 3,000 sq.m.; watered by Riv. Chiloango; very fertile; plantations, orange groves. Belongs to Angola, from which it is separated by Belg. Congo. 2) Cap. of above; sheltered harbour; pop., c. 10,000; former slave mart.

**Kabul, Cabul**, 1) cap. of Afghanistan; pop., 140,500; 5,775 ft. abv. sea-lvl.; on Riv. Kabul, and on caravan route betw. Herat, Kandahar, and Peshawar (*via* Khaibar Pass); strongly fortified; ancient monuments (mosque with Timur's tomb); leather and textiles; important bazaar. 2) Riv., Afghanistan, flowing S. from the Hindu Kush to the Indus at Attock; length, 275 m.; not navigable.

**Kabyle**: see BERBERS.

**Kaddish** (Hebr., Holy), doxology recited after each section of synagogue service by the precentor. When a mourner (or one celebrating Yahrzeit, *q.v.*) is present, he recites it in place of the precentor.

**Kadi-keul**, suburb of Constantinople on Bosphorus, S. of Skutari; pop., 37,350.

**Kaffa**, S.W. district of Abyssinia, Africa; area, 5,000 sq.m.; mountainous, thickly wooded; aver. alt., 8,000 ft.; original habitat of coffee plant.

**Kaffirs**, see BANTU Negro races: Amakosa, Zulu, and Bechuana.

**Kaffraria**, 1) former name of S.E. part of Cape Prov., S. Africa, betw. Stormberg and *Drakensberg Mts.* and Ind. Ocean. 2) Geogr. term comprising Griqualand East, Pondoland, Transkei, and Tembuland, in S.E. Cape Province.

**Kagoshima**, tn., S.W. coast of Kyushu, Japan, on K. Gulf; pop., 125,000; textiles, porcelain, cigarettes, arms.

**Kaletur Fall**, waterfall, Riv. Potaro, trib. of Riv. Essequibo, Brit. Guiana; 741 feet.

**Kai-feng**, cap., prov. of Ho-nan, China, on Riv. Hwang-ho (Yellow Riv.); pop., 223,500;

centre of densely pop. rural dist.; cotton, millet, wheat, horse- and cattle-breeding; metal works; subject to serious floods. Cap. of China, 960-1125.

**Kallyard School**, name given derisively (orig. by W. E. Henley) to sentimental-humorous dialect novels of J. M. Barrie and his imitators (S.R. Crockett, "Ian Maclaren") dealing with Lowland Scots life.

**Kalnite**, (chem.) nat. potassium chloride, KCl. usu. with magnesium sulphate; used as fertiliser for root crops (not potatoes) and hay; also as weed-killer.

**Kalrouan, Qairwan**, sacred city in Tunisia, S. of Tunis. Pop., 19,500 (Mohammedan); Fr. garrison; carpet weaving.

**Kalsarich** (anc. *Caesarea*), 1) Inland Turk. vill. and tn. Asia Minor, at N. ft. of Erjias Dag; vil., 5,370 sq.m.; pop., 250,490; tn. pop., 39,545; vines, fruit. 2) Anc. seapt., Palestine; see CAESAREA.

**Kalsar-i-hind Medal**, Brit. decoration (insttd. 1900) for bestowal on any person, of whatever race, creed, or sex, who has rendered important service in the advancement of public interest in India. Two classes: 1st (gold), bestowed by sovereign; 2nd, (silver) by gov.-genl.; ribbon, blue.

**Kaiser** (= Caesar), formerly Emperor of Germany or Austria.

**Kaiser**, Georg (1878- ), Ger. dramatist; *From Morn to Midnight*, prod. London, 1926.

**Kaiser Friedrich Museum**, State Museum in Berlin; erected, 1904. Picture gallery, sculpture (early Christian to Rococo); numismatic collection; Moham. art, etc.

**Kaiser Gebirge**, E. ridge of N. Tyrolean Alps, nr. Kufstein; *Wilder Kaiser*, 7,770 feet.

**Kaiserslautern**, tn., Bavaria, Germany, on Riv. Waldlauter; pop., 61,300; sewing machines, cycles, textiles, furniture, boots, beer, sugar.

**Kaiser Wilhelm Canal**: see KIEL CANAL.

**Kaiser Wilhelm II Land**, antarctic coastal region, 90° E.; discovered by Gauss (1902).

**Kaiser Wilhelm's Land**, former name of the N.E. part of New Guinea (*q.v.*).

**Kakemono**, Jap. picture, usu. painted or embroidered on silk, and thus capable of being rolled up.

**Kalahari Desert**, desert plateau (alt., 4,000 ft.), S. Bechuanaland and S.W. Africa,

with low hills and small salt lakes; rivs. flow only during short rainy season; inhab. by Bushmen and Bechuanas; big game; area over 100,000 sq. miles.

**Kalat**, native state, Baluchistan (*q.v.*); 73,300 sq.m.; pop., 328,300; cap., *Kalat*.

**Kaleidoscope**, optical instr. consisting of a mirror-lined polygonal tube, thr. wh. a number of small objects, *e.g.*, fragments of glass, are viewed; the mirrors prod. a symmetrical pattern from the irregular arrangement; great variety of patterns possible.

**Kalevala**, Finnish nat. epic, in 8-syll. trochaic verse, built up of folk-songs collected by Lönnrot in 1835.

**Kalgan**, fortress tn., Hopeh, China; pop., 77,500; starting-point of caravan route through Mongolia; centre for Chin.-Mongol. trade, incl. tea and wool.

**Kalgoorlie**, tn., W. Australia, on Trans-Continental rly.; gold-mining; pop., 5,400.

**Kalidasa**, Ind. poet of 5th cent. A.D.; dramas, *Sakuntala*, *Vikramorvasi*, *Malavikagnimitra*; epic, *Raghuvansa*; lyric, *Meghaduta*.

**Kalilah and Dimna**, transl. of Bidpai's fables from Pahlavi into Arabic by Ibn Mugaffa in 8th cent. A.D.

**Kalisz**, tn., Lodz, Poland, on Riv. Prosna, cap. prov. of K.; pop., 44,615; R.C. cathed., castle; silks and furnishing fabrics.

**Kalmar**, tn., S. Sweden, on K. Sound (separating Öland Isl. from the mainland); pop., 19,400; timber, matches, shipbuilding. **Union of K.**, the amalgamation of Den., Nor., and Swed. into one kgdm., lasting from 1397 to 1523.

**Kalmuck**, 1) auton. area (*c.* 30,570 sq.m.), Russian S.F.S.R., bounded by Volga, Daghistan, and Caspian Sea. Plain 30-40 ft. below sea-lvl. Kalmucks, Buddhist, of Mongol descent, gradually dying out. Admin. centre, *Astrakhan* (*q.v.*). 2) (Text.) Hairy coarse cloth.

**Kalong**, *Pteropus*, common fruit bat or fox bat, inhabiting oriental countries, Syria, Africa, and Madagascar.

**Kaluga**, chf. tn. of prov. K. (*c.* 9,920 sq.m., pop., 1,151,837), on Riv. Oka, centr. Russia; pop., 51,570. Coal-mining, leather industry. Formerly place of banishment for people in high positions.

**Kama**, trib. (1,175 m.) of Riv. Volga, Uralsk area, U.S.S.R. rises in foothills of Ural Mtns.; navig. for 635 miles.

**Kamakura**, Japanese coast village, 12 m. S. of Yokohama, formerly cap. of Shogunate; famous beauty-spot; colossal 8th. cent bronze image of Buddha (*Dai-Butsu*) by Ono-Goroyémon.

**Kamchatka**, penins. in N.E. Asia, prov. of Far Eastern area, Russ. S.F.S.R., betw. Sea of Okhotsk and Bering Sea; *c.* 106,000 sq.m.; wooded, mtns. with many extinct

and 14 active volcanoes (*Kluchevskaya Sopka*, 15,000 ft.); fur-bearing animals (*seals*, bears), salmon; fishing and agric.; pop., *c.* 25,000 (*Koryaks*, who live underground and use kayaks, and *Kamchadals*). Chf. tn., *Petropavlovsk*, pop., 1,700.

**Kame**, (geol.) high, narrow ridge of glacial gravel deposit; *eskar* (*q.v.*).

**Kamenets Podolskiy**, Ukrainian tn. on Bessarabian frontier; pop., 32,050 (50% Jews); agric. institute.

**Kamenskaya**, tn., Ukraine, U.S.S.R., on Riv. Dnieper, in Don Basin; pop., 34,150; largest Ukrainian steel works.

**Kamennomost**: see KARACHAEV.

**Kamet**, peak, Himalayas, India; highest in Brit. Empire; 25,431 ft.; first climbed July, 1931; highest summit climbed by man.

**Kampala, Mengo**, commerc. cap. of Uganda, East Africa; pop. (est.) 60,000; cotton, coffee.

**Kan.**, abbr. Kansas.

**Kanaka**, native of South Sea Islands.

**Kanazawa**, port, Hondo, Japan; pop., 156,400; porcelain, bronze foundries.

**Kanchanjanga**: see KINCHINJUNGA

**Kandahar**, tn., S.E. Afghanistan, on caravan route to Herat and to Kabul; rly. to Quetta; silk manuf. and fruit-growing; pop., *c.* 60,000.

**Kandalaksha**, tn., Karelia A.S.S.R., N. Russia, on Gulf of K. and Murmansk Rly.; pop., 3,470. Indust.: saw-mills, jam manufac., and fishing. Known to the Vikings.

**Kandersteg** (alt. 3,840 ft.), tn., Berne, Switzerland; pop., 3,550; health resort and winter sports centre; highest pt. on rly. betw. Berne and Brig.

**Kandinsky**, Vassily (1866- ), Russ. expressionist painter.

**Kandy**, inland tn., Ceylon (alt., 1,680 ft.), on an artificial lake; former cap. of island; ancient temples; pop., 32,575.

**Kangaroo**, generic name for large family of herbivorous marsupials, natives of Australia; have short, weak fore legs; strong hind legs, with wh. they jump and fight; long tail. Young are born in immature condition and remain in pouch of female until able to fend for themselves. The great grey K. male stands 6 ft. when upright. Abt. 26 species.

**Kan-kiang**, trib. of the Yangtze-kiang; length, 807 m.; navig., abt. 620 miles.

**Kano**, walled tn. in N. of Nigeria, Africa, 705 m. N.E. of Lagos; headqrs. Hausa race; trading centre; manuf.: cloth, embroidery, shoes, etc.; pop., 50,000.

**Kansas** ("Sunflower State"), State, U.S.A.; 82,158 sq.m.; pop., 1,900,000; mainly



Kangaroo

prairie; maize, wheat, potatoes, alfalfa; cattle-breeding; dairy produce; coal, petroleum, and zinc; cap., *Topeka*. **K. City**, 1) largest tn., Kansas, U.S.A.; at junctn. of Kansas (Kan) and Missouri rivs.; pop., 121,850; min. springs, rly. workshops, meat-packing. Airport. 2) Tn., Missouri, U.S.A., adjoining 1); pop., 399,750; port of entry; rly. centre; lumber, grain, live-stock, dairy-produce, meat-packing.

**Kansu**, prov., N. China; area, 125,450 sq.m.; pop., 5,815,680; watered by Riv. Hwang-Ho; partly mountainous; loess plateaux; agric.; coal; petroleum; cap., *Lanchow*.

**Kant**, Immanuel (1724-1804), Ger. philos.; representative of formalistic aestheticism: *Critique of Pure Reason*, 1781. Other principal works are: *Dreams of a Visionary*, 1762; *Religion within the Limits of Pure Reason*, 1793; *Towards Everlasting Peace*, 1795.

**Kant-Laplace theory**, properly 2 theories wh., though not identical, are usu. treated together; relate to formation of solar system out of a cosmic dust-cloud (*Kant*), or a rotating ball of gas (*Laplace*).

**Kaolin**, china clay; white substance, chemically hydrated aluminium silicate, chiefly prod. from feldspar by weathering; used in the manuf. of porcelain.

**Kapella Mountains**, range, Yugoslavia; up to 5,100 ft.; vineyards on S. slopes.

**Kapok**, a W. Ind. evergreen tree (*Eaiodendron anfractuosum*); also the vegetable down prep. from the hairy substance that grows on its seeds and in its woody capsules; damp-proof, resilient, and light; used esp. for upholstery and lifebelts.

**Kaposvar**, cap. (pop., 29,610) of the Hung. county of Somogy (2,590 sq.m.; pop., 368,485); wine, tobacco, horse breeding, and horse dealing.

**Kapp**, Wolfgang (1858-1922), Ger. politic.; with Gen. von Lüttwitz, seized Govt. offices Berlin, 1920, and procl. himself Reichs chanc. (*Kapp Putsch*); arrested for high treason, 1922; d. before trial.

**K.A.R.**, abbr. King's African Rifles.

**Karabagh**, **Nagorny**, auton. region forming part of Azerbaijan Soc. Sov. Repub.; 1,610 sq.m.; pop., 125,300, mainly Christian Armenians; mtns.; indust.: silver- and lead-mining, corn, fruit, and wine. Cap., *Stepanakert*.

**Kara Balkan**, wooded mountainous country (up to 7,150 ft.) on Graeco-Bulgarian frontier.

**Kara-Boghaz**, gulf on S.E. Caspian Sea; Glauber's salt production.

**Karachaev**, auton. area, N. Caucasus, U.S.S.R.; mtns. (Tchiper Ayatz, 10,820 ft.); 3,200 sq.m.; pop., 73,000; chf. export, hemp. Adminis. tn., Kamennomost, on rivs. Teberda and Kuban, begun 1928.

**Karachi**, cap. and seapt., prov. of Sind, Bombay, India, N.W. of Indus delta; pop., 260,600; third Indian port; chf. exports, wheat and cotton.

**Karaguez** ("Black-eye"), jester and princ. of Turk. and Moroccan shadow-plays; plays known as "Karaguez."

**Karahissar Sharki**, **Shabin Karahissar**, Turk. vil., W. Anatolia (4,900 sq.m.; pop., 258,750) and tn. (pop., 23,370); carpets, woollens, opium, alum; junc. on Anatolian Railway.

**Karaites**, Jew. sect (estab'd. 8th cent.) professing to follow the Biblical ordinances literally, to exclusion of Rabbinical tradition. Once very powerful and numerous, it now numbers abt. 10,000, mostly in S. Russia and Egypt.

**Kara-Kalpak**, auton. area, Kazakhstan A.S.S.R., bounded N.W. by Aral Sea, c. 56,750 sq.m.; pop., 304,000; aver. ann. rainfall, 4 inches. Consists largely of red sand desert; served by caravan routes. Adm. tn., Chimbai (pop., 5,372).

**Karakoram Mountains**, **Mustagh Range**, N. Kashmir, Centr. Asia, N.W. of Himalayas; Mt. Godwin-Austen (28,250 ft.).

**Kara-Kul**, lakes, Great and Little Asiatic Russia, 13,000 ft. above sea-lvl., on Pamir Plateau. Great K.-K., 10 m. wide, 12 m. long, max. depth, 764 ft.; Little K.-K., max. depth, 1,020 feet.

**Kara-Kum**, desert reg., Turkmenistan S.S.R., extending into Kazakhstan A.S.S.R., S. of Riv. Amu-darya; c. 115,000 sq.m.; tn. and oasis, Merv.

**Karamazov**, **The Brothers**, novel by Dostoevsky (g.r.), 1881.

**Kara Sea**, part of Arctic Ocean betw. Novaya Zemlya, Sib. coast, and Vaygach Isl.; frozen annually for 4-5 months; abundance of fish. **K. Strait**, betw. Vaygach Isl. and Nov. Zemlya.

**Karasu-Bazar**, tn., Crimean A.S.S.R., N.E. of Simferopol. Pop., 8,100, Tatars, Armen., Greeks, and Krymchaki (Tatar-speaking Jews). Fruit export.

**Karawanken**, E. part of Carnic Alps; calcareous mtns. forming frontier betw. Austria and Yugoslavia; chf. pk., Grintovec (8,429 ft.); Loibl Pass, carriage rd. from Klagenfurt to Laibach (4,495 feet).

**Karbala**, **Kerbela**, tn., Irak; pop., 66,160; sta. on Bagdad Rly.; holy city; Shiite place of pilgrimage.

**Karditza**, tn., prov. of Thessaly, Greece; pop., 14,200; vineyards and orchards.

**Karelia**, wooded country, N.E. Europe, W. of Lake Ladoga and stretching N. to



Kant

White Sea; Finn. provs. of Viipuri (Viipuri) and Kuopio in S.W.; in N.E. the Auton. Soc. Sov. Rep. of K.; c. 56,120 sq.m.; pop., 268,300; indust., forestry, fishing, and hunting; agriculture. Cap., *Petrozavodsk*, on W. shore, Lake Onega. **Karellans**, Finn. race in Finland and Russian Karelia; primitive hunters and fishers, a few farmers.

**Karikal**, Fr. colony, S. India, on Coromandel coast; pop., 57,900; cap., K. (pop., 17,600).

**Karlfeld**, Erik Axel (1864-1931), Swed. lyric poet. Nobel Prize (Lit.), 1931.

**Karlovac**, tn., Croatia-Slavonia, Jugoslavia, on Riv. Kupa; pop., 16,875; Gr. Orthodox and R.C. catheds.; transit trade; wine, tobacco.

**Karlovy Vary**: see CARLSBAD.

**Karlsborg**, chf. fortress, Sweden, on N.E. shore of L. Vätter.

**Karlsburg**: see ALBA JULIA.

**Karlskrona**, **Carlskrona**, cap., prov. of Blekinge, Sweden; pop., 26,370; chf. naval port of Sweden; docks cut out of the rock.

**Karlstad**, cap., prov. of Värmland, Sweden, N. of L. Venner; pop., 20,610; timber, matches, machinery.

**Karlstadt** (**Bodenstein**), Andreas (1480-1541), Ger. reformer, opposed to Luther.

**Karma** (Buddhism), the moral character that is formed by good or bad deeds determining the nature of an individual's rebirth; a term used also in Theosophy.

**Karnak**, vill., Upper Egypt, N. of Luxor (q.v.), on site of anc. Thebes; Temple of Ammon (largest known; enclosure 1,500 ft. long).

**Károlyi**, Michael, Count (1875- ), Hung. statesm.; fndd. K. party (Hung. Independence); Prem., 1918-19, Pres. Hung. Rep., 1919; now in exile.

**Karri**, Austral. timber tree, *Eucalyptus diversicolor*; grows to great height; its hard wood used for road-paving, shipb., etc.

**Karoo**, two plateaux (c. 100,000 sq.m.), in S. of Cape Prov., S. Africa; *Little Karoo* (c. 1,500 ft.; 200 m. by 30), in S., separated by Zwaarteberg from *Great Karoo* (c. 2,500 ft.; 350 m. by 60), in N.; bounded on N. by Nieuwveld Range and Sneeuwberg.

**Kars**, 1) vilay., E. Anatolia, Turkey, 5,575 sq.m.; pop., 205,100. 2) Fortified tn., pop., 13,735; carpets and rugs. Ceded by Turkey to Russia, 1878 (Treaty of Berlin); capt'd. by Turkey, 1918.

**Karst**, N.W. part of Dinaric Alps, Jugoslavia; a limestone belt extending from Gulf of Quarnero to Riv. Isonzo. Name also applied to other mtn. dists., showing same characteristic formation. Geologically favourable to formation of caves and underground rivers.

**Karvinna**, tn., Czechoslovakia, N.W. of W. Beskid Mtns.; pop., 10,330; coal mns.

**Karwendel**, peak, the Bavarian Alps, 6,042 ft.; K. rly. electric rly. betw. Innsbruck and Scharnitz (20 miles).

**Kasai**, riv., W. Africa; rises Angola; flows through S.W. Belg. Congo; chf. trib. Riv. Kwango; joins Congo on frontier of Fr. Equat. Africa; length 800 miles.

**Kashan**, tn., Persia, on N.W. slopes of Kuh-Rud Mtns.; pop., 45,370; wine, tobacco, silks, carpets.

**Kasher**, **Kosher** (Hebr., "proper"), term used to describe food ritually fit for use by Jews.

**Kashgar**, oasis and tn., Chin. Turkestan, on riv. same name; pop. of oasis, 300,000; of tn., 80,000; trading centre.

**Kashmir**, native State, N.W. India; JAMMU.

**Kassaba**, tn., Asia Minor, on Riv. Gediz, pop., 16,470; silk, tobacco.

**Kastron**: see CHIOS.

**Kastamuni**, 1) vilay., Asia Minor, Turkey, 19,565 sq.m.; pop., 335,600. 2) Tn., Black Sea coast; pop., 14,360; timber, minerals, copper.

**Katabolism**: see METABOLISM.

**Katahdin Mountain**: see APPALACHIAN MOUNTAINS.

**Kataphoresis**: see OSMOSIS.

**Katavothra**, 1) chasm through which a riv. disappears to flow underground, reappearing later; common in Arcadia, Greece. 2) Modern name for Mt. Oeta (q.v.).

**Kathlwar**, penins., W. India, betw. gulfs of Cutch and Cambay. **K. Agency**, collection 187 native States in penins.; area 21,000 sq.m.; pop., 2,540,000.

**Kation**, (phys.) an electro-positive ion (q.v.) which, in electrolysis (q.v.), moves to the negative electrode or cathode; Ks. are formed by metals and hydrogen. See IONIC THEORY.

**Katmai National Monument**: see VALLEY OF TEN THOUSAND SMOKE.

**Katmandu**, **Khatmandu**, **Kathmandu**, cap., Nepal, India, in the Himalayan vall. of the same name; pop., 108,800; many temples; manuf. jute and opium.

**Katowice**, **Kattowitz**, cap. of Polish Silesia, on Riv. Rawa; pop., 123,750; coal, iron, zinc.

**Katrine**, **Loch**, mountain lake, Perthshire and Stirlingshire, Scotland; 8 m. by 1 m. (13 sq.m.); max. depth 495 ft.; scene of Scott's *Lady of the Lake*; at E. end is gorge of the Trossachs; at W. end the aqueduct of Glasgow Corp'n. waterworks.

**Kattegat**, stretch of water betw. Jutland and S. Sweden, connected with Baltic by the Sound and the Great and Little Belts, and with N. Sea by the Skagerrak.

**Kattowitz**: see KATOWICE.

**Katydid**, name given in Amer. to insects of grasshopper family.

**Kauffmann**, Angelica (1741-1807), Swiss painter; R.A., 1769.

**Kaulbach**, Wilhelm von (1804-74), Ger. painter; *Destruction of Jerusalem by Titus*, 1839.

**Kaunas**, **Kovno**, cap. of Lithuania, at confl. of Rivs. Viliya and Niemen; pop., 92,450; univ., nat. museum, and theatre; wood trade, metal goods.

**Kaunitz**, Wenzel Anton, Pr. von (1711-94), Austr. statesm.; chancellor, 1753; coalition with Fr. and Russ. agst. Fredk. the Great, 1756.

**Kauri pine**, resiniferous New Zealand tree, 80-150 ft. high, producing strong, easily worked timber. **K. gum**, amber-like resin, dug from sites of K.p. forests; used in varnish-making.

**Kavalla**, seapt., Macedonia, Greece, on N. coast Aegean Sea; pop., 49,980; tobacco.

**Kavass**, Turk. milit. policeman.

**Kayak**, Eskimo single-seated boat, propelled by double paddle; made of sealskin, stiffened with walrus ribs.



Eskimo kayak

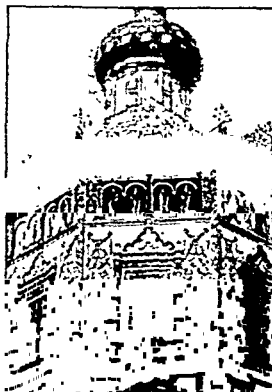
**Kaye-Smith**,

Sporting kayak

Sheila, Brit. novelist: *The Tramping Methodist*, 1908; *Tamarisk Town*, 1919; *Iron and Smoke*, 1928; *Susan Spray*, 1931.

**Kazakhstan**, auton. Soc. Sov. Repub., c. 1,143,000 sq.m., second largest in U.S.S.R., bounded N. by Siberian Area, E. by Chin. Turkestan, S. by Kirghiz A.S.S.R. and W. by Caspian Sea and Samara prov. Pop., 6,405,000 (65% Kazaks, of Turkish origin, who physically resemble Mongolians); sheep, agric., opium poppy. Chf. tn., Semipalatinsk; pop., 61,000. Adminis. centre, Alma-Ata, pop., 46,432.

**Kazan**, cap. and port of Tartar, A.S.S.R. on Riv. Kazanka; pop., 179,210 (72% Russ., 24% Tartars); Kremlin (1437)



Kremlin: Kazan

and univ., leather and soap factories.

**Kazanlik**, tn., Bulgaria, on Riv. Tundza,

pop., 1,700; attar of roses, carpets, shawls; known as "Kashmir of Europe."

**Kazbek**, sixth highest mountain of the Caucasus (16,556 ft.), two peaks, two craters (extinct volcano), and eight glaciers. Reputed site of punishment of Prometheus.

**Kazvin**, tn., N.W. Persia on S. slopes of Elburz Mtns.; pop., 41,800; rly. sta.; tobacco, camel- and horse-breeding.

**K.B.**, abbr. 1) Knight Bachelor. 2) Knight of the Bath. 3) King's Bench, Ct. of. 4) King's Bishop (chess).

**K.C.**, abbr. 1) King's Counsel. 2) Knights of Columbus (U.S.A.).

**K.C.B.**, abbr. Knight Commander, Order of the Bath.

**K.C.C.**, abbr., 1) Knight Commander, Order of the Crown (Belg. and Congo). 2) Catholic closure contraction.

**K.C.I.E.**, abbr. Knight Commander, Order of the Indian Empire.

**K.C.M.G.**, abbr. Knight Commander, Order of St. Michael and St. George.

**K.C.S.I.**, abbr. Knight Commander of the Star of India.

**K.C.V.O.**, abbr. Knight Commander, Royal Victorian Order.

**K.E.**, abbr. Knight of the Elephant (Den.).

**Kea**, variety of parrot, confined to New Zealand; olive-green, length abt. 20 in.; attacks living sheep, whose liver it is said to consume.

**Kean**, Chas. John (1811-68), Eng. actor, 1st appeared as Norval, 1827; acted with his father; m. Ellen Tree, 1842; produced spectacular revivals, particularly Shakespeare. His f. **K.**, **Edmund** (1787-1833), gave notable performances of Shylock, Hamlet, Othello, etc.

**Keats**, John (1796-1821), Eng. poet; died of consumption in Rome. *Poems*, 1817; *Endymion*, 1818, bitterly criticised in *Quarterly Review*; *Lamia*, *Isabella*, *The Eve of St. Agnes* and *Other Poems*, 1820; *Letters*, ed. by Lord Houghton, 1848.

**Keble**, John (1792-1866), Eng. clergyman, poet, *The Christian Year* (1827), and hymn-writer; supporter of "Oxford Movement"; edited with Newman and Pusey, *Library of the Fathers*. **K. College**, Oxford, fndd. 1870 by subscip. to commemorate John Keble.

**Kebnekaise**, one of the highest mnts. in Sweden, in N.E. range of Lappmarken; 7,005 ft.; barren; large snow-fields; glaciers.

**Kecskemet**, tn., Hungary, in Danube-Thess basin; pop., 73,110; horse breeding and dealing; vineyards.



Edmund Kean



Keats



**Kedah**, one of the unfederated Malay States on W. coast Malay Penins.; under Brit. protection; 3,640 sq.m.; pop., 429,000 (Chin. 78,000); rice, coconuts, rubber. Cap., *Alor Star*, pop., 18,600. **Pulau Langkawi**, large isl. off N.W. coast; has important granite quarries.

**Kėdainiai**, prov. and tn., Lithuania; prov., 927 sq.m.; pop., 92,455; tn., pop., 11,370; cattle breeding and agric.

**Kedgerie**, cold fish and rice heated in fat; served with finely chopped herbs.

**Keel**, lower wooden or iron longitudinal beam of ship; fore-and-aft backbone structure of steel vessel; also a flat-bottomed barge or lighter.

**Keene**, Chas. Samuel (1823-91), Eng. illustrator and caricaturist.

**Keighley**, munic. bor., W. Riding, Yorks, Eng.; manuf.: woollens, spinning machinery; pop., 40,400.

**Keith**, Sir Arthur (1866- ), Brit. anthropologist; sec. Anatomical Society of Gt. Brit., 1899-1902; pres. Roy. Anthropological Institute, 1913-17; Fullerian prof. of comparative anatomy, Roy. Institution, 1917-23; pres. Brit. Assoc., 1927.



Sir A. Keith

Author of *The Antiquity of Man*, 1915; 2nd edn., 1924; *The Engines of the Human Body*, 1920; *Religion of a Darwinist*, 1925, etc.

**Kekulé von Stradonitz**, Friedrich (1829-96), Ger. chem.; pioneer in organic chemistry.

**Kelat**, khanate and tn. in Baluchistan; pop. of tn., 12,300; residence of the Khan; Brit. Agency.

**Keller, Ferdinand** (1800-81), Swiss archaeol.; disc. lake dwellings. **K., Gottfried** (1819-90), Swiss novelist and poet. **K., Helen** (1880- ), Amer. authoress; blind, deaf and dumb since age of 19 mths.; *Story of My Life*.

**Kellermann**, Bernhard (1879- ), Ger. novelist; *The Sea*, 1910; trans. Engl., 1925.

**Kelley**, Edgar Stillman (1857- ), Amer. composer, conductor, and lecturer on music; music to *Macbeth*; *Prometheus Bound*; *Ben Hur*; orchestral suite to *Alice in Wonderland*; *Pilgrim's Progress*.

**Kellogg**, Frank Billings (1856- ), Amer. statesm., ambass. to Gt. Brit., 1924-25; Sec. of State, 1925-29; author of **K. Pact**, internat. agreement for proscription of war, signed in Paris, 1928.



Kellogg

**Kells**, *Book of*, Irish illuminated MS. of 8th cent., now at Trinity Coll., Dublin; beautiful variety of design.

**Kelly Field**, aerodrome in Texas, U.S.A.

**Kelmscott Press** (1890-96), printing

press fndd. by Wm. Morris (*q.v.*) at Hamersmith to lead return to mediaeval models in typography and book-illustration by use of hand processes wherever possible; prod. 53 works (67 vols.), 1891-98 in limited edns., incl. *Story of the Glittering Plain*, 1891; *K. Chaucer*, 1895, etc.

**Kelp**, seaweed, varieties of *Laminaria* and *Fucus*, collected in large quantities and burnt for the ashes, wh. contain iodine; also a useful manure.

**Kelso**, police burgh and mkt. tn., Roxburghsh., Scot., on Riv. Tweed; abbey; pop., 3,900.

**Keltie**, Sir John Scott (1840-1927), Brit. geographer; ed. *Statesman's Year-Book*, 1880-1926; librarian Royal Geographical Society, 1885; secretary, 1892; joint ed. *Geographical Journal*, 1915; auth. *The Partition of Africa*, 1894, etc.

**Kelvin**, William Thomson, 1st bn. (1824-1907), Brit. physicist; reconstructed mariner's compass; pres. Roy. Soc., 1890; O.M., 1902.



Lord Kelvin

**Kem**, tn., Russia, on W. shore of White Sea; pop., 8,170; race-horse breeding, sea fisheries; oldest Russ. settlement in Karelia.

**Kemal Pasha**, Ghazi Mustapha (1880- ) Turk. gen. and statesm.; com. in Gallipoli and Palestine, 1915; estab. Repub. with nat. assembly at Angora in Asia Minor; destd. Greeks, 1922; elected 1st Pres., 1923, ruling as dictator.

**Kemble**, family of Eng. actors. **K., Roger** (1721-1802), strolling player, had 12 children, most of whom appeared on the stage; the most famous were Mrs. Siddons (*q.v.*) and **K., John Philip** (1757-1823), noted for interpretation of Shakespeare's tragic heroes; manager of Drury Lane, 1788, and of Covent Garden, 1803. Other actors of the family were **Charles** (1775-1854), his daughter **Frances Anne** (1809-93), and his grandson **Henry** (1848-1907).



Kemal Pasha

**Kemmel, Mount**, ridge (495 ft.), Belgium, near Ypres; scene of severe fighting in World War.

**Kempen**, tn., Rhenish Prussia, nr. Düsseldorf; pop., 8,000; b.-place of Thomas à Kempis.

**Kempton Park**, Eng. race-course, 16 m. S. W. of London; flat race-meetings take place, April, May, June, Aug., Sept.; steeplechases in Jan., March, December.

**Ken**, Thos. (1637-1711), Eng. divine and hymn-writer; Bp. of Bath and Wells, 1684; committed to Tower as one of 7 bps. refusing to publ. James II's Decl. of Indulgence, 1688; deprived of see as a non-juror, 1691. *Awake, My Soul; Glory to Thee, My God; The Practice of Divine Love.*

**Kendal**, Margaret (Madge), D.B.E. (1849- ), Brit. actress; London début as Ophelia, at Haymarket.

**Kendal**, co. bor. and largest tn., Westmor., Eng., "Gateway to Lake Dist."; castle; manuf.: woollens, boots and shoes, paper; pop., 15,600.

**Kenilworth**, tn., Warwicksh., Eng., 5 m. N. of Warwick; pop., 7,500; castle (1120).



Kenilworth Castle

**Kenites** (O.T.), tribe of Midianites to wh. Jethro belonged; allies of Israelites after the Exodus.

**Kennel Club**, fndd. 1873, now governing body of canine world, controlling practically all dog-shows in United Kingdom.

**Kennesaw Mountain**, nat. monument (1928) in Georgia, U.S.A.

**Kennet**, riv. (44 m.), Wilts and Berks, trib. of Riv. Thames; rises Wilts Downs, passes Marlborough, Hungerford, and Newbury; joins Thames at Reading.

**Kenning**, periphrastic formula in O. Eng., O. Icel., and other anc. Teut. poetry.

**Kennington**, dist. of Lambeth, London, Eng.; site of palace from A.-S. times to c. 1640; contains park and cricket ground, the Oval (q.v.).

**Kensal Green**, dist. of N.W. London, in bors. of Paddington and Kensington; *K. G. Cemetery* and adjoining *St. Mary's (R.C.) Cem.* contain graves of Thackeray, Thos. Hood, Francis Thompson, Santley, and others.

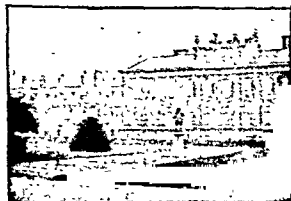
**Kensico Dam**, Bronx Watershed, N.Y. State, U.S.A.; N.Y. City water supply; 307 ft. high; storage cap., 30,573 mill. galls. (1915).

**Kensington**, royal bor., W. London; pop., 180,700; residential and shopping centre. Ch. of

St. Mary Abbotts (1869); IMPERIAL INSTITUTE; VICTORIA AND ALBERT MUSEUM (qq.v.).

**K. Gardens**, park

adjoining Hyde Park (q.v.), 275 ac.; Albert Memorial (1876, to Prince Consort); bronze equestrian group, *Physical Energy* (G. F.



Kensington Palace

Watts); *Peter Pan* statue (Sir G. Frampton, 1912). **K. Palace**, on W. side of K. Gardens, royal residence from Wm. III (1689) till Geo. III; restored and enlarged by Wren; B. place of Qn. Victoria, and of Qn. Mary, consort of Geo. V.

**Kent**, co., S.E. Eng., betw. Thames estuary and Eng. Channel; area, 1,552 sq.m.; pop., 1,218,600. Contains part of Greater London. Fertile agric. country with many woods, orchards, and hop-gardens, with their characteristic oast-houses ("the garden of England"). The North Downs (q.v.) reach to Dover. Great contrasts of scenery: the Weald (q.v.) charming, the N. Kent coast monotonous; coal-mines in E.; cement works, gunpowder, petroleum, paper; aeroplane works at Rochester; oyster-fisheries at Whitstable. Chatham and Sheerness naval bases; Dover, Folkestone, and Gravesend passenger ports; Canterbury seat of archbp.; Tunbridge Wells fashionable spa; many popular seaside resorts; co. tn., *Maidstone*; largest tn., Gillingham.

**Kent's Cavern**, cave, S. Devon, 1 m. E. of Torquay; flints, remains of extinct mammals (incl. sabre-toothed tiger) discovered here indicate early existence of man in Devon.

**Kentia**, an Austral. pinnate-leaved palm, cultivated in N. Eur. in hot-houses as an ornamental plant.

**Kentucky** (the "Dark and Bloody Ground"), State, U.S.A., bounded on N. by Ohio Riv.; 40,598 sq.m.; pop., 2,630,000; swamps in S.W.; famous caves; blue-grass area; tobacco, hemp; timber; coal, petroleum; horses. Cap., *Frankfort*.

**Ken Wood**, estate of 74 acres and mansion, adjoining Hampstead Heath, N.W. London; property of Earls of Mansfield for over a century, until 1914, part bought for nation by public subscription (1924), remainder bequeathed (1927) to nation by 1st. E. of Iveagh, together with the house and collection of pictures, incldg. works of Reynolds, Romney, Gainsborough, Van Dyck, Rembrandt, etc.

**Kenya Colony and Protectorate**, formerly Brit. E. Africa; Brit. crown colony and protectorate (the latter comprising small coastal strip at mouth Riv. Tana); bounded N. by Abyssinia and Anglo-Egyptian Sudan, W. by Uganda, S.W. by Lake Victoria and Tanganyika Territory, S.E. by Indian Ocean, and E. by Jubaland (Ital. Somaliland); area, 225,000 sq.m.; pop., 3,025,100 (nearly 3 million Africans, 16,800 Europeans, 59,600 Indians, 12,200 Arabs). Climate varies from humid trop. coasts to the healthy interior plateaux (up to 7,000 ft.), with good pasture; suitable for Europeans; volcanic mtns. include Mt. Kenya (17,040 ft.); rvs. Tana and Athi; parts of lakes Rudolf (N.W.) and Victoria (S.W.); big game preserves; over 3,500

sq.m. forest land; products and exports, coffee, sisal fibre, maize, wheat, raw cotton, rice, coconuts, oilseeds; minerals hardly worked; rlys. 1,600 m.; cap., *Nairobi*; port, Mombasa.

**Keokuk Dam**, Mississippi Riv., Iowa, U.S.A.; 53 ft. high; 4,360 ft. long (1913); flood control.

**Képi** (Fr.), a light milit. cap.

**Kepler**, Johann (1571-1630), Ger. astron. and mathemat.; formulated **K.'s Laws** (1618); laws of planetary motion according to wh.: 1) the planets revolve round the sun in ellipses, having sun in one of the foci (*q.v.*); 2) line joining centre of sun and centre of planet (radius vector) travels over equal areas in equal time; 3) squares of periodic times of planets are proportional to cubes of semi-axis major (mean distances) from sun.



Kepler

**Keratin**, (biol.) horny, insoluble substance forming the bases of epidermal structures such as horns and nails of mammals.

**Keratitis**, (med.) inflammation of the cornea of the eye, resulting in corneal opacity.

**Kerb market**, (Stk. Exch.) N.Y., market orig. carried on in street outside Stk. Exch.; trade in securities not admitted to Stk. Exch. list; K.m. in N.Y. now has its own bldg. regulations, etc.

**Kerbela**: see KARBELA.

**Kerch** (anc. *Panticapaeum*), port, Crimea, Russia, on *Str. of K.*; pop., 34,580; import. steel and iron foundries; many Greek works of art, dating 4th and 5th cents., found in sepulchral mounds.

**Kerensky**, Alex. Ferdinand (1881- ), Russ. statesm.; leader of small "Labour" (*Toil*) Group in Duma; Min. of Justice in 1st revlnary. Govt., 1917; then Pr. Min. with support of Mensheviks and Soc. Revs. till overthrown by Bolsheviks, Nov., 1917; fled abroad.

**Kerguelen Islands**, largest sub-antarctic group (1 main isl. and 130 islets) in S. Ind. Ocean; 1,317 sq.m.; uninhabited; low plateau; in W. of main isl. is a glacier-covered range (*Mt. Ross*, 6,070 ft.); fern, moss, herbs (*K.* cabbage, remedy for scurvy); penguins. Annexed by France, 1893.



Kerensky

**Kermadec Islands**, group Brit. islands in Pacific, 700 m. N.E. of New Zealand (to which they belong); 13 sq.m., uninhabited.

**Kermadec Trench**, depression, Pacific Ocean; depth, 29,500 feet.

**Kerman**, prov., S.E. Persia; desert and

mountainous country; cattle breeding, tobacco; cap., Kerman; pop., 35,370.

**Kermanshah**, cap. prov. of K., Persia, on N.W. slopes of Pusht-i-Kuh range; pop., 60,000; fruit, wines, silks, opium.

**Kermes**, 1) a crimson dye obtained from the *K. ilicis*, a species of insect belonging to the Coccids; cochineal (*q.v.*) now used in its place. 2) A bright red mineral, a compound of antimony.

**Kermess**, orig. feast of the consecration of a new church in Germany, Holland, etc.; now any church festival; also a fair.

**Kernel**, (bot.) inner portion of seed, endocarp; used gen. of edible fruits, such as nuts.

**Kerosene**, see PETROLEUM. **K. shale**: see BOGEHEAD COAL.

**Kerr cell**, (chem.) vessel with windows for the passage of light, and cntg. one of the fluids that show the two *Kerr Effects*; 2 electrodes in the liq. prod. an elec. field, causing double refraction depending in amt. on applied voltage. When polarised light is passed thr. the cell its intensity varies in acc. with elec. field. Used by Karolus in Pictorial Telegraphy. See TELEVISION.

**Kerria**, *K. japonica*, Japanese rose, rosaceous shrub with bright yellow flower.

**Kerry**, marit. co., Munster, I.F.S.; area, 1,815 sq.m.; pop., 149,200; coast deeply indented by Tralee, Dingle, and Kenmare Bays; islands include Valencia Isl. and the Blaskets (westernmost point of Ire.); interior mountainous, reaching, in *Carrantuohill* (3,414 ft.), in Macgillicuddy's Reeks, highest peak in Ire.; lakes include *Lakes of Killarney*: agric., dairy farming, Kerry cattle, fisheries; co. tn., *Tralee*. **K. cattle**, small, black breed from S.W. Ire.; hardy, good milkers.

**Kersey**, coarse, ribbed, woollen cloth.

**Kesteven**, S.W. division Lincs, Eng.; chf. tn., *Sleaford*.

**Kestrel**, *Falco tinnunculus* or *Tinnunculus alaudarius*, migratory bird of prey, common in Brit. Isles, variously referred to a sub-genus of the falcons or to a separate genus *Tinnunculus*; also known in Eng. as "wind-hover," or "standgale" (stonegale, stannell).

**Keswick**, mkt. tn., Cumb., Lake Dist., Eng., tourist centre, 1 m. from Derwentwater; lead pencils; pop., 4,600.

**Ketch**, small sailing-vessel, with main and small mizzen mast fore-and-aft rigged; chiefly used for fishing.

**Ketchup**, catsup, savoury sauce most frequently made from mushrooms or tomatoes.

**Ketones**, (chem.) class of organic chem. compounds derived from secondary alcohols and containing divalent group = C = O; simplest is acetone (CH<sub>3</sub>)<sub>2</sub>CO.

**Kettering**, urb. dist., Northants, Eng.; manuf. boots and shoes, plush; ironworks; pop., 31,200.

**Kettledrum**, percussive instr.; copper drum covered by skin, the tension at which it is stretched determining the pitch of the note.

**Kett's Rebellion**, 1549, a rising of peasantry in Norfolk and Suffolk under Robert Kett, a tanner, who was deftd. nr. Norwich and subsequently executed.


**Ketubah** (Hebr.), marriage contract drawn up in accordance with Jewish religious law—often a very ornate document.

**Keuper**, (geol.) uppermost division of Triassic (*q.v.*) system; extends over large area in Brit. Midlands, and esp. in Alsace and Lorraine, Swabia, and Luxemburg.

**Kew**, residential suburb, W. London, on Riv. Thames; included in Richmond (*q.v.*).

**K. Gardens**: see ROYAL BOTANIC GARDENS. At *Kew Palace* (1631), Qn. Charlotte died in 1818.

**Key**, Ellen (1849–1926), Swed. author; aroused controversy by her views on the family; *The Century of the Child*, 1900; *Lines of Life*, 1903–06.

**Key**, 1) (tech.) see LOCK. 2) (Mus.) Tonality; grouping of notes of the scale round a tonic or **K.-note**, indicated after the clef by **K.-signature** (exc. in C maj. and A min., wh. require none). Also, mechanism on organ and kindred instruments for admitting wind to pipe affected; on piano for causing hammer to strike the string. 3) Directions for use and deciphering of code or cipher. **K.-board**, the notes on an organ, or piano, to be played with the hands; other instr. with K.: accordion, celesta, harmonium, etc.; see MANUAL. **K. industries**, those essential to the carrying on of staple industry. **K. I. duties**: see CUSTOMS DUTIES. **K. pattern**:  **Key Pattern** *Greek Key*, classical ornament consisting of lines turning at rt. angles; so-called from its similarity to wards of a key.

**Keyes**, Sir Roger, 1st bt. (1872– ), Brit. adml.; com. Dover Patrol; operations at Zeebrugge and Ostend, 1918.

**Keynes**, John Maynard (1883– ); Brit. polit. econ.; deputised for Chanc. of Excheq. on Supreme Econ. Council, 1919; *The Economic Consequences of the Peace*, 1919.

**Keynote**, (mus.) fundamental note of a scale or tonality from which it takes its name.

**Keys, House of**, the lower branch of the Tynwald (or Tynwald Court), the legislature of the Isle of Man, the "Council" being the upper branch. The latter consists of the lieutenant-gov., the bp., the two deemsters (*q.v.*), with 4 other officials (all apptd. by the Crown), and the Keys of 24 members elected (since 1866) for 5 years by property owners (manhood and woman suffrage at 21 yrs.). The House of Keys is one of the earliest legislative assemblies still in existence. **Keys, the Power of the**, (eccl.) the authority to

grant or withhold absolution claimed by the R.C.Ch. to have been transmitted through St. Peter (see MATT. xvi, 19) to the Pope and the R.C. priesthood.

**Keyserling, Ed. von** (1855–1918), Livonian author. **K., Ct. Hermann von** (1880– ), Livonian philosopher and essayist; *Creative Understanding*, 1929.

**Keystone**, (bldg.) wedge-shaped centr. stone, keying or locking in position the *voussoirs* (*q.v.*) of an arch; often richly ornamented. **K. State**: see PENNSYLVANIA.



Keystone

**Key West**, port, on isl., extreme S. of Florida, U.S.A.; pop., 21,000; joined to mainland by rly. bridge; sponges, turtle-fisheries; cigars.

**K.G.**, abbr. Knight, Order of the Garter. **kg.**, abbr. kilogram.

**K.G.C.**, abbr., 1) Knight Grand Cross; 2) Knight of the Golden Circle (U.S.A.).

**kgm.**, abbr. kilogram-meter.

**Khabarovsk**, tn., Far Eastern Area, S.F.S.R., on Riv. Amur; pop., 49,705; import. centre for sable trade. Tanning, fur-dressing.

**Khaiber, Khyber Pass**, betw. Punjab, India, and Afghanistan; extends 33 m. beyond Jamrud, a fort 12 m. W. of Peshawar; summit at Landi Khotal (3,370 ft.); 10–150 yds. wide; flanked by mtns. up to 3,400 ft.; rly. from Peshawar (to be extended to Kabul).

**Khaki** (Pers.), dull-coloured material for uniforms.

**Khalifa, The, Abdullah el Taaisha** (1846–99), succ. Mohammed Ahmed as Mahdi, Egypt. Sudan, 1885; destroyed Khartoum; made Omdurman his capital; deftd. and army annihilated at Omdurman, 2 Sept., 1898; slain at Om Debreikat, 25 Nov., 1899.

**Khamsin, Kamsin**, hot S. wind, simoom, blowing for abt. 50 days, March–May, in Egypt.

**Khan**, title of ruler in various states in centr. Asia; title signifying "of royal or gentle birth," in Moslem countries of centr. Asia and N. India; also an Arab. or Pers. caravan-serai (*q.v.*).

**Khan-tengri**, highest peak of the Tien-shan Mtns.; 23,950 feet.

**Kharkov**, cap. Ukrainian S.S.R., pop., 417,345 (38% Ukrainians, 35% Russ.). Opera House, theatre, univ., high schools, scientific institutions, museums; machine manuf., textile trade. Air traffic centre. During World War and Revolution, occupied in turn by six armies.

**Kharpot**, tn., Turkish Kurdistan, N. of the source of the Tigris; pop., 21,675; carpet weaving.

**Khartoum, Khartum**, cap. Anglo-Egypt. Sudan, at confluence Blue and White Nile; cathed.; Gordon Memorial Coll.; Kitchener Memorial Medical School; pop.,

42,000. Opp., on Blue Nile, lies *Khartoum North* (pop., 102,500), and on White Nile, Omdurman (*q.v.*). Stormed by the Mahdi, Jan., 1885, after a defence of four months by Gen. Gordon, who was massacred with his troops; retaken by Kitchener in 1898.

**Khawak Pass**, fortified caravan route across Hindu Kush, 12,000 ft.; used by Alexander the Great.

**Khazars**, anc. Turk. people settled betw. Caucasus and Caspian. Rose to power on collapse of Huns (6th cent. A.D.); accepted Judaism in 8th cent.; conqd. by Russ., 10th century.

**Khedive** (Pers. *khediv* = commander), from 1867 to 1922 title of the Viceroy of Egypt.

**Kherson**, port, Ukrainian S.S.R., on Riv. Dnieper; pop., 58,800; wool and grain trade, shipb. John Howard, Eng. philanthropist, bur. 1790.

**Khibinogorsk**, tn., Gulf of Kandalaksha, White Sea, Eur. Russia, created 1929; pop., 40,000. *Apatite (q.v.) discovd., 1930.*

**Khingan**, two mtn. ranges, E. Asia; a) *Great K.*, separating Mongol plateau from Manchuria (alt. 8,000 ft.); b) *Little K.*, offshoot of Great K.; separates Sungari vall. from that of the Amur.

**Khiva**, tn., Kharezmi dist., Uzbek S.S.R., Asia; pop., 20,250; dependent on Riv. Amu Darya for irrigation. Silk and carpet manufac.; important airport. Taken by Arabs, A.D. 680. Native dynasty, Khanate, expelled by Soviets, 1919.

**Khonds**, aborig. mixed Dravidian (*q.v.*) race of Orissa distr. of India.

**Khorassan**: see KHURASAN.

**Khorsabad**, oldest ruined city of Assyria, cap. of King Sargon II (B.C. 722-705).

**Khortitsa**, isl. on Riv. Dnieper, first settlem. of Zaporozhian Cossacks. Scene of Gogol's novel, *Taras Bulba*.

**Khurasan**, **Khorassan**, prov., N.E. Persia; 150,000 sq.m.; pop., c. 1,000,000; mountainous borders, centr. deserts, with fertile valleys, wool, turquoises (nr. *Nishapur*). Cap., *Meshed*.

**Khyber Pass**: see KHAIBER PASS.

**Kiakhta**: see TROITSKOSAVSK.

**Kiang**, wild ass of barren plains of Tibet, where it lives in herds at elevations of 14,000 ft. and upwards.

**Kiangsi**, prov., S.E. China; 67,280 sq.m.; pop., 27,563,410; mtn. ridges with fertile valleys; corn, rice, tea; porcelain. Cap., *Nanchang*.

**Kiangsu**, coastal prov. of N. China; 39,090 sq.m.; pop., 34,624,450; silk, cotton, rice, wheat; contains the largest indust. tns. in China; cap., *Chingkiang*.

**Kiaochoo**, territ. on K. Bay, N. China; area, c. 200 sq.m.; pop., 59,100; straw goods, textiles; cap., *Tsingtao*. Leased by Germany,

1898; captured by Japan, 1914, returned to China, 1922.

**Kichkas**, indus. tn., Ukraine S.S.R., begun 1927; opened 1932; site of Eur.'s largest dam, 170 ft. high, spanning Riv. Dnieper ( $\frac{1}{4}$  mile); also, of the world's most powerful hydro-elec. plant (max. gener. capacity 1,100,000 h.p.) Dneprostroi. Pop., 125,100 (1932). Pipes laid 120 m. to Donetsk coal basin.

**Kicking Horse Pass**, pass (5,295 ft.) over Rocky Mtns. betw. Brit. Columbia and Alberta; traversed by C.P. Railroad.

**Kidd**, Capt. Wm. (d. 1701), pirate; commd. to suppress pirates by Gov. of Mass. Bay (1695), and turned p. himself; arrested at Boston, Mass., 1699; sent to Eng.; hanged at Execution Dock.

**Kidderminster**, mun. bor. Worcs, 15 m. S.S.W. Wolverhampton; pop., 28,900; manuf. carpets. Richd. Baxter ministered here, 1641-66; birthplace, Sir Rowland Hill.

**Kiderlen-Wächter**, Alfred von (1852-1912), Ger. statesm.; For. Sec., 1910-12; *Morocco negotiations with Fr. (Agadir incident)*, 1911.

**Kidneys**, (physiol.) organs of excretion placed on each side of the body at height of 12th rib; they excrete urine from blood; most important organs for eliminating poisons and waste products. **Pelvis of K.**, funnel-shaped reservoir; discharges into the bag-shaped bladder by way of the ureter; inflammation is caused by infection of K. pelvis, usually due to *Bacillus coli*. **Inflammation of K.** (nephritis), inflammatory disease of K., due to cold or infection; causes presence of albumen and blood in urine. **Sinking of K.**, **Floating K.**, loosening of K. due to wasting, usually on right side. **Stones in K.**, deposit of uric acid crystals or oxalate of calcium formed by separation of solid matter from urine in K., causes painful cramp of K. pelvis and ureter: stone may also form in the bladder.

**Kidron**, brook, E. of Jerusalem, betw. the city and Mt. of Olives; became depository of cast-out idols and common burial-place.

**Kiel**, port, Schleswig-Holstein, Prussia, on the Kieler Förde, inlet of Baltic; Ger. naval base; univ. (1665); shipb., fisheries; pop., 219,200. **Kiel Canal** (*Kaiser Wilhelm Canal*), opened 1895, connects Baltic (Holtenua, Kieler Förde) with North Sea (Brunsbüttel, estuary of the Elbe); length, 61 m.; depth, 36 ft.; breadth at bottom, 144 ft.; at water-level, 335 ft.; large double locks at both ends. By Treaty of Versailles open to vessels of all countries at peace with Germany.

**Kielce**, co., Poland; area, 9,886 sq.m.; pop., 2,535,900; agric.; coal, iron, zinc; cap., Kielce (pop., 41,350), R.C. bpric.; leather, textiles.

**Kierkegaard**, Sören (1813-55), Dan. philosopher and psychologist; *Either—Or*, 1843.

**Kieselguhr**: see DIATOMACEOUS EARTH.

**Kiev**, tn., Ukrainian S.S.R., on Riv. Dnieper, third largest city of Sov. Union; pop., 513,640; many churches (St. Sophia's Cath., 11th cent.), and monasteries (Lavra, oldest in Russia); univ., tech. college, scient. instit., nat. museums and theatre. Machin., textiles, sugar. Occupied since Palaeolithic times.

**Kikuyu**, inland prov. Kenya; cap., *Nyeri*.

**Kikuyu Controversy**: In June, 1913, at a missionary conference in the prov., the bps. of Uganda and Mombasa administered communion to worshippers, irrespective of denomination. Declared irregular in 1915.

**Kilauea**, active volcano, Hawaii, on side of Mauna Loa; alt., 4,000 ft.; crater 8 m. by 6 miles.

**Kildare**, 1) inland co., Leinster, I.F.S.; area, 654 sq.m.; pop., 58,000; surface flat, with Bog of Allen in N.W.; contains the *Curragh* (common 6 m. by 2 m.; horse-races); rivs. Liffey, Boyne, Barrow; agric., stock-raising, brewing, distilling. 2) Cap. co. K.; cathed.; pop., 2,100.

**Kilderkin** or **runlet**, small cask, 18 imperial gallons, 2 firkins, or  $\frac{1}{2}$  barrel.

**Kilimanjaro**, extinct volcano, Tanganyika Terr., E. Africa, highest mtn. in Africa; two snow-covered peaks: *Kibo* (19,720 ft.), *Mawenzi* (17,570 ft.); first climbed by Dr. Hans Meyer in 1889.

**Kilkenny**, 1) inland co., Leinster, I.F.S.; area, 796 sq.m.; pop., 71,000; surface undulating; rivs. Barrow, Suir, Nore; agric., pasture, marble, anthracite, brewing, distilling. 2) Co. tn., Co. Kilkenny; pop., 10,000.

**Killarney, Lakes of**, chain of three lakes near *Killarney*, mkt. tn., Co. Kerry, Munster, I.F.S. (pop., 5,300): *Upper Lake* (2 $\frac{1}{2}$  m. by  $\frac{1}{2}$ ), *Middle* or *Muckross Lake* (2 m. by 1), and *Lower Lake* or *Lough Leane* (5 m. by 2 $\frac{1}{2}$ ).

**Kill Devil Hill**, nat. monument, N. Carolina, U.S.A.

**Killer whale**: see GRAMPUS.

**Killiecrankie**, dist. W. Perthsh., Scot.; battle of, 1689, victory of Highland Jacobites under Dundee, who was slain.

**Kilmarnock**, W. suburb of Dublin, I.F.S.; milit. hospital by Wren (1683). At **K. Jail**, Parnell was imprisoned (1882) and Sinn Fein leaders were executed (1916).

**K. Treaty**, unofficial agreement betw. Gladstone and Parnell (there at the time imprisoned) regarding introd'n. of an Irish Land Bill (1882).

**Kilmarnock**, police burgh and mkt. tn., N. Ayrsh., Scotland, on Riv. Irvine; pop., 38,100; Burns' monument and museum; first ed. Burns' poems published here, 1789; rly. works; manuf. textiles, carpets, porcelain; dairy produce.

**Kiln**, furnace for firing ceramic and other objects, or treating minerals by heat (e.g., converting limestone into lime) in wh. products of combustion act directly on objects. In **muffle k.**, products of combustion (furnace gases) play round outside of muffle, a thin walled refractory chamber containing objects to be fired.

**Kilo-**, (metric system) prefix indicating 1,000 times; e.g., 1 *k.-gram* (kg.) = 1,000 gr. (2.20462 lb.), the unit of weight of the metric system. **K.-grammetre** (kgm.), the techn. unit of work (*g.v.*). **K.-metre** (km.) = 1,000 metres (1,093.63 yds.). **K.-watt** (kw.) = 1,000 watts. **K.-watt-hour**, (kwh.) = 1,000 watt hours.

**Kilocycle**, practical unit for measuring frequency of any vibration, but esp. electric oscillations and wireless waves; = 1,000 complete oscillations per second.

**Kilom.**, abbr. kilometre.

**Kilt**, **filibeg**, short pleated skirt forming part of nat. dress in Highlands of Scot. and of Highland regiments (*g.v.*). Similar cost. worn by men in mtn. districts of centr. Europe.

**Kilung**, Jap. port in N. Formosa; pop., 74,540; manuf. camphor oil.

**Kimberley**, cap. Griqualand West, Cape prov., S. Africa; pop., 38,700 (18,500 Europeans); diamond mining. Besieged by Boers, Oct., 1899–Feb., 1900; relieved by Gen. French.

**Kimbolton**, vill., S.W. Hunts, on Beds border; **K. Castle** (Duke of Manchester), occupied by Catherine of Aragon, 1533–36; rebuilt by Vanbrugh.

**Kimeridgian**, (geol.) sub-division of Jurassic (*g.v.*) system; bluish bituminous clay, extensively found in Lincs, Yorks, and Dorset, Eng.; contains many fossil remains.

**Kimono**, a Jap. over-garment with wide sleeves, used by both men and women; held by a sash-like girdle (*obi*).

**Kincardineshire, the Mearns**, marit. co., E. Scot.; area, 383 sq.m.; pop., 39,900; rises inland to the Grampians (2,550 ft.); rivs. Dee, Esk; cattle and sheep, fishing; co. tn., *Stonchaven*.

**Kinchinjunga, Kanchanjanga**, mtn. Nepal, India, third highest in the Himalayas; 28,146 feet.

**Kindergarten**, school for educ. of children under 7 by means of object-lessons, toys, games, etc., if poss., in open air, on system orig. by F. Froebel (1837), and introduced into England, 1854.

**Kinderscout**, (2,088 ft.) highest point Peak District (*g.v.*), England.

**Kinematics**, sc. of motion, study of movement without regard to the motive forces, wh. are subject of dynamics.



Kimono

**Kinetics**, study of motion as imparted by forces. **K. gas theory**: that molecules of all gases move freely with velocity in straight lines, contin. colliding in the manner of perfectly elastic bodies. Their mean K. energy is propor. to the absolute temp.; gas pressure results from impact of the molecules on walls of containing vessel. When this theory is compared with measurements of actual gas properties, no. of molecules in a given vol. and their velocity can be calculated.

**Kinetoscope**: see BIOSCOPE.

**King**, hered. ruler in monarchical States, with spec. prerogatives and title.

**King**, Wm. Lyon Mackenzie (1874- ), Canadian Liberal statesm.; M.P., 1908-11, and from 1919; Minister of Labour, 1909-11; leader of Liberal party, 1919; Pr. Min., 1921-30; vice-pres. Assembly of League of Nations, 1928.

**King-crab**, **Horse-shoe crab**, *Limulus*, marine creature having upper surface of body covered by two great horny plates, beyond which projects the long, spine-like tail. These crabs are last survivors of a great group of Crustaceae whose fossil remains are found in early strata of marine origin. Present-day species confined to E. and W. Indies and E. coast of N. America.

**Kingfisher**, a bird remarkable for the gem-like brilliancy of its plumage; frequenting quiet streams throughout British Isles; ranging in Europe from Scandinavia and Russia to the Mediterranean. Unfortunately much persecuted for its gorgeous blue and fawn plumage. Feeds entirely on small fish, tadpoles. See LAUGHING KINGFISHER.



Kingfisher

**Kinglake**, Alex. Wm. (1809-91), Eng. author, *Eothen*, 1844, etc.; historian of Crimean War, 8 vols., 1863-87.

**King-post**, (archit.) piece of timber placed vertically in centre of a truss or support, in open-timber roofs.

**Kings, Books of, I and II**, (O.T.) known in *Vulgate* (q.v.) and R.C.Ch. as Kings III and IV (see SAMUEL, BKS. OF): hist. of Israel and Judah from last days of David until Babylonian exile; compiled 621-586 B.C.; extended and edited after the Exile.

**King's Bench**, orig. collective title of those judges who, on circuit or in Lond., dealt spec. with cases affecting K's. revenue or rights. Now, by merger of cert. other "Benches" of Judges, the K.B. Div. of High Ct. of Justice deals with all common-law cases (e.g., disputes about contracts, libels, and most everyday relationships). See CHANCERY; COMMON LAW.

**King's College**, Cambridge; fndd. 1441

by King Henry VI. Horace Walpole was among its alumni. **K. C., London**, fndd. by Roy. Charter, 1829, incorprtd. in Univ. of London, 1908; inclds. a Medical School (Hosp. bld. at Lincoln's Inn, 1839, removed to Denmark Hill, S. E. London, 1913).

**King's Counsel** (K.C.), title conferred by Ld. Chanc. (at his discretion) upon barristers who apply for it as an indication of professional status. They wear distinctive robes and are required by etiquette to charge higher fees.

**King's County**: see OFFALY.

**King's Cross**, in N.W. London; formerly *Battle Bridge*, tradit. scene of battle betw. Boadicea and Romans. Site of K.C. and St. Pancras Rly. stations, London termini respectively of the L.N.E. and L.M.S. railways.

**King's evil**, old name for scrofula (q.v.); so called because the disease was believed to be cured by the touch of the Kg. of England's, or of Scotland's, hand.

**Kingsley**, Henry (1830-76), Eng. novelist; bro. of Charles. *Recollections of Geoffrey Hamlyn*, 1859; *Ravenshoe*, 1861; *Silcolc of Silcolc*, 1867. **K., Charles** (1819-75), Eng. clergyman, poet, and author; *Westward Hol*, 1855; *Water Babies*, 1863, etc.; leader of Christian Socialism; prof. of mod. hist. at Camb. (1860-69); had (unsuccessful) theol. controversy with Newman. **K., Mary Henrietta** (1862-1900), Eng. author and traveller; visited W. coast of Afr., 1893-95; *Travels in West Africa*, 1897; *West African Studies*, 1899, etc.

**King's Lynn**, munic. bor. and seaside resort, 3 m. from mouth Riv. Ouse, Norfolk, Eng.; ancient seapt. and mkt. tn.; pop., 20,600.

**Kings of Arms**, chief officers of heraldry; in England: Garter, Clarenceux, and Norroy; in Scotland: Lyon; in Ireland: Ulster (q.v.). See also HERALD.

**King's Own Royal Regiment (Lancaster)**, Brit. infantry regt.; old 4th Foot (raised 1680); depot, Lancaster; record office, Preston; 16 battalions in World War.

**King's Own Scottish Borderers**, Brit. infantry regt.; old 25th Foot (raised 1689); depot, Berwick-upon-Tweed; record office, Leith; 12 battalions in World War.

**King's Prize**, the "blue ribbon" of rifle-shooting in the Brit. Empire; inaugurated in 1860 as Queen's Prize; competed for annually, at Bisley, under auspices of Nat. Rifle Ass., by present or past members of H.M. Forces or forces of a Brit. protectorate; shot for in three stages, first two of which are eliminating; in final stage, 10 shots at 300, 500, and 600 yds., 15 shots at 900 and 1,000 yds., giving possible aggregate score of 300. Prize (3rd stage), £250, gold medal and badge. Only woman winner,

Miss M. E. Foster (1930), late of the Women's Legion.

**King's proctor**, legal officer representing State in matrimonial cases; chief duty to expose and prevent collusive divorces or those in wh. complaining party has concealed unchastity; also, in war, in Prize Court. Office usually combined with that of Solicitor to the Treasury.

**King's Quair**, allegorical poem by Kg. James I of Scot., c. 1423, in 197 stanzas, rhyming a b a b b c c; based on Chaucer, (*q.v.*) and the *Roman de la Rose* (*q.v.*).

**King's Regiment** (Liverpool), Brit. infantry regt.; old 8th Foot (raised 1685); depot, Seaford (Liverpool); record office, Preston; 45 battalions in World War.

**King's Royal Rifle Corps**, colloq., *Sixtieth*, Brit. rifle regt.; old 60th Foot (raised 1755); uniform green with scarlet facings; depot and record office, Winchester; 26 battalions in World War.

**Kingston**, 1) cap. of Jamaica, on the S. coast; fine harbour; pop., 62,700. Ruinous earthquake in 1907. 2) Tn., New York State, U.S.A.; pop., 28,100; Ashokan Reservoir (N.Y. City's water supply), 5 m. W.; rly. repair works. Burned by British, 1777; after War of Indep. proposed as site for national capital.

**Kingston-on-Thames**, royal bor., since 1932 co. tn., Surrey, Eng., 12 m. S.W. London; residential dist. and riverside resort; A.-S. kings crowned here; pop., 39,100.

**Kingston-upon-Hull**: see HULL.

**Kingstown**: see DUN LAOGHAIRE.

**Kingsway**, thoroughfare in W.-Centr. London, Eng., connecting Holborn and the Strand via Aldwych (*q.v.*). Constructed (1900-05) on site of Clare Market and a number of small courts and alleys. At S. end, *Bush House*, important offices, built 1922-31, from designs by Amer. architect, Harvey Corbett, with sculptured group (Malvina Hoffman, 1925) typifying friendship betw. Gt. Brit. and U.S.A.

**Kinkajou**, small carnivore abt. size of cat, native of S. Amer., allied to coatis and raccoons, but with long prehensile tail; thick brownish coat; nocturnal and arboreal in habit.

**Kino**, astringent gum obtained from various tropical trees, used in tanning and in medicine.

**Kin ping mei**, "Lovely Women of a Wealthy Household," Chinese 16th cent. "novel of manners."

**Kinross-shire**, inland co., E. Scot.; area, 73 sq.m.; pop., 7,500; hilly surface containing *Loch Leven*, in which stands co. tn., *Kinross* (pop., 2,240); trout-fishing.

**Kinsale**, mkt. tn. and seapt., Co. Cork, Ire., at head of *K. Harbour*; pop., 2,900. Taken by the Spaniards and re-taken by

English, 1601; James II landed here, 1689. **Old Head of K.**, headland (250 ft.) ending a penins. (3 m.), 7 m. S. of Kinsale; first Eur. land sighted by ships from America.

**Kinship systems, classificatory**, institution found among all primitive peoples. Relationship terms used among us only for blood relations (*e.g.*, father, mother, brother, sister) are applied to clansmen and relatives, to indicate not blood relationship, but mutual obligations and privileges; *e.g.*, mother, and mother's sisters may all be called "mother"; father, father's brothers, mother's brothers may all be called "father."

**Kintyre**, penins. (40 m. by 7) of Argyllsh., Scot., ending in Mull (*q.v.*) of Kintyre (11 m. from N. Ire.); crossed in N. by Crinan Canal (*q.v.*).

**Kiosk**, an ornamental summer-house common in Persia and Turkey; applied to small pavilions for sale of newspapers, refreshments, etc.

**Kip**, untanned hide of young of large animal (cow, horse, camel, pig, etc.).

**Kipchak**, Turk. tribe of Ferghana, centr. Asia.

**Kipling**, Rudyard (1865- ), Brit. author: *The Jungle Book*, 1894; *Kim*, 1901; *Barrack Room Ballads*, 1892; *Nobel Prize* (Lit.), 1907.

**Kipp's apparatus**, (chem.) apparatus for generating gas by action of liquid on solid, automatically adjusting itself to demand; gas pressure drives liquid away from contact with solid when no gas is taken. Used in laboratories for making hydrogen by action of sulphuric acid on zinc, and sulphuretted hydrogen from iron sulphide and dilute sulphuric or hydrochloric acid.

**Kircher**, Athanasius (1601-80), Ger. physicist, archaeol., and mathemat.: inv. magic lantern (*q.v.*).

**Kirchhoff**, Robert (1824-87), Ger. physicist; researches, with Bunsen, in spectrum analysis (*q.v.*).

**Kirghis**: see LANGUAGE SURVEY, *Caucasian Languages*.

**Kirghizia**, Auton. Soc. Sov. Rep., Centr. Asia, created Feb., 1926; c. 76,000 sq.m.; pop., 1,045,900; mostly nomadic Kara-Kirghiz (Turkish-Tartar tribe) and Uzbeks; mtns.; wheat, barley, horse breeding. Cap., *Frunze*.

**Kirin**, prov., Manchuria, China, but included in Jap. State of Manchukuo, 1933; 106,000 sq.m., pop., 5,633,190; grain and poppy cultivation, coal mining; cap., *Kirin*, on Riv. Sungari (pop., 81,250); treaty port.

**Kirkcaldy**, royal burgh and seapt., Fifesh., Scot., 14 m. N. Edinburgh; the



Kipling



"Lang Toun", b. place Adam Smith; linoleum, linen, pottery, machinery; pop., 43,900.

**Kirkcudbrightshire**, or *East Galloway*, marit. co., S.W. Scot.; on Solway Firth: area, 898 sq.m.; pop., 30,300; coast rocky, surface hilly (*Merrick*, 2,764 ft.); much pasture (cattle, sheep, horses); granite quarries. **Kirkcudbright**, co. tn., on Dee estuary; pop., 2,300.

**Kirkstall Abbey**, ruined Cistercian abbey (1152), 3½ m. N.W. Leeds, W. Riding, Yorks.

**Kirkstone Pass**, mtn. pass (1,486 ft.), Westmorland, on road from Windermere to Ullswater; Traveller's Rest Inn, on summit, one of highest inhabited houses in England.

**Kirkwall**, royal burgh and seapt., cap. of Orkney Isls., on Pomona; pop., 3,500; 12th cent. cathed. (now parish church); distilling, boat-building.

**Kirriemuir**, police burgh and mkt. tn., Angus, Scotland, 6 m. N.W. of Forfar; pop., 3,300; linen weaving. B. place J. M. Barrie; Barrie associations ("*Thrums*").

**Kirschenwasser**, Ger. liqueur distilled from kernels of cherry-stones, chfy. used as flavouring.

**Kirtle**, 1) name for various skirted garments, from a loose gown or petticoat to a long hooded cloak. 2) (Meas.) Name for parcel of flax packed for transit.

**Kiruna**, tn., N. Sweden; pop., 9,240; nr. **Mt. Kirunavaara**, 2,360 ft., with iron ore deposit 1½ mill. tons, worked in the open. Port: Lulea.

**Kirunga**, intermittently active volcano, equatorial Africa, N. of L. Kivu, in Belgian Congo; highest pk., *Karissimbi*, 14,650 feet.

**Kish**, anc. city, Akkad, Mesopotamia, on both sides of old bed of the Euphrates; extensive temple and other ruins excavated since 1922.

**Kismet** (Arab.), in Moham. doctrine the inevitable fate allotted to man, which the faithful bear with submission.

**Kissingen, Bad K.**, tn., Bavaria, Ger.; pop., 6,500; min. springs, health resort.

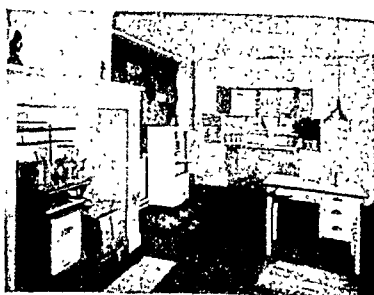
**Kistna, Krishna**, riv., Deccan, India; rises W. Ghats; flows across penins.; drains through wide delta into Bay of Bengal; length, 800 m.; not navigable.

**Kistvaen**, (archaeol.) prehist. sepulchral monument, with flat top and closed sides; covered with stones and earth.

**Kitchener of Khartoum**, Horatio Herbert, 1st E. (1850-1916); Brit F.-M.; recov. Sudan from Khalifa, 1898; c.-in-c. 2nd Boer War, 1900-02; c.-in-c. India, 1902-09; member of Com. of Imp. Defence, War Sec., 1914.

**Kitchen**, room in a house, hotel, institution, etc., in wh. food is prepared and cooked. The mod. K. is designed with a view to saving of labour and space, furniture, stove, appliances, etc., being so placed as to require minimum of energy for household work;

materials (chromium, porcelain, etc.) employed are such that minimum of cleaning is



Modern Kitchen

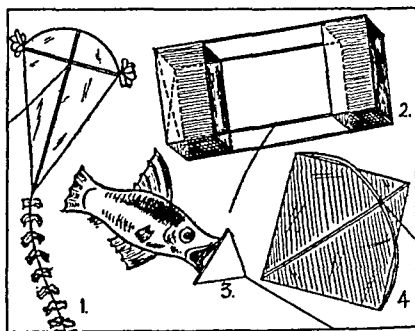
necessary. **K.-midden culture**: see SHELL-MOUND CULTURE.

**Kite**, 1) medium-sized bird of prey belonging to the sub-family Aquilinae; wide geographical distribution: Europe, Asia, Malaya, Africa, N. America.

**Red k.** of Europe may be 24 in. long; breeds in N. Eur., migrating to Asia Minor and N. Africa in winter. **Black k.** is native to Africa, migrates to S. Eur. **Swallow-tailed k.** (*g.v.*), native to Centr. and S. America. 2) Light frame covered with paper or linen, wh. rises into



Kite



Types of Kite

- 1) Common kite. 2) Box kite. 3) Chinese kite. 4) Japanese kite

the wind at end of a string; used as a toy and in meteorology. 3) (Finan.) See ACCOMMODATION BILL.

**Kite-balloon**, captive balloon for observation in war; sausage-shaped and so designed that it behaves like a kite in the wind and does not sway or revolve like a spherical captive balloon.

**Kit's Coty House**, dolmen, Kent, Eng., 3½ m. N.W. Maidstone.

**Kittiwake**, species of gull of the genus *Rissa*, the *R. tridactyla*, common to both sides of the N. Atlantic.

**Kitzbühel** (2,485 ft.), tn., Austr. Tyrol; health resort and winter sport centre on Kitzbühler Ache, which flows into the Chiemsee; pop., 2,500; copper mining.

**Kivu**: see LAKE KIVU.

**Kiwi**, *apteryx*, remarkable flightless bird of New Zealand; abt. size of large fowl; no visible wing or tail; nostrils placed near tip of long bill; fine hair-like feathers; nocturnal in habit; almost extinct.

**Kizel**, tn. U.S.S.R., centre of largest colliery dist. in Urals.

**Kizil-Irmak**, largest riv. in Asia Minor; rises in Kizil Dag (6,500 ft.), and flows from Armen. Highlands into Black Sea W. of Samsun; length, c. 590 miles.

**Kizil-Kum**, desert reg., Turkestan, betw. the lower Amu-darya and the Syr-darya.

**Kizlyar**, tn., Daghestan A.S.S.R., on Riv. Terek; pop., 10,114; noted for wine. New settlements fndd., 1928.

**K.K.K.**, abbr. Ku-Klux-Klan (U.S.A.).

**K.kt.**, abbr. King's knight (chess).

**Klagenfurt**, cap., prov. of Carinthia, Austria; pop., 27,500; mining school, aerodrome; iron foundries, textiles.

**Klaipeda**: see MEMEL 3).

**Klaproth**, Martin (1743-1817), Ger. chem.; disc. many elements: cerium, uranium, titanium, zirconium, etc.

**Klarälven**, Scandinavian riv., flowing from E. Norway, through Värmland, Sweden, into L. Vener; salmon fishing.

**Klausenburg**: see CLUJ.

**Kleiber**, Erich (1890- ), Ger. mus. conductor.

**Kleist**, Ewald von (1715-59), Pruss. soldier and poet; *Spring*. **K., Friedrich von** (1762-1823), Pruss. gen., deitd. Fr. at B. of Nollendorf (Kulm), 1813; hence *Count K. von Nollendorf*. **K., Heinrich von** (1777-1811), Ger. poet and novelist; *Battle of Hermann*, 1809.

**Kleptomania**, diseased state of mind, marked by inability to refrain from theft.

**Klerksdorp**, tn., Transvaal, S. Africa, 120 m. S.W. of Johannesburg, on borders Orange Free State; pop., 5,700 (3,100 whites); diamond mines.

**Klettenberg**, Susanne Katherine von (1723-74), Germ. pietist, the "Beautiful Soul" of Goethe's *Wilhelm Meister*.

**Klinger**, Friedrich Maximilian (1752-1831), Ger. poet; his play, *Sturm und Drang* (1776), gave name to period of Ger. literature. **K., Max** (1857-1920), Ger. artist and sculptor: *Beethoven*.

**Klinzy**, tn., Bryansk, Russia; pop., 22,300; important rope works.

**Klipspringer**, *Oreotragus saltator*, a small S. and E. African mountain antelope, resembling European chamois, but belonging to a genus of its own.

**Klondike**, small riv., Yukon, Canada,

joins Riv. Yukon at Dawson; centre of gold-fields (gold rush, 1896).

**Klopstock**, Friedrich Gottlieb (1724-1803), Ger. poet: *The Messiah*.

**Kluck**, Alexander von (1846- ), Ger. gen.; com. I Army of the West, 1914-15; ret'd., 1916.

**K.M.**, abbr. Knight of Malta.

**Km.**, abbr. kilometre.

**Knapsack**, case or bag worn by soldiers or travellers to carry pers. necessities, usu. suspended across shoulders by a strap.

**Knap-weed**, *Centaurea*, wild flower (purple) found in meadows; one of a very large class (*Compositae*); *C. cyanus* is the corn-flower (*q.v.*).

**Knaresborough**, mkt. tn., W. Riding, Yorks, on Riv. Nidd. 4 m. E. of Harrogate; pop., 6,000; 10th-14th cent. castle (Richard II imprisoned 1399); dropping well (petrifying effects).

Trad. b. place Mother Shipton; assoc. with Eugene Aram.

**Knebworth**, vill., Herts, 25 m. N. of London. **K.**

**House** was residence of Bulwer-Lytton for many years. **Visct. K.**, a title of the E. of Lytton, borne as courtesy title by eldest son.

**Knee**, (anat.) the joint between the thigh and lower leg, covered in front by the tendon of quadriceps, muscle of thigh in wh. the bony knee-cap is embedded. Injury to **K.-joint** freqtly. leads to synovitis (see SYNOVIA). **K. reflex**: see PATELLA. **Knock k.**, inward curving of legs at K.-joint, caused by rickets (*q.v.*).

**Kneller**, Sir Godfrey (1646-1723), Ger.-Eng. portrait painter; built K. Hall, Hounslow (1711), now Roy. Milit. Sch. of Music.

**Knickerbockers**, 1) nickname of descend. of old Dut. settlers of New York. Name applied to a type of knee-breeches.

**Knight**, Laura, D.B.E., Brit. painter; exhibited at R. A., 1903; elec. A.R.A., 1927; known for circus and stage studies.

**Knight**, 1) orig. attendant on prince or great lord; after Norman Conq. a landowner who held by milit. service, his rank being conferred by accolade (*q.v.*). Henry II converted personal service into scutage or money payment. By Tudor times knighthood was



Klopstock



Knebworth House

freq. conferred on civilians, but knight service was still in theory a condition of owning land above a certain value, and Charles I raised revenue by fining those who refused it or its financial equivalent; knight service was abolished at Restoration. See KNIGHTHOOD, ORDERS OF. 2) (Chess) One of the minor pieces; usu. represented by a carved horse's head. **K.'s move**, move by the kt. of 2 squares, one straight, one diagonal, leaping intervening pieces if necessary.

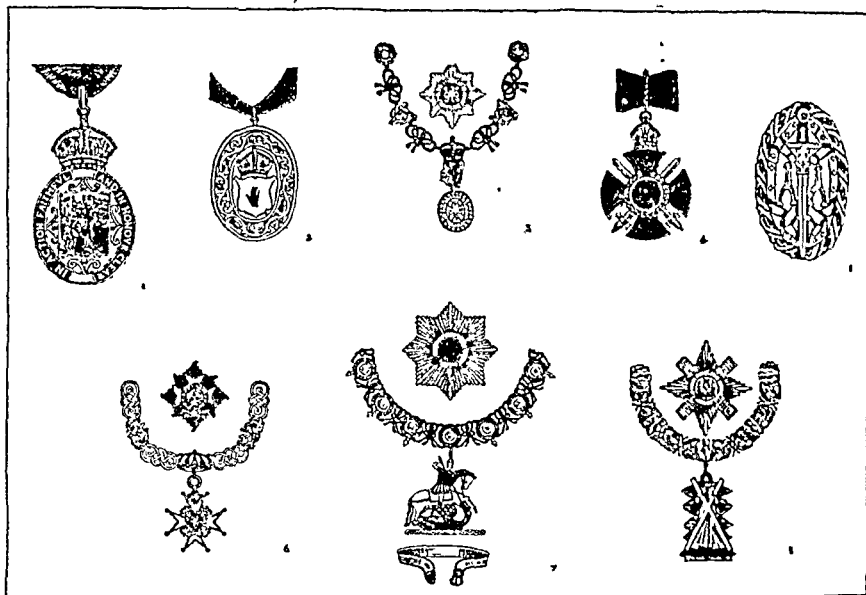
**Kighthood, Orders of**, in their earliest form at once milit. and relig. in character,

**Knight of the Burning Pestle**, mock-heroic drama by Beaumont and Fletcher, 1613, satirizing incongruously high-flown and chivalric language put into mouths of middle classes by such dramatists as Heywood.

**Knight of the Shire**, M.P. for a county, or rural division, as distinct from member for a borough; title originated in 1254; abolished, 1858.

**Knights Templars**: see **TEMPLARS**.

**Knitting**, handwork whereby a meshlike tissue is made with needles from looped threads. **K. machine** (**circular**), machine



- 1 Companion of Honour
- 2 Baronet's Badge (1929)
- 3 Order of St. Patrick
- 4 Order of Merit

- 5 Knight Bachelor (1926)
- 6 Order of the Bath
- 7 Order of the Garter
- 8 Order of the Thistle

Orders of Knighthood

fndd. with special reference to the Crusades. Such were the Templars, Hospitallers, and Teutonic Knights, and several Orders in Sp. and Port., all fndd. in 12th century. Later Orders inst. by sovereigns as means of bestowing distinction on subjects; the sovereign being Grand Master, and each O., or class within it, having special insignia. The earliest and highest Eng. O. is the Garter, others being the Bath, St. Michael and St. George, Star of India, Thistle (Scot.), St. Patrick (Ire.). The O. of Merit, not carrying knighthood, fndd. 1902 as reward of intellectual distinction. The O. of the Brit. Empire (5 classes) inst. during World War and widely bestowed. Among foreign Orders the most disting. is the Golden Fleece (*q.v.*). In Fr. all O. abol. at the Revolution, but Legion of Honour fndd. by Napoleon, 1802. In Ger. and Aus. (except O. of Merit) abol. after the World War,

in wh. the needles are set radially for making bag or tube-shaped articles, such as stockings, gloves, etc.

**Knivskjaerodden**, isl. off N. coast Norway; farther N. than North Cape (*q.v.*).

**Knock-knee**: see **KNEE**.

**Knockmealdown Mountains**, range, borders Cos. Waterford and Tipperary; highest peak, 2,609 feet.

**Knock-out**, (boxing) end of contest, when one of the combatants is unable to rise within 10 secs. **K.-o. competition**, one in wh. losing side is eliminated in each round.

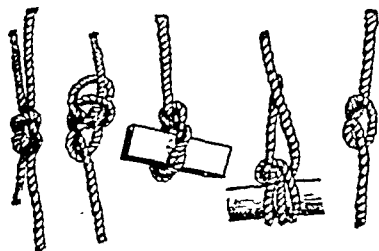
**Knole**, seat (Lord Sackville), Kent, 1 m. S.E. of Sevenoaks; mainly 17th, though dating from 15th cent.; picture gallery, antique furniture.

**Knoll**, top of small hill; hillock, mound. In countries formerly covered with sheet ice and glaciers (*e.g.*, Sweden), they have a rounded, dome-like appearance due to move-

ment of glaciers, and are a striking characteristic of the landscape.

**Knossos**, city and palace of Minos, in Crete. Centre of Minoan (q.v.) civilization; excavated by Sir A. Evans (since 1893).

**Knot**, 1) fastening of rope, cord, string, etc., one free end being passed thr. loop and drawn tight. Various kinds are used, esp. for securing ropes on ships, e.g., *reef K.*, two over-hand knots turned reverse ways (opp. to *granny K.*, wh. does not hold); *slip K.*



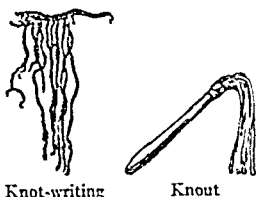
Reef Bowline Timber-hitch Fisherman's Bend Simple Bend  
Forms of Knot

slides up and down, can be tightened or loosened with a pull; *bowline*, cannot slip; *fisherman's bend*, used in fastening gut of fishing-rods; *timber-hitch*, secures rope round spar. 2) (Nautic.) Division of log-line indicating rate of ship's progress; hence, measure of speed, e.g., 20 K. = 20 nautic. miles (23 m.) per hour.

**Knot Grass**, *Polygonum*, shrub-like plant. Common K.-grass (*P. aviculare*) has small white flowers.

**Knott**, Ralph (1878-1929), Brit. architect; eight years with Sir Aston Webb; *London County Hall* at Westminster Bridge, houses in Mayfair, Chelsea, etc.

**Knot-writing**, *Quipu*, used by the Peruvians in pre-Spanish Peru to indicate astron. dates and arith. data; several yds. of long string with gay fringes, knotted and twisted in a special way.



Knot-writing

Knot

**Knout**, type of whip formerly used in Russia for flogging of criminals, consisting of bundle of leather thongs, sometimes interwoven with wire.

**Knowles**, Jas. Sheridan (1784-1862), Irish actor and playwright; *Leo*, 1810; *Caius Gracchus*, 1815; *William Tell*, 1825; *The Hunchback*, 1832.

**Knox**, John (1505-72), Scot. reformer and writer; Reformed Kirk in Scot. adopted his *Confession of Faith*, 1560.

**Knoxville**, city, Tennessee, U.S.A., on

Tennessee Riv., pop., 105,800; univ. (1875); zinc, copper, coal, iron; marble, tobacco, fruit; poultry; shipping centre.

**Knt.**, abbr. knight.

**Knuckleduster**, conjoined metal rings fitting across the knuckles; a hand-grip; weapon used by ruffians.



Knuckleduster

**Knur and spell**: see TRAP-BALL.

**Knurl**: see NURL.

**Knut (or Canute) the Great** (c. 995-1035), Kg. of England, Norway, and Denmark.

**Knutsford**, Sydney George Holland, 2nd visct. (1855-1931), chairman of the London Hospital, for which he raised large sums; his proposal to pull down City churches and sell sites for benefit of hospitals aroused wide controversy.

**Koala**, small Australian marsupial of arboreal habits, allied to the wombat; also called "native bear" or "sloth."

**Kobe**, tn., Hondo, Japan, on Osaka Bay; pop., 755,100; harbour, shipyards; exports cotton, rice, matches.

**Kobold**, dwarfish sprite in Ger. folklore, frequenting mines and houses.

**Koch**, Robert (1843-1910), Ger. physician and bacteriol.; isolated tubercle bacillus, 1882, and other pathogenic organisms; Nobel Prize (Med.), 1905.

**Kochanowski**, Jan (1530-84), Pol. poet: *The Satyr*.



Robert Koch

**Kocher**, riv., S. Germany, right trib. of Riv. Neckar; rises Swabian Jura, joins Riv. Neckar at Kochendorf.

**Kock**, Charles Paul de (1794-1871), Fr. novelist; *André le Savoyard*, 1825.

**Kodály**, Zoltán (1882- ), Hung. composer: *Psalmus Hungaricus* (1923); collectn. and arragmnt. of Hung. folk songs.

**K. of L.**, abbr. Knight of Labour (U.S.A.).

**Kohalpur**, Ind. state in Bombay, India; 3,220 sq.m.; pop., 833,700; cap., K. (pop., 55,600).

**Koh-i-nor** (Pers., "Mountain of Light"), famous large diamond; presented by East India Company to Qn. Victoria, now one of British crown jewels; cut down to 106 carats, but originally much larger.

**Kohl-rabi**, var. of cabbage with enlarged stem, eaten as a vegetable.

**Kokand**, cap. of K. (Ferghana) dist. Uzbek S.S.R., Asia, on Riv. Syr-Darya; pop., 69,310; cotton trade, textile industry.

**Kola**, Russ., penins. betw. White Sea and Barents Sea; 52,000 sq.m.; mostly plateau, E. marshy, S. wooded; tundras; mtns. rise to

3,000-4,000 ft. Murmansk Rlwy. crosses K. to ice-free N. coast. Reindeer bred. Salmon, herrings, seals. Communic. difficult. Pop. (including Murmansk, chf. tn.), 24,000.

**Kola**, the seeds of the tree *Cola vera* growing wild in W. Africa and cultivated there and in W. Indies, Brazil, and Java; they contain caffeine, and preparations made from them are used as stimulants.

**Kolar**, 1) dist., Deccan, India; area, 3,059 sq.m.; pop., 700,000. 2) Cap. of dist.; gold-mines, metals, textiles; pop., 87,700.

**Kolbe**, Hermann (1818-84), Ger. chem.; disc. nitro-methane method of making salicylic acid from phenol, 1860.

**Kolchak**, Alexander (1870-1920), Russ. adm.; declared self Supreme Ruler, 1918; attacked Bolsh. from Siberia, advancing victorious to gates of Samara whr. deftd. by Trotsky, also at Ufa and Omsk, killed in rout at Irkutsk.

**Kolding**, tn., Vejle, Denmark, on Kolding Fjord, S. Jutland; pop., 16,745; fisheries.

**Kolima**, riv., 1,100 m. (660 m. nvgl.), E. Siberia; rises in Stanovoi Mtns., falls into Arctic Ocean, by tn. of Nijni Kolymsk; fish abundant.

**Kollár**, Jan (1793-1852), Slovak. poet; revived Slovak. literature.

**Kollontay**, Alexandra Mikhailovna (1872- ), Russ. woman diplomat; ambassador to var. courts since 1917; 1st woman ambassador.

**Kolonna**, tn., 74 m. S. of Moscow, Russia; pop., 18,106. Destroyed by Tartars several times in 13th century. Import. munition centre in World War.

**Koltaköngäs**, harbour settlement in Finn. district of Petsamo; Finland's only harbour on N. Polar Sea.

**Komarom**, **Komorn**, fortified tn., Czechoslovakia, on isl. of Schütt, at confluence Rivs. Waag and Danube; pop., 17,715. Hungarian till 1919.

**Komati**, riv. (500 m.), S.E. Africa; rises in *Drakensberg Mtns.*, Transvaal, close to source of the Vaal; joined by Crocodile Riv. above K. Poort (pass in *Limpopo Mtns.*); joins the sea in Delagoa Bay.

**Komi**, **Zirian**, auton. area, Russian Soc. Fed. Sov. Rep., bounded W. by Archangel, E. by Urals, N. by Arctic, and S. by Vyatka prov.; c. 171,420 sq.m.; pop., 209,500; in Sept. ice-covered, winters severe (to -50° F.); sun never sets below horizon May-July. Reindeer bred by Komi, Russians, and Samoyedes. Ermine, mink hunting. Admin. centre, Ust-Sysolsk; pop., 5,105.

**Komitadjii**, guerrilla bandit, or franc-tireur, engaged in either private war or political intermittent insurrection; Balkans.

**Komodo dragon**, largest species of moni-

tor lizards (*g.c.*) in existence, said to attain up to 20 ft. in length. Native to Dut. E. Indies.

**Komorn**: see KOMAROM.

**Konak**, a large residence in Turkey, esp. the palace of a govt. official.

**Konia**, **Konya**, vil. (18,910 sq.m., pop., 504,125) and tn., centr. Anatolia, Turkey (pop., 47,285); relig. centre of Islam; sit. irrigated and consequently fertile plain (wheat); term. of Anatolian Rly., and starting-point of Bagdad Railway.

**König**, Friedrich (1774-1833), inv. mechanical printing press (1810); cylinder press (1811).

**Königgratz**: see HRADEC KRÁLOVĚ.

**Königinhof MS.**, collection of Bohem. MS. poems of 13th-14th cents. wh. Hanka (*g.v.*) alleged he had discovered in church tower of vill. of Königinhof or Kralodwor.

**Königsberg**, cap. of E. Prussia, Germany, on Riv. Pregel; pop., 295,000; castle (1255); univ. (1544); cathed. (1333); acad. of art. Connected with Baltic by K. Canal; outer and inner harbours; shipb., machinery; airport. Resid. of Grand Master of Teutonic Order, 1457-1525, of dukes of Prussia till 1618; Pruss. coronations, 1701 and 1861. B. place of Kant.

**Königshütte**: see KRÓLEWSKA HUTA.

**Königsmarck**, Johann Christopher, Ct. von (1600-63), Swed. gen. in Thirty Years' War.

**Königssee** (*L. of St. Bartholomew*), lake, Bavaria, Germany, nr. Berchtesgaden, 1,829 ft. abv. sea-lvl., greatest depth, 600 feet.

**Königswusterhausen**, tn., nr. Potsdam, Prussia; pop., 5,500; high-power wireless broadcasting station, *Zeeseen*.

**König Wilhelms Canal**, E. Pruss., navigable canal from the Minge (delta arm of the Niemen of Memel) to the Gulf of Courland at Memel, 15½ m. long.

**Konitz**: see CHOJNICZ.

**Koo**, Wellington (1887- ), Chinese statesm.; ambass. to Gt. Brit., 1921; Pr. Min. and For. Min., 1926-27.

**Kopeck**, Russ. copper coin, = 1/100 rouble, worth abt. 1/3 d. (\$ .00 2/3).

**Kopparberg**, prov. Sweden; 11,600 sq.m.; pop., 250,530; mines of manganese, zinc, copper, lead; cap., *Falun*.

**Korah** (O.T.), Levite assocd. with Dathan and Abiram in rebellion agst. Moses and Aaron (Num. xvi).

**Koran**, **Alkoran**, sacred book of Islam; contains the "Revelations" of Mohammed; divided into 114 Suras or chapters; written in kind of rhyming prose; oldest complete copies 7th century.

**Kordofan**, prov., Anglo-Egypt. Sudan; area, 130,000 sq.m.; pop., c. 670,000; mainly hot steppe country, but richer vegetation in N., incldg. rubber forests; exports, gum

arabic, ostrich feathers, ivory; inhab. chfly. by nomadic Arabs; cap., *El-Obeid*.

**Kore** (Gr. myth.): "The Maiden"; see PROSERPINE.

**Korea, Chosen**, mountainous penins., E. Asia, betw. Yellow Sea and Sea of Japan; separated from Japan by Korea Str.; 85,230 sq.m.; pop., 21,058,300 (incl. 337,000 Japanese and 46,000 Chinese); official religion Confucianism. Mtn. chain runs diagonally across penins.; rapid rivs. (longest, the Yalu) forming part of the frontier betw. K. and Manchuria; wide, fertile plain in W. Climate severe. Rice, cereals, pulses, cotton, and tobacco grown; minerals (coal, iron, lead, gold) await development; exports rice, soya beans, hides, and skins, red ginseng. Rlys., 1,585 m. Cap., *Seoul*. Koreans akin to Chinese; ancestor worship universal. Nominally independent, under Chinese suzerainty, 1644-1895; under Jap. influence since 1895; involved in Russo-Jap. War of 1904-05; annexed by Japan, 1910; now Jap. prov. of *Chosen*, under a governor-general.

**Korean**: see LANGUAGE SURVEY, *Allaic*.

**Korfanty**, Albert Wojciech (1873- ), Pol. nationalist; com. Pol. rebellions, 1920-21; Pr. Min., 1922; Vice-Pres., 1923.

**Koritza, Kortcha**, Albanian prov. (1,275 sq.m.; pop., 147,535), and tn. (pop., 19,500), near the Albano-Gr. frontier; vineyards.

**Korn**, Arthur (1870- ), Ger. physicist; inv. picture telegraphy.

**Kornilov**, Lavr Georgevich (1870-1918), Russ. cossack general. Led insurrection agst. Kerensky, 1917; destd.; after Bolsh. revn. led fresh revolt, agn. destd.; fled south, killed in Caucasus.

**Korsakov**, Sergei (1853-1900), Russ. neurologist. **K.'s Psychosis**, form of mental disease accompanied by loss of memory and neuritis; due to alcohol.

**Kosciusko**, Tadeusz Andrzej (1746-1817), Pol. gen. and patriot; directed last resistance to partition betw. Russ., Austr., Prussia; fought for Amer. in War of Independence.

**Kosciusko Mountain**, peak, Australian Alps, second highest Australia; 7,336 feet.

**Kosher**: see KASHER.

**Kosice, Kassa**, tn., Czechoslovakia, on Riv. Hernad; pop., 52,900; R.C. bishopric.

**Kosovo**, Battle of, defeat of the Serbs, Bulgars, and allies by the Turks, 1389; eclipse of Serbian kingdom.

**Kossel**, Albrecht (1853-1927), Ger. physiologist; Nobel Prize (Med.), 1910.

**Kossuth**, Louis (1802-94), Hung. patriot; led Revol. agst. Austr., 1849.

**Kostroma**, chf. tn. of prov. K. (c. 12,900 sq.m.; pop., 811,104), Russian Soc. F.S.R., on Riv. Volga; pop., 69,250; linen industry,

shipyards. Michael Feodorovitch Romanov elected Czar, 1669, at Ipatiyevski Convent.

**Kotlin** (*Retusari*: "Rat Isl."), Russ. isl. E. of Gulf of Finland, on which stands Kronstadt (q.v.).

**Kotor**: see CATTARO.

**Kotzebue**, August von (1761-1819), Ger. dramat., served in Russ. civ. service; *Die Indianer in England*, 1790; numerous other plays, sketches, and autobiog. works.

**Koumiss**: see KUMISS.

**Kovno**: see KAUNAS.

**Koweit**: see KUWAIT.

**Kowloon**, port, S. China, on penins. same name; pop., 240,000; belongs to Hong-kong (q.v.).

**Kowtow**, Chin. manifestation of respect; prostration and threefold touching of the floor with the forehead.

**K.O.Y.L.**, abbr. King's Own Yorkshire Light Infantry.

**Kozlov**, Russ. tn., prov. Tambov, on Riv. Lyesnoi Voronezh; pop., 54,250; wood cutting, corn and cattle trading; rlwy. workshop.

**K.P.**, abbr., 1) Knight, Order of St. Patrick; 2) Knight of Pythias (U.S.A.).

**Kr**, (chem.) sym. for krypton (q.v.).

**Kraal**, circular vill. of the Kaffirs and Hottentots of S. Africa.

**Krafft-Ebing**, R. von (1840-92), Austr. psychiatrist; *Psychopathia Sexualis*.

**Krakatoa**, active volcanic isl. in Sunda Strait; formerly 2,632

ft. abv. the sea; submerged after eruptions of Aug. 26-27, 1883, wh. were so violent that Batavia, 100 m. away, was darkened at midday and atmospheric effects were world wide; further eruptions 1930-31.

**Kraken**, genus of gigantic cuttle-fish (q.v.).

**Kran**, Pers. silver coin, =  $\frac{1}{16}$  of toman (q.v.), or 4½d. (S.oS) at par.

**Krasnodar** (form. *Ekaterinodar*), tn., N. Caucasian area, U.S.S.R., on rt. bank of Riv. Kuban; pop., 162,525; naphtha, glass, corn trade.

**Krasnovodsk**, tn., Turcoman S.S.R., on S.E. shore of Caspian Sea; pop., 10,010; trading centre for C. Asiatic cotton, skins, hides, fish, naphtha. Terminus C. Asiatic railway.



Kaffir Kraal



Eruption of Krakatoa

**Krasnoyarsk**, tn., and port, Siberian area, Russian S.F.S.R., on Riv. Yenisei; pop., 72,260; on Trans-Siberian Rly.; precious metal refinery; graphite.

**Krassln**, Leonid Borisovich (1870-1926), Russian engineer; frequently impr. under Czar till 1908; then secured imppt post in Siemens-Schuckert cos.; rejoined revnary. movement 1917; Commissar for Trade and Industry; negotiated treaty with Britain; first Soviet ambassador in London.

**Krause**, Karl Christian Friedrich (1781-1832), Ger. philos; fndd. *Panentheism* (q.v.); *Das Urbild der Menschheit*, 1811; Eng. trans., 1900.

**Krefeld**: see CREFELD.

**Kreislser**, Fritz (1875- ), Austrian violinist; studied at Vienna and Paris; toured U.S.A., 1889; U.S.A. and Gt. Brit., 1900-01; wounded in World War, but later returned to concert-stage.

**Kremenichug**, tn., Ukrainian S.S.R., on Riv. Dnieper; pop., 58,835; timber, saw-mills, corn trade. Tn. damaged severely, 1914-21.

**Kremlin**, **Kreml**, citadel of Moscow, seat of People's Commissariats and most Federal Govt. offices. Forms irreg. triangle and consists of large numb. of offcl. buldgs., anc. palaces, an arsenal, and monastery; enclosed by wall nearly  $1\frac{1}{4}$  m. long, and 65 ft. high (A.D. 1492). Tower of Ch. of Great Ivan, 320 ft. high, contains Bell of Assumption, 65 tons; Czar Bell, on granite pedestal, largest in world, 26 ft. high, 66 ft. in circum., 198 tons. Five gates (Spasskiy Gate, 265 ft.) and 16 towers. *Great Palace* has fine apartments, Throne Room, St. George Hall, Alexander Hall, all 68 ft. wide, 100-200 ft. long, 57-67 ft. high. Under K. walls in Red Square are revnary. graves of abt. 50 revnary. leaders of all countries, and Lenin Mausoleum, in black and red granite, containing his embalmed body.

**Krems**, tn., lower Austria, on Riv. Danube; pop., 14,000; vineyards and orchards, hardware factories.

**Krenek**, Ernst (1900- ), Czech composer: jazz opera, *Johnny Strikes Up*.

**Kretschmer**, Ernst (1888- ), Ger. psychiatrist: *Körperbau und Charakter*.

**Kreutzer**, Rudolph (1766-1831), Fr. violinist of Ger. extraction; Beethoven's Kreutzer Sonata ded. to him, 1803. *K. Sonata*, novel by Tolstoy, 1890.

**Kreuznach**, tn., Rhineland, Ger.; pop., 25,000; min. springs, tobacco, leather. Ger. G.H.Q. (1917-April, '18).

**Kris**, **Creese**, Malay dagger, with a wavy blade.

**Krishna**, Indian hero; as 8th re-incarnation of Vishnu is worshipped as a god. See also KISTNA.



Kris

**Krishnarajasagara Dam**, Mysore, India; one of largest irrigation undertakings in India; ht. of dam, 124 ft.; crosses Cauvery Riv. 9 m. above isl. of Seringapatam.

**Krivoi Rog**, tn., Ukrainian S.S.R., on Riv. Ingulets (trib. of Riv. Dnieper); pop., 31,285; iron and steel; iron-ore mines, annual produc. over 200,000 tons.

**Krobatin**, Alexander, Bn. von (1849- ), Austr. F.-M. and statesm.; War Min., 1912-17; com. X Army, 1917.

**Królewska Huta**, **Königshütte**, tn., Polish Silesia; pop., 72,640 (39,275 Germans); coal-mines, foundries.

**Krone**, 1) Scandinavian coin and monetary unit, = 100 öre (q.v.) or 1s.  $1\frac{1}{2}$ d. (\$27) at par. 2) Ger. gold coin = 10 marks (q.v.) or 9s.  $9\frac{1}{2}$ d. (\$2.38), at par. 3) Former Aust. silver coin = abt.  $10\frac{1}{2}$ d. (\$20) at par.

**Kronos**: see CRONUS.

**Kronstadt**, 1) Russ. naval port, arsenal, on isl. of Kotlin, Gulf of Finland; pop., 31,195. Scene of outbreak of Russ. revolut. followg. nav. mutiny, Mar. 14, 1917. 2) **K.** or **Brasov**, tn. in Transylvania, N. of the Predeal Pass; pop., 50,000; largest industrial town in Transylvania.

**Kropotkin**, Peter Alexeyevich, Pr. (1842-1921), Russ. revolut. and auth.; *Memoirs of a Revolutionary*, 1900.

**K.R.R.**, abbr. King's Royal Rifles.

**Kru**, Negro race in Liberia; fishermen and agriculturists.

**Krüdener**, Barbara, Baroness de (1764-1824), Russ. mystic; adopted *Chiliasm* (q.v.), and converted Alexander I of Russia, 1815; published a romance: *Valerie*, 1803.

**Krüger**, Paul (1825-1904), "Oom Paul," Pres. Transvaal Repub., 1883-1900; com. in 1st Boer War; fled to Eur. during 2nd Boer War; d. in Switzerland, bur. at Pretoria.

**Krugersdorp**, tn., Transvaal, S. Africa, 20 m. W. of Johannesburg; pop., 43,000 (14,500 whites); gold mining.

**Krupp**, **Alfred** (1812-87), Ger. steel manufact.; developed steel works at Essen; spec. in artillery (the "Cannon Kg."). His s. **Fried. Alfred** (1854-1902) made further extensions.

**Krylenko**, Abraham (1885- ), Russ. revolut.; c.-in-c. Soviet army, 1917-18; People's Commissar for Justice.

**Krypton**, (chem.) element; symbol Kr; at. wt. 83.7; one of the rare gases found in the atmosphere.

**Krzemieniec**, tn., Volhynia, Poland, on the Ikwa; pop., 16,070; metal and glass.

**K.S.I.**, abbr. Knight of the Star of India.

**Kt.**, abbr., knight.

**K.T.**, abbr., 1) Knight of the Thistle; 2) Knight Templar.

**Kuala Lumpur**, chf. tn. of Selangor, and capital of Federated Malay States; pop., 111,000 (Chinese, 67,000).

**Kuban**, riv. (400 m.) of N. Caucasus, Russia; rises in glaciers of Mt. Elburz; falls into Black Sea.

**Kubelik**, Jan (1880- ), Bohemian violinist (naturalized Hungarian, 1903); trained by Sevcik; 1st appeared Vienna, 1898; in London, 1900; in U.S.A., 1901; has composed violin concertos.

**Kublai Khan** (1216-94), Mongol ruler; fndd. Yuan dyn. in China, 1279.

**Kudu**, antelope found from S. Africa to Abyssinia. Horns of male rise in form of an open spiral sometimes to over 3 feet in length. Smaller species found only in Somaliland and Kilimanjaro district.

**Kuen-lun Mtns.**: see KUNLUN.

**Kufra**, group of 5 oases (Taizarbo, Zighen, Bu-Zeima, Erbena, Kebabo) in Libyan Desert, E. Sahara; area, 7,000 sq.m.; pop., c. 6,500; centre of Senussite brotherhood; occupied by Italy, 1931.

**Kufstein**, tn., Tyrol, Austria, on Bavarian frontier and Riv. Inn; pop., 4,200; tourist centre.

**Kühlmann**, Richard von (1873- ). Ger. diplomat; For. Min., 1917-18; negot. treaty of Brest-Litovsk, and Peace of Bucharest (1918).

**Kuka**, tn., cap. Bornu Dist., N. Nigeria, on W. shore Lake Chad; pop. (est.), 20,000; exports ivory and ostrich feathers.

**Ku-Klux-Klan**, Amer. nat. secret society, founded c. 1867, with elaborate ceremonies and disguises. Orig. obj. to restore white 'dominion' in Southern States by secret terrorism of Negroes. Extended terror to cover Catholics, Jews, "Reds", and others; lynchings, etc.

**Kuku-nor**, lake without outlet in the Nan-shan range, Tibet; alt., 12,150 feet.

**Kulak** (Russ.), a fist; figuratively applied in U.S.S.R. to small holders who contrive to extract some profit for themselves from their land.

**Kulja**, tn., Sinkiang, N.W. China, on Riv. Ili, near Russ. frontier; pop., 42,100. Starting point of several exploring expeditions into centr. Asia.

**Kulmbach**, Hans von (c. 1480-1522), pseudon. of Hans Süss, Ger. painter.

**Kulmbach**, tn., Upper Franconia, Bavaria, on the White Main; pop., 12,000; textiles, breweries.

**Kulturkampf**, struggle betw. R.C. Ch.

and State in Prussia under Bismarck, 1872-76.

**Kumamoto**, prefecture (2,870 sq.m.; pop., 1,296,090) and city (pop., 162,100), on Kiushu Isl., Japan; iron.

**Kumasi**, cap., Ashanti, Gold Coast, Africa; pop., 20,000.

**Kumiss**, **Kumys**, fermented mare's milk, used by wild tribes of Tartary; sim. drink made in E. Eur. with cow's milk, sugar, and yeast.

**Kummel**, liqueur made of caraway seeds distilled in spirit.

**Kun**, Bela (1886- ) Hung. revlinary.; head of Hung. Soviet Rep. in 1919; escaped to Austria; deported to Russia, 1927.

**Kunlun** (or **Kuen-lun**) **Mountains**, range, centr. Asia, forming N. wall of Tibetan plateau; length, c. 2,400 m., highest peak, 24,000 feet.

**Kuomintang**, Chin. revolutionary Party founded by Sun Yat Sen in 1912. Took part in 1st revoln. but lost influence when Yuan-shih-kai made Presdt.; estd. power in Canton 1924 after so-called War of the Paper Tiger; after Sun's death victoriously advanced north, founding nat. govt. in Nanking under Chiang-kai-shek.

**Kura**, riv., rises in Georgia, flows through Azerbaidjan into Caspian Sea.

**Kurdish**: see LANGUAGE SURVEY, *Iranian*.

**Kurdistan**, reg. on Turco-Persian frontier, S. of Armenian Mtns.; inhab. by nomadic Kurds.

**Kurds**, warlike Iranian nomads on upper Tigris (*Kurdistan*); Moslems; abt. 3 millions.

**Kure**, port on E. coast of Hondo, Japan; pop., 190,300. Naval base; ship-building.

**Kurgan**, tn., Uralsk Area, R.S.F.S.R., on Riv. Tobol; pop., 27,900; butter, grain.

**Kuria Muria Isls.**, group five islets S.E. coast Arabia; Brit. since 1854; admin. by Aden; cable station.

**Kuriles**, chain of volcanic isls. betw. Kamchatka and Japan; area, 6,170 sq.m.; pop., 4,450; hot springs; freq. earthquakes; usu. fog-bound. Headquarters of Jap. deep-sea fisheries. Ceded to Japan by Russia, 1875.

**Kurisches Haff**, lagoon (620 sq.m.), S. coast of Baltic Sea, partly in Lithuania, partly in E. Prussia; receives Riv. Niemen; almost separated from the Baltic by the **Kurische Nehrung**, a sandy spit 60 m. long and 1½ m. wide, leaving narrow passage (Memel or Niemen Deep) to the open sea.

**Kuropatkin**, Alexei Nikolaievich (1848-1925), Russ. gen.; c.-in-c. in Russo-Japanese War, 1904-05; gov.-gen. Turkestan, 1916.



Ku-Klux-Klan



Kurd Chieftain



**Kursk**, chf. tn. of prov. K. (c. 16,670 sq.m.; pop., 3,100,000), Russian S.F.S.R. on Riv. Kur; pop. 98,800. Woods noted for nightingales. Rly. junction.

**Kurushiwo**, warm current in the Pacific, flowing from E. coast of Formosa, along S.E. coast of Japan towards California.

**Kurzeme**, W. prov. of Latvia, on Baltic Sea, N. part of former Russ. Baltic prov. of Courland; wooded hills and plains; forestry, agric., and cattle-breeding; cap., *Liepāja* (Libau).

**Küsnacht**, vill., Canton of Schwyz, Switzerland, on N. arm of Lake K.; associated with William Tell legend; ruins of Gessler's castle.

**Kussmaul**, Adolf (1822-1902), Ger. physician; inv. stomach-pump.

**Kustendil**: see KYUSTENDIL.

**Küstrin**, tn. in Brandenburg, Prussia, on Riv. Oder; pop., 20,000. Frederick the Great imprisoned here when Crown Prince, 1730.

**Kutais**, tn., Georgian S.S.R., on Riv. Rion; pop., 48,200. End of Ossetian milit. road (*q.v.*).

**Kut-al-Amara**, tn., Iraq, on left bank of Riv. Tigris; pop., c. 6,000; carpets. Besieged and captured by Turks in 1916; recaptured by British, 1917.

**Kutusoff**, Michael, Pr. of Smolensk (1745-1813), Russ. gen.; deftd. Napoleon, 1812.

**Kuwait**, **Koweit**, principality N.W. Persian Gulf, in treaty relation with Brit. India; 1,930 sq.m. Cap. and port, *K.*; pop., 60,000; spices; pearl fisheries.

**Kuznetsk**, 1) tn., Saratov prov., Russian S.F.S.R.; pop., 36,150; grain trade. 2) See STALINSK.

**Kvass**, Russ. beer made from fermented rye; non-alcoholic fruit-drink.

**Kw.** = kilowatt; **Kwh.** = kilowatt-hour; units of elect. power and energy.

**Kwangchow-wan**, Fr. leased terr., China, on N.E. coast of penins. of Leichow; 330 sq.m.; pop., 206,000; exports rice. Cap. and port, *Fort Bayard*; pop., 9,000.

**Kwango**, riv., W. Africa, left trib. of Riv. Kasai; falls and rapids; forms frontier for part of course betw. Belg. Congo and Angola.

**Kwangsi**, prov., S. China; 80,950 sq.m.; pop., 12,258,350; tea, cereals, textiles; cap., *Kuelin*.

**Kwannon**, Chinese and Japanese personification of Mercy.

**Kwantung**, 1) coastal prov., S. China, with isl. of Hainan, in lower Si-kang basin; area, 99,965 sq.m.; pop., 36,773,500; richest prov. of China; iron and copper mines; rice, tea, sugar plantations, silk-worm breeding. Cap., *Canton*. 2) Dist. on Liaotung penins., S. Manchuria, China; area, 1,438 sq.m.; pop., 905,180 (inclgd. 114,050 Jap.); soya beans, maize, wheat, vegetables, hemp; fisheries. Cap., *Dairen*; leased to China by Japan.



Kwannon

**Kwanza**, **Coanza**, riv. (700 m.), Angola, W. Africa; rises in Bihe plateau (alt., c. 5,000 ft.), flows into Atlantic; course broken by rapids.

**Kweichow**, inland prov., S.W. China; 69,800 sq.m.; pop., 11,291,260; high plateaux; copper, mercury, paper-mills, horse-breeding. Cap., *Kuei-yang*.

**Ky.**, abbr. Kentucky.

**Kyanizing**, impregnation (of wood, etc.) with corrosive sublimate, to prevent rotting.

**Kyd**, Thomas (1558-94), Eng. dramat.; *A Spanish Tragedy*.

**Kyffhäuser**, wooded ridge, Thuringia, Ger.; K. Castle associated in legend with Emp. Barbarossa, who is supposed to sleep in a limestone cavern under the ruins of Falkenburg.

**Kyles of Bute**, narrow winding channel separating isl. of Bute from mainland of Argyllsh., Scotland.

**Kyōgen**, Jap. comedies played as interludes in Nō drama (*q.v.*).

**Kyoto**, dept. (1,760 sq.m.; pop., 1,406,380), and tn. (pop., 765,200), Hondo, Japan; univ.; "sacred residence" of emperor during the Shogunate, 794-1869.

**Kyrie eleison** (Gr., "Lord, have mercy"), chanted portion of R.C. and certain ancient liturgies.

**Kyushu**, **Kiushiu**, large S. isl. of Japan; 16,230 sq.m.; pop., 8,524,950; volcanic mtns., hot springs, fertile valls.; camphor, cane sugar, rice, tea, tobacco; chf. port, *Nagasaki*.

**Kyustendil**, tn., Bulgaria; pop., 15,500; hot min. springs; vines, fruit, tobacco; cattle breeding.

£, abbr. pound sterling; **£E.**, pound Egyptian; **£T.**, pound Turkish.

**L**, Roman numeral 50.

**l.**, abbr., 1) *lira* (Ital. money); 2) litre.

**L.A.**, abbr. 1) *Literate in Arts*; 2) Member, Incorporated Society of Law Agents, Scotland; 3) Library Association.

**La.**, abbr., 1) Louisiana; 2) last (wool weight, 39 cwt.).

**La**, chem. symbol of Lanthanum.

**Laacher Sea**, volcanic lake, nr. Andernach, Rhineland, Prussia, probably occupying crater of Eifel formation; 910 ft. abv. sea-lvl.; area, 1.2 sq.m.; dpth., 200 ft.

**Laaland**, isl. in the Baltic, at S. end of Great Belt, forming part of Denmark; area, 450 sq.m.; extensive woods (oak and beech) and fertile agric. land; pop., 75,000; cap., *Maribo*.

**Lab.**, abbr. 1) Labrador; 2) Labour.

**Laban**, (O.T.) bro. of Rebecca, father of Leah and Rachel; Jacob's father-in-law.

**Labarum**, the imperial Rom. standard intro. by Constantine (q.v.), bearing Cross and Christ's monogram.

**La Bassée**, tn., France, S.W. of Lille, on La Bassée Canal; scene of much fighting in World War; pop., 3,550.

**Labdanum**, dark, fragrant, bitter resin, obtained from species of *cistus* or rock rose; form. used in medicine; name transferred to *laudanum* (q.v.).

**Labé**, Louise (1526-66), *La Belle Cordière*, Fr. poetess; wrote elegies and sonnets, and, in prose, *Débat de folie et d'amour*.

**Labial**, (phon.) sound formed princ. by lips, e.g., *b*, *p*.

**Labia pudendi**, folds of skin and mucous membrane wh. form part of the female external genital organs.

**Labiates**, (bot.) plant family, comprising abt. 3,000 species, with characteristic two-lipped flowers (e.g., antirrhinum, foxglove); includes many medicinal and fragrant aromatic herbs, such as the mints, lavender, rosemary, etc.

**Labiche**, Eugène (1815-88), Fr. dramatist; *Célimaire le bien-aimé*, 1863; *Le voyage de M. Perrichon*, 1860.

**Laborare est orare** (Lat.), to work is to pray.

**Laboratory**, room or building equipped for experiments and research in natural sciences.

**Labouchere**, Henry (1831-1912), Brit. Lib. politician and journalist; in diplom. serv., 1854-64; M.P., 1866-1906; Privy Council, 1905; owner and ed. of *Truth*.

**Labour battalions**, in the World War, troops employed in construc. field fortif., roads, etc.

**Labour College**, independent institution in Gt. Brit. for educ. of working-class; esp. to fit workers to take part in Socialist movement (Ruskin Coll., Oxford, 1899; Lab. Coll., London, 1909; etc.).

**Labour Day**, day devoted to Labour demonstrations; in Eng. and most Europ. countries, May 1st; in U.S.A. and Canada, 1st Mond. in Sept. (legal holiday); in Australia, kept on var. dates in diff. States.

**Labourdounais**, Bernard François, Count Mahé de (1699-1755), Fr. admiral and administrator; Gov. of Île de France and Île de Bourbon, 1735-40; captured Mahé (India), 1746; quarrel with Duplex led to arrest on charge of maladministration, 1748; tried and acquitted, 1751.

**Labourers, Statute of**, 1349, Eng. statute decreeing compulsory labour at wages obtaining bef. the Black Death, scarcity of labour having led to demand for higher rates.

**Labour exchange**: see EMPLOYMENT EXCHANGE. **L. legislation**: see SOCIAL LEGISLATION.

**Labour, Minister of**, member of Brit. Govt. charged with admin. of laws of spec. int. to employed pers., incl. those relating to unemployment exchanges and insurance.

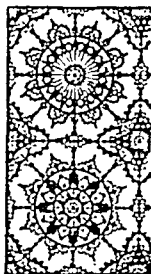
**Labour party**, polit. party, formed to advance specific interests of wage-earning class. In Brit., *Nat. L. P.* rising from alliance of trade unions and Soc. societies in 1899 in Lab. Representation Ctees. First Lab. M.P., J. Keir Hardie, 1892, also 1st chmn. of L. P., succ. by J. R. MacDonald; repre. of L. P. (A. Henderson) first included in Cabinet, 1915; Lab. Govts., 1924, 1929, MacDonald Pr. Min. Representatn. in Parlt. increased from 11 (1900) to 287 (1929); in 1931 red. to 48. See SOCIALISM, *Fabian Society*.

**Labrador**, penins., N. Amer., betw. Gulf of St. Lawrence, Atlantic, Hudson Strait, and Hudson Bay; forms part of Canada (Quebec prov.), except E. coast, Labrador Coast. Interior (partly unexplored) a pla-

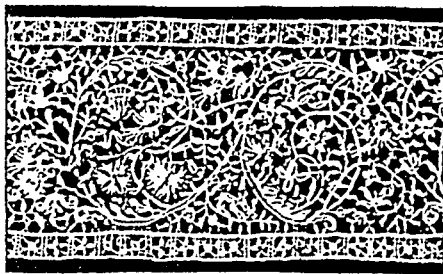
teau (2,000 ft.), with many forests, lakes, and rivs. Rigorous climate due to cold *Labrador Current* on E. coast. N. part inhab. by Indians and Eskimos. Area c. 500,000 sq.m. Cod, salmon, and herring fisheries; minerals include labradorite (q.v.). Discovered, c. 1000 A.D. by Norsemen; rediscovered by Cabot in 1498. **L. Coast**, belonging to Newfoundland, has area of 120,000 sq.m.; pop., 4,200.

**Labradorite**, (geol.) var. of feldspar (q.v.), gen. dull grey with play of var. bright colours; occas. used as ornamental stone.

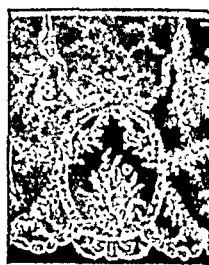
**La Bruyère**, Jean de (1645-96), Fr.



16th Cent. Lace Pattern



Venetian Point



Brussels Point

Lace

essayist and moralist; *Les Caractères de Théophraste*.

**Labuan**, Brit. island, 6 m. off N.W. coast Borneo; area, 28 sq.m.; pop., 7,600; one of Straits Settlements (q.v.); exports sago; cap. *Victoria* (pop., 1,500).

**Laburnum**, ornamental papilionaceous shrub, from S. Eur.; drooping yellow flowers. Poisonous.

**Labyrinth**, 1) system of complicated, winding, intricate paths or passages; maze. **Cretan L.**, built by Daedalus, was home of the Minotaur (q.v.). 2) (Med.) Internal ear; consisting of *bony L.* and *membranous L.* See EAR. **L-fish**, fresh-water fish of trop. Asia, having a labyrinthine air-space, with many blood-vessels in the upper jaw; this forms a primitive lung. **L. packing**, (tech.) packing intended to allow relative motion and prevent passage of fluid; depending upon making path of latter as long as possible.

**L.A.C.**, abbr. Licentiate, the Apothecaries' Company.

**Lac**, 1) small insect of E. Asia, secreting a resinous material. 2) The material so produced (see SHELLAC). 3) red dye secreted by lac insect. 4) **L.**, or **lakh**, Indian word meaning 100,000, generally used of 100,000 rupees (a *lakh* of rupees); 100 lacs = 1 crore.

**Laccadive Islands**, Brit. group of 14 coral islands (9 inhabited), in Arabian Sea, admin. by Madras; area 75 sq.m.; pop., 13,600 (Moslems); coconuts and fibre.

**Laccolith**, or **laccolite**, (geol.) magma

(q.v.) rock forced up from great depth betw. existing strata, and pressing up the surface into the shape of a dome.

**Lace**, open-work fabric, usu. with meshed ground, upon wh. designs are wrought in linen, silk, gold, or silver threads; evolved from knotted thread-work for fringes, and later more elaborate knotted *macramé* work (N. Italy). Classified as: 1) *Drawn-work*, in wh. threads are drawn from fabric and pattern is worked on remaining strands. 2) *Needle-point*, network ground on wh. design is worked with needle. 3) *Bobbin*, or *pillow*, design marked on a pillow with

pins; threads interwoven into pattern by passing over and under by hand, bobbins or weights serving to keep threads distinct. HISTORY: a form of open-work weaving has been found in Egypt. tombs, dating from Coptic period (1st cent. A.D.), but modern L. dates from 16th cent. Ital. needle-point, most notable being *Venetian point*. In 17th cent., pre-eminence in the art passed to France, owing to establmt. (1665) of centres in that country by Colbert, Min. of Finance to Louis XIV; before long Fr. needle-point and pillow lace was finest obtainable; among famous Fr. types are: Alençon, Argentan, Chantilly. In 18th cent., Flemish L. (Brussels, Valenciennes, Mechlin, etc.) offered serious rivalry to French. L.-making suffered decline from Fr. Rev. onwards, and with incrsd. use of machinery in 19th cent. hand-made L. ceased to be an active indus. In Eng., *Honiton L.* was revived in Victorian Era, but fashion for L. practically died out in 20th century. First **machine-made L.** made in late 18th cent. at Nottingham, wh. is still a centre of the industry.

**Lacedaemon**, alternative name for Sparta (q.v.); inhab. of Sparta were called *Lacedaemonians*.

**Lace-wing flies**, delicate insects with gauzy wings; some feed on garden aphids in both larval and adult stages, and are therefore beneficial in gardens.

**Lachaise**, François de (1629-1709), Fr. Jesuit priest; confessor of Louis XIV; friend of Fénelon (q.v.). **Père La C.**, prin. cemetery

of Paris (3 m. N.E.), standing on ground formerly in poss. of Lachaise, acquired 1826; famous people's graves: Patti, Thiers, Oscar Wilde, Laplace, and many others; noted for *Wall of Communards*, scene of mass machine-gun executions, 1871.

**Lachesis**, (Gr. myth.) one of the Three Fates (*q.v.*).

**Lachmann**, Karl (1793-1851), Ger. philolog.; edit. early Ger. texts; *Der Nibelunge Not und die Klage*.

**Lackey**, attending manservant, footman; hence, servile follower. **L-moth**, a small species of moth, brown in colour; lays its eggs in a ring round twigs; larvae often injurious to fruit trees.

**Laclos**, Choderlos de (1741-1803), Fr. gen. and auth.: *Les Liaisons dangereuses*.

**Laconia**, dist. of anc. and mod. Greece in the Peloponnesus (cap., Sparta); 493 sq.m.; pop., 144,350. **Laconic**, short and to the point (in the manner of the anc. inhab. of Laconia).

**Lacquer**, varnish, shellac, and other gums dissolved in alcohol or other solvent; also, solution of nitrocellulose extensively used as coating for carriages, motorcars, etc. **L. work**, craft of high artistic order, mainly practised in China and Japan. The lac or varnish is applied to surface of object (usu. made of wood) in from 3 to 18 or 20 layers, each layer being allowed to dry before a new one is laid on. The result is a hard, bright surface resistant to heat. Used in Far East for objects of domestic use, such as trays, tables, cabinets, writing-sets, etc.; often highly decorated with elaborate landscapes and designs in gold, mother-of-pearl, etc.

**Lacrime Christi** (tear of Christ), strong, sweet wine of S. Italy, generally white.

**Lacrosse**, nat. game of Canada played by 2 teams of 12 with a curved netted stick (*crosse*) and india-rubber ball, which is propelled by the *crosse* through the opponents' goal. There is an Eng. championship (inst. 1890), and annual matches have been played betw. Oxford and Cambridge since 1903.

**Lactation**, (physiol.)

1) the secretion of milk;  
2) the period during wh. a mother feeds her infant from the breast.

**Lactic acid**,  $\text{CH}_3\text{CH}(\text{OH})\text{COOH}$ , colourless liquid, prod. from milk and other sugars by action of bacteria; sp. gr. 1.24; used in med. for diarrhoea, esp. for children; also employed, much di-

luted, as a contraceptive. Calcium lactate given for chilblains and nettle-rash.

**Lactometer**, apparatus for determining the quality of milk by its specific gravity; usu. a hydrometer (*q.v.*).

**Lactose**, sugar obtained chfly. from the milk of mammals; produced on a large scale by evaporation of whey, and used in preparation of foods for infants and invalids; also called *milk sugar*.

**Ladakh and Baltistan**, prov., E. Kashmir, on borders of Tibet; aver. alt. 11-15,000 ft., with peaks up to 19,000 ft.; pop., c. 184,000; cap., Leh.

**Ladanum**, another name for labdanum (*q.v.*).

**Ladder-dredger**, type of dredger (*q.v.*) having buckets on an endless chain.

**Ladin**, Rhaeto-Romanic dialect spoken in Engadine and S. Tyrol.

**Ladino**, see LANGUAGE SURVEY, I., 2.

**Ladislaus**, name of 5 kgs. of Hungary, of whom the most important are: **L. I**, St. (1040-95), succeeded his brother, Geza, 1077; extended Transylvanian boundary; assisted pope agst. Emp. Hy. IV; introduced Catholicism into Croatia. **L. IV**, the *Cumanian* (1262-90), succeeded father, 1272; favoured Cumans and aroused Magyar opposition, involving Hungary in civil war; murdered by Cumans. **L. V** (1440-57), jealous of Hunyadi; crowned Kg. of Bohemia, 1453; died suddenly, tradit. poisoned. **Jagiello L.** (1350-1434) Kg. of Poland, 1386; constant disputes with Teutonic Order; estab. Catholicism in Lithuania; fadd. Jagellan dynasty.

**Ladoga, Lake**, largest European lake, on Russo-Finnish frontier; 7,005 sq.m.; max. depth, 730 ft.; rich in fish; frozen 4 months in the year; drained by the Riv. Neva.

**Ladrones**: see MARIANAS ISLANDS.

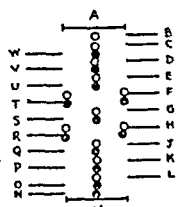
**Lady**, title of honour used informally of any peeress below rank of duchess, or of wife of a baronet or knight. Daughter of a duke, marquess, or earl prefixes it to her Christian name and surname; wife of a duke's or marquess's younger son, to her husband's Christian name and surname. See COURTESY TITLE.

**Lady-bird**, small red, black-spotted beetle; both larvae and adult feed on aphids and are useful in gardens.

**Ladybrand**, tn. (5,240 ft.), Orange Free State, on borders Basutoland; pop., 3,800 (2,300 whites); agric. and tourist centre.

**Lady Day**, or **Our Lady's Day**, 25th March, feast of the Annunciation, commemorating announcement by Angel Gabriel of Incarnation. First quarter-day in England.

**Lady Margaret Hall**, Oxford Univ.;



fndd., 1878, for women students; incorp., college 1913 and 1926.

**Lady's mantle**, (bot.) member of strawberry group; common L.m., *Alchemilla vulgaris*, has pretty leaves and small yellowish flowers. **Alpine l. m.**, *A. Alpina*, lower sides of leaves a lustrous white; **Field l. m.**, *A. arvensis*, a small common weed with very small yellowish flowers. In Mexico a variety of *Ipomoea* with large blue blossoms, growing very thickly, is known as "Our Lady's Mantle." **L.'s slipper**, (bot.) *Cypripedium calceolus*, member of the orchid family, grows in woods; flower has large inflated lip; Eng. variety is a small wild flower. **L.'s smock**, cuckoo-flower, *Cardamine pratensis*, perennial meadow flower with violet blossoms. **L.'s tresses**, perennial, orchidaceous plant with spiral stem and white fragrant flowers; found in Europe and N. Africa; rare in Gt. Britain.

**Ladysmith**, tn., Natal, S. Africa; pop., 7,000. *Siege of Ladysmith*, Oct., 1899, to Feb., 1900, during the second Boer War (*q.v.*); tn. defended by Sir George White and relieved by Sir Redvers Buller.

**Laeken**, N. suburb of Brussels; royal palace.

**Laërtes**, father of Odysseus (*q.v.*).

**Laetare Sunday**: see MID-LENT SUNDAY.

**Laevulose**, fruit-sugar present in honey, most sweet fruits, etc.; it is laevo-rotatory, *i.e.*, turns the plane of polarised light to the left, and is sweeter than cane sugar.

**Lafayette**, Gilbert du Motier, Marq. de (1757-1834), Fr. gen. and statesm.; fought agst. Eng. in Amer. War of Independence; leader in Fr. Rev. 1789 fled 1792; com. Nat. Guard after revn. of 1830.

**La Ferté-sous-Jouarre**, tn., dépt., Seine-et-Marne, France, on Riv. Marne; pop., 3,800; riv. crossed by the Brit. in 1st battle of the Marne (9 Sept., 1914). Brit. nat. memorial to 3,888 missing.

**Lafontaine**, Jean de (1621-95), Fr. poet; *Fables*; *Contes*.

**Lagarde**, Paul Ant. de (1827-91), pseudon. of Bötticher, Ger. auth. and orientalist, and Biblical scholar; *Hagiographa chaldaica*; *Der Pentateuch koptisch*, 1867.

**Lagash**, Telloh, anc. Sumerian city, S. Mesopotamia, betw. rivs. Tigris and Euphrates; sites of temples (from 3rd millennium B.C.).

**Lager**, beer containing small proportion of hops but subjected to prolonged fermentation at low temperature.

**Lagerlöf**, Selma (1858- ), Swed. novelist; elected 1st woman member of Swedish Academy, 1914; Nobel Prize (Lit.), 1909; *Invisible Links*, 1894; *The Legend of the Manor*, 1922; *Charlotte Löfvensköld*, 1925.

**Lagging**, 1) (bldg.) narrow battens used to strengthen centres of long arches, such as

tunnels. 2) (Phys.) Insulating device on vessels to be kept hot or cold; most effective is a vacuum with silvered walls (see DEWAR FLASK); any porous, non-conducting substance wh. prevents air from circulating may be used, *e.g.*, felt, wool, cotton-wool, granulated cork, corrugated paper, asbestos. See FIRELESS COOKER.

**Laghwat**, garrison tn., S. Algeria, on edge of Sahara; pop., 7,000.

**Lagoon**, shallow lake or channel near river or sea, esp. one communicating with latter, as at Venice; interior waters of an atoll (*q.v.*); cf. HAFF.

**Lagos**, cap. and principal port, British Nigeria, on the Slave Coast (Upper Guinea); pop., 126,108; wireless station; rly. to interior.

**Lagrange**, Joseph Louis (1736-1813), Fr. mathematician; awarded prizes by Paris Academy of Sciences, 1764, '66, '72, '74, '78; *Mécanique analytique*, 1788; *Théorie des fonctions analytiques*, 1797.

**Lahn**, r. trib. (136 m.) of Rhine, rises on the Jagdberg (1,975 ft.), peak of Rothaar Mtns., reaches Rhine betw. tns. of Oberlahnstein and Niederlahnstein; canalized from mouth to Giessen.

**La Hogue, Battle of** (1692), naval action in which the Fr. fleet, under de Tourville, was defeated and dispersed by combined Eng. and Dut., under admls. Russell and van Almonde; two days later Adml. Rooke destroyed 16 of the Fr. ships and some transports.

**Lafore**, cap., Punjab, India, and of dist. (2,691 sq.m.) and division (24,900 sq.m.) same name, on Riv. Ravi; pop., 429,800; walled city; Punjab univ.; mosque; fine public buildings; rly. centre; Brit. since 1846.

**Lahr**, tn., Baden, Ger.; pop., 14,100; cardboard, textiles, tobacco.

**Laing's Nek**, defile (5,400 ft.), N. Natal, S. Africa, leading to *Drakensberg Mtns.*; Boer victory over British, 28 Jan., 1881; occupied by Boers at beginning of S. Afr. War (Oct., 1899).

**Lais**, name of two Gr. hetaerae (*q.v.*).

**Laisse**, (lit.) term applied in Fr. prosody to denote passage or series of lines having same assonance.

**Laissez-faire**, (econ.) principle of non-interference; doctrine propounded by economists of early 18th cent. as a protest agst. State regulation of industry; politically, it became part of doctrine of *Individualism* (*q.v.*) of 19th century; chief advocates Adam Smith, Jeremy Bentham.

**Laity**, those who are not clergy; sometimes applied analogically to those who are not members of some other named profession. **House of L.**, one of the 3 houses of the National Assembly of the Ch. of Eng.

elect every 5 yrs. by lay members of diocesan conferences.

**Lake**, large body of water completely surrounded by land; geol. classified as *rock-basins* (e.g., those formed by volcanic agency), *barrier-basins* (by landslip, glacier, etc.), and *organic basins* (e.g., those in tundras and coral-reefs).

**Lake District, English**, tract of mountainous country, c. 35 m. square in Cumb., Westmor., and Lancs; lakes include *Windermere*, *Ullswater*, and *Derwentwater*; *Scafell Pike* (3,210 ft.) highest Eng. mountain.



**Lake dwellings**,

(archaeol.) habitations built in groups on platforms supported by piles driven into the floor of a lake or on artificial isls., surrounded by stockades. Common to Neolithic Period, Bronze Age, and Iron Age, esp. in Switzerland. Survive to present day in S. Amer., New Guinea, etc.

**Lakehurst**, aerodrome, New Jersey, U.S.A.

**Lake Kivu**, a lake in E. Belgian Congo, Africa, with numerous islands; connected with Lake Tanganyika; alt., 4,750 feet.

**Lake of the Woods**, lake on frontier betw. Minnesota, U.S.A., and Canada; 1,500 sq. miles.

**Lake Placid**, vill., New York, U.S.A., on W. shore of L. Mirror, *Adirondack Mtns.*; pop., 2,950; holiday resort; winter sports centre; motor-boat racing.

**Lake School**, designation of group of Eng. poets including Wordsworth, Coleridge, Southey, from their residence in or connection with the Lake country of Eng.; orig. a derogatory term used in *Edinburgh Review*.

**Lakewood**, tn., Ohio, U.S.A.; suburb of Cleveland; pop., 70,500.

**Lakh**: see LAC 4).

**Lalang, Ilang-ilang**, variety of grass found in Malaya, used for paper manufacture.

**L'Allegro** (Ital.), *The Merry Man*; title of poem by Milton.

**Lally**, Thomas Arthur, Comte de, and Bn. de Tollendal (1702-66), Fr. gen.; son of the Jacobite, Sir G. O'Lally; cmmd. regiment de Lally at Fontenoy, 1745, and Fr. force sent to India, 1756; captured at Pondicherry and brought to Eng., 1761; returned to France to face charge of treachery; exec. after long imprisonment.

**L.A.M.**, abbr. *Liberalium Artium Magister* (Lat.), Master of the Liberal Arts.

**Lama**, Buddhist priest in Tibet.

**La Madeleine**: see MAGDALENIAN CULTURE.

**Lamaism**: see BUDDHISM.

**Lamarck**, Jean Baptiste Pierre Antoine de Monet, Chevalier de (1744-1829), Fr. zoolog. and botanist; *Système des Animaux sans Vertèbres*, 1801; *Philosophie Zoologique*, 1809. Formulated **Lamarckism**, theory of evolution accdg. to wh. new species are produced by effect of environment on existing species, producing modifications which are inherited by offspring. Theory opposed by Darwin and generally abandoned; since revived by Kammerer and others, but no widely accepted proof of inheritance of acquired characteristics has yet appeared.

**La Marmora**, Alfonso (1804-78), Ital. gen. and statesm.; Min. of War, 1849; took part in Austrian War, 1859; Pr. Min., 1864-66; resigned after deft. at Custoza; Gov. of Rome, 1870-71.

**Lamartine**, Alphonse de (1790-1869), Fr. lyric poet and statesm.; *Méditations poétiques et religieuses*, 1820; *Jocelyn*, 1836; *Histoire des Girondins*, 1847. For. Min., 1848, after revn. wh. expelled Louis Philippe.

**Lamb**, Chas. (1775-1834), Eng. essayist and critic; friend of Coleridge; *Essays of Elia*, 1823, etc.

**Lamballe**, Marie Thérèse, Princesse de (1749-92), wife of Louis de Bourbon, Pr. of L.; friend of Marie Antoinette; visited Eng. on behalf of royal family, 1791; imprisoned on return and guillotined.

**Lambert**, Constant (1905- ), Eng. composer; ballets *Roméo and Juliet*; *Pomona*; *The Rio Grande*; etc.

**Lambert of Hersfeld**, 11th cent. Ger. historian; wrote *Annales*.

**Lambeth**, met. bor., S. London, Eng., on S. bank Riv. Thames; pop., 296,200; **L.**

**Palace**, residence of

Abps. of Canterbury

since 1197; on r. bank

Thames; built of red

brick and grey stone.

Oldest portion is chapel

and crypt (E.E.); Lol-

lard's Tower (1440) was

formerly a prison; part of palace now occupied

restored 1834. Fine library; portraits by

Holbein, Van Dyck, Reynolds, etc. **L. Con-**

**ferences**, held every 10 years since 1867 at

L. Palace; meeting of Anglican bps. from all

over the world.

**Lamb of God**: see AGNUS DEI.

**Lambrequin**, drapery over doors, windows, etc.; architectural imitation thereof in stone; mantling (see HERALDRY).

**Lamb's lettuce**, corn salad, *Fedia olitoria*, member of valerian family, about 6 in. high; bright green leaves and tiny white flowers. Sometimes cultivated for salad.

**Lamé**, fabric interwoven with metal thread.

**Lamech**, (O.T.) antediluvian descendant of Cain; father of Jabal, Jubal, and Tubal-



Lambeth Palace

cain; 1st recorded polygamist. **L's Song** (Gen. iv. 23), or **Sword Song** (in praise of blood-revenge), one of oldest passages in Old Testament.

**Lame duck**, 1) (Stk. Exch.) person unable to meet his engagements and receiving assistance to prevent his default. 2) (U.S.) Senator or Congressman not re-elected, but serving out last session.

**Lamella**, 1) a very thin leaf or layer; **lamellar structure** consists of mass of leaves like a book, e.g., mica; 2) (bot.) gill or plate which in the agarics (*q.v.*) bears the spore-producing organs.

**Lamellicorn beetle**, one with the last joint of the antennae modified into a series of blade-like plates capable of being expanded fan-wise, e.g., cockchafer.

**Lamennais**, Hugues de (1782-1854), Fr. theolog.; advocated theocratic democracy; tended increasingly to democracy alone; separation from the Church, 1834, marked by publication of *Paroles d'un croyant*.

**Lamentations**, (O.T.) 5 poems or dirges ascribed to Jeremiah (*q.v.*), dealing with destruction of Jerusalem.

**Lametrie**, Julien Offray de (1709-51), Fr. materialist philos., and physician; *Hist. Naturelle de l'Âme*, 1745; *L'Homme Machine*, 1748.

**Lamia**, (Gr. myth.) blood-sucking female demon.

**La Micoque**: see MICOQUEAN CULTURE.

**Lammas**, feast formerly celebrated on Aug. 1st, so called from the custom of offering loaves (A.-S. *hlāf*, loaf, and *mass*) in church on that day; 3rd quarter-day in Scotland.

**Lammergeier**, bearded vulture, large bird of prey still found in mountain ranges of S. Europe and throughout centr. Asia. In Mediterranean countries and Asia often called the "bone-breaker" from curious habit of carrying bones to great height and letting them drop on a rock in order to crack them. Aeschylus said to have been killed by a lammergeier having dropped a tortoise on his bald head, mistaking it for a rock.

**Lammermuir**, **Lammermoor**, dist. of Berwicksh., Scotland; **L. Hills**, range betw. Berwicksh. and E. Lothian; Lammer Law, 1,733 ft. Novel by Scott (*Bride of Lammermoor*, 1819); opera by Donizetti (*Lucia di Lammermoor*, 1835).

**Lampblack**, finely divided, fairly pure carbon; sepd. from flame of various oils when allowed to play on cooled surface. Used for printers' ink, paint, electrodes.

**Lampeter**, co. bor., Cardigansh., Wales; St. David's Coll., 1825; pop., 1,700.

**Lamprey**, primitive member of the class *Cyclostomata* (*q.v.*), the lowest group of true vertebrates; aquatic in habit and eel-like in form, they are found in the seas and in rivers.

Sea L. reaches 3 ft. in length; the river lamprey is rarely over 18 inches. Live on flesh of fishes, to whose bodies the lampreys attach themselves by the adhesive disk surrounding the mouth, and then rasp off the flesh with their horny, dental-armoured tongues. All ascend rivers for breeding, depositing their eggs in furrows excavated in the river bottom.



Lamprey

**Lampascus**, anc. Gr. city on Hellespont (Dardanelles); Turk. town of *Lapsaki* on site.

**Län, Laen**, administr. dist. in Sweden.

**Lanarkshire**, co. S. centr. Scot.; area, 879 sq.m.; pop., 1,586,000; div. into *Upper* (Lanark), *Middle* (Hamilton), and *Lower* wards (Glasgow: largest town in Scot.); mainly in Clyde basin; surface varied (Lead Hills, 2,377 ft.); orchards in Clydesdale; greatest Scottish coal and iron and manuf. dist. **Lanark**, co. tn., royal burgh, on Riv. Clyde; pop., 6,200; cotton mills; Falls of Clyde close by.

**Lancashire**, abbr. **Lancs**, marit. co. N.W. Eng.; area, 1,887 sq.m.; pop., 5,039,100; flat coast, mountainous in E. and N.; N.W. Furness, a detached portion, includes part of Eng. Lake District and highest summit in co. (*Conistone Old Man*, 2,633 ft.). Busiest and most populous co. in Eng.; great coalfield, centre of cotton industry, iron and steel and shipb. at Barrow-in-Furness. Liverpool the third, Manchester the fourth, city in Brit. Isles. Agric. and cattle-breeding. Close network of rlys.; many canals (incl. Manchester Ship Canal). Co. tn., **Lancaster**.

**Lancashire Fusiliers**, Brit. infantry regt., old 20th Foot: raised 1688; depot, Bury; record office, Preston; 30 battalions in World War; distinguished at Gallipoli.

**Lancashire hot-pot**, pieces of lean beef, onions, and potatoes laid in layers in a dish with condiments, covered with water, slowly baked.

**Lancaster**, House of, Eng. dynasty descended from John of Gaunt, Duke of L. (see GAUNT); comprises Henry IV, V, and VI; on conclusion of Wars of the Roses, united with House of York by marr. of Henry VII (representing younger Lancastrian branch) and Eliz. of York, dau. of Edw. IV.

**Lancaster**, Joseph (1778-1838), Eng. educator, introduced monitorial system; Roy. Lancastrian Institution was founded for him, 1808; became bankrupt and emigrated to Amer., 1818; killed in street accident; wrote *Improvements in Education*, 1803, etc.

**Lancaster**, 1) co. tn. of Lancs, on Riv. Lune; pop., 43,396; manuf. cotton, silk, machinery, linoleum, furniture. 2) Tn., Pennsylvania, U.S.A.; centre agric. dist.; cap. of State, 1799-1812.

**Lancaster, Duchy of**, group of estates settled orig. on John of Gaunt (q.v.), and subseq. on kg. for time being. Income now part of that assigned by kg. for State purposes. Chancellor of Duchy holds ministerial office but has few and formal duties, similar to foreign "minister without portfolio." See CIVIL LIST; PALATINE COUNTY.

**Lancaster Sound**, channel, Arctic Canada, betw. N. of Baffin Isl. and Devon Isl.; named after Sir James Lancaster, Eng. navigator (d. 1618).

**Lance**, type of spear used by cavalry; in use from anc. times and orig. borne by foot-soldiers also. L. of Mid. Ages was abt. 16 ft long; now 9-11 ft., and, in Brit. Army, abolished, except for ceremonial use, since 1927.

**Lance-corporal**: see LANCE RANK.

**Lancelet**, *Amphioxus*, small marine animal of extremely primitive character, the backbone being represented by a supporting rod, the *notochord*, which extends from head to tail; semi-transparent, 1 to 2 in. in length, compressed from side to side, pointed at both ends, with a circle of small tentacles round the mouth; lives in shallow water, in loose sand, into which it burrows with great rapidity, if disturbed.

**Lancelot**, Claude (1615-95), Fr. grammarian, of Port Royal; *Méthode Latine*, 1644.

**Lancelot of the Lake**, a hero of the Arthurian Cycle in love with Guinevere.

**Lance rank**, term used in Brit. Army for an appointment given to a soldier performing the duties of the rank above his own: *L-sergeant*, *L-corporal*.

**Lancers**, 1) (milit.) cavalry armed with the lance; 4 regts. of L. in Brit. Army: 9th Queen's Royal L., 12th Royal L., 16th 5th L., 17th 21st L. 2) Square dance resembling a quadrille.

**Lancet** (med.), knife with double-edged, lance-shaped blade, used for opening abscesses, etc.

**Lancewood**, straight-grained, elastic wood of two varieties of tree from W. Indies and Guiana, used for carriage-shafts, whip-handles, etc.

**Lancing College**, Eng. public school for boys, nr. Shoreham, Sussex; fndd. 1848, by Canon N. Woodard, for providing education on C. of E. principles.

**Lancet**, Nicolas (1690-1743), Fr. painter; *Four Ages of Man*.

**Lancs**, abbr. Lancashire.

**Land**, 1) solid surface of the earth as distinct from and contrasted with water or sea; 2) specific area or region of the earth; country, nation, state; 3) ground, soil considered from point of view of its character, quality, the crops it bears, etc.; this as distinct from urban area; 4) area considered as property (q.v.).

**Landau**, 1) tn., Bavarian Palatinate; pop., 14,500; iron foundry; wine trade. 2) Four-wheeled carriage, with hood, made in two portions to fold back; named after the town.

**Landauer**, Gustav (1870-1910), Ger. socialist writer; Commiss. for Educ. in Bavarian Sov. Rep., 1910.

**Landaulet**, small landau (q.v.); also a type of motorcar with movable hood at back.

**Land breeze**, wind blowing from land towards sea, esp. after sunset, owing to more rapid cooling of ground surface.

**Land-crab**, name given to var. species of crab (q.v.) which spend most, or all, of their life on land, under stones, in hollow trees, sand-burrows, etc.

**Landeck**, tn., Lower Silesia, Prussia, on the Biele; pop., 4,800; alt., c. 1,400 ft.; sulphur springs; health resort.

**Landes**, sandy heath-land in S.W. France betw. the Riv. Gironde and the Pyrenees, on Bay of Biscay. South part forms dépt. of L., 3,616 sq.m.; pop., 263,000; cap., *Mont-de-Marsan*.

**Landeshut**, tn., Lower Silesia, Prussia, on Riv. Bober; pop., 14,500; linen industry.

**Landing-net**, hand fishing-net with long handle, for landing large fish caught with rod and line. **L-stage**, steel or masonry structure, alongside wh. ships can lie to embark or disembark passengers; usu. fitted with cranes for handling baggage and connected to nearest rly. system.

**Landkreise**, admin. area in Prussia; includes towns of less than 25,000 pop. and rural districts.

**Land League**, organization formed, in 1879, by the Irish Nationalist party for the resistance of payment of rent; proclaimed illegal and suppressed by the Liberal Govt., 1881.

**Lando**, pope (913-914); scarcely anything known of him.

"**Land of the Five Rivers**": see PUNJAB.

**Landor**, Walter Savage (1775-1864), Eng. poet and critic; *Gebir*, 1798; *Imaginary Conversations*, 1824-29; *The Pentameron*, 1837; etc.

**Landrecies**, vill., dépt. Nord, France, 10 m. N.E. Le Cateau; taken by the Germans in World War, 25-26 Aug., 1914; retaken by the British, 4th Nov., 1918; pop., 3,550.

**Landsberg**, 1) tn., Brandenburg, Prussia, on Riv. Warthe; pop., 43,400; iron foundries, jute, tobacco, leather. 2) Tn., Bavaria, on Riv. Lech; pop., 7,800; timber; agric. machinery.

**Landscape Gardening**, art and practice of laying out ground, usu. attached to mansion or house, so as to make an artistic whole. Gdg. develpd. in anc. Egypt, Persia, Assyria, Babylonia (*Hanging Gardens*). Grks.



cultvtd. "sacred groves" and public gardens; villa gardens of anc. Rome formal and architectl. as were those of Moorish palaces of Mid. Ages. Prosperity of France expressed in magnificence of *château* gardens of late 17th century (*Versailles*). In Eng., ornamental gdns. 1st made by monks (13th-14th cents.); Henry VIII employed Italians in making of gardens at Hampton Court, 1530. Dutch style introduced with William and Mary (formal clipped hedges, avenues, etc.). True L. G. flourished in late 18th cent., with return to natural beauty. Mod. architects sometimes design garden that will combine harmoniously with house. Small town-gardens, roof-gardens, etc., usu. formal in style. *See also* GARDEN; PARK.

**Landseer**, Sir Edwin Henry (1802-73), Eng. animal painter; *Dignity and Impudence* (1839), etc.; designer of the lions (Nelson Monmt.) in Trafalgar Sq., London; R.A., 1831.

**Land's End**, promontory, Cornwall, westernmost point of England; 5°41' W. long.; granite cliffs.

**Landshut**, cap. of Lower Bavaria, on the Isar; pop., 30,200; rly. junction; castle of Trausnitz.

**Landsknecht**, Ger. mercenary foot-soldiers of the 15th and 16th cents.

**Landskrona**, seapt., Malmöhus, Sweden, on the Öresund; pop., 19,540.

**Landsturm**, reserve militia forces of Ger. and Austria, consisting of men not eligible for mil. service (17-20 yrs., or unfit) and of those who had completed their service and were liable to be called upon up to 45 yrs. Abolished 1918. Swiss L. still exists.

**Land Tax**, Brit. tax on land (addl. to Income Tax, Sch. A); raised, according to quota of each parish, by an equal pound rate, varying from 1d to 1/- in the £. First levied, 1798; in many cases redeemed.

**Landwehr**, reserves incorptd. in Ger. Army; distinguished from Landsturm in that they continued to receive periodical training. Abolished 1919.

**Lane**, Edward W. (1801-76), Eng. orientalist; transl. *A Thousand and One Nights*; *Manners and Customs of the Modern Egyptians*, 1836.

**Lanercost Priory**, Cumberland, 3 m. N.E. of Brampton, dates from 1169; half-ruined E.E. church (still used); on line of Rom. wall.

**Lanfranc** (c. 1005-89), prelate and scholar; b. at Pavia; adviser to Wm. I; Abbot of Caen, 1066; Abp. of Canterbury, 1070; rebuilt Canterbury Cathed., where he is buried.

**Lang**, Andrew (1844-1912), Scot. poet and misc. writer: *History of Scotland from the Roman Occupation*, 1900-07; *Blue Fairy Tale Book*, 1889; *Ballads and Lyrics of Old*

*France*, 1872; *Myth. Literature and Religion*, 1899. **L., Cosmo Gordon** (1864-

), Abp. of Canterbury, 1928; Fellow, and Dean of Divinity, Magdalen Coll. Oxford, 1893-96; Bp. of Stepney, 1901-08; Abp. of York, 1908-28; works incl.: *The Parables of Jesus*, 1906; *The Opportunity of the Church of England*, 1906. **L., John Thomas** (1876-), Austral. Labour leader; Pr. Min. and Treasurer, N.S. Wales, 1925-27 and 1930-32, when his refusal to pay the interest on overseas State debts led to his dismissal by the governor and a gen. election in wh. he was defeated.

**Langdale Pikes**, two mtn. peaks, N. Westmorland, Eng. Lake Dist.; *Harrison Stickle*, 2,401 ft.; *Pike o' Stickle*, 2,303 feet.

**Lange**, Friedr. Albert (1828-75), Ger. philos. and pol. econ.; *History of Materialism*, 1866.

**Langerhans, Islets of**, groups of cells scattered throughout glandular tissue of pancreas; they produce insulin (q.v.). *See* DIABETES.

**Langhans**, Joh. Gotth. (1733-1808), Ger. architect; *Brandenburg Gate*.

**Langholm**, police burgh and mkt. tn., E. Dumfriessh., Scotland, on Riv. Esk; pop., 2,450; manuf. tweeds; scanty remains of Wauchope Castle.

**Langland**, William, name given (on internal evidence) to the author of the 14th cent. Eng. poem *Piers the Plowman* (q.v.) and perhaps of *Richard the Redeless* (poem addressed to Richard II in 1399). He is said to have lived c. 1325-1400, but *Piers* is possibly the work of more than one hand.

**Langley Field**, aerodrome, Hampton, Virginia, U.S.A.; cadet school.

**Langmuir**, Dr. Irving (1881-), chemist; director of the Gen. Electric Company's Research Laboratory at Schenectady; Nobel Prize (Science), 1932.

**Langport**, small mkt. tn. (Saxon royal boro.), Somersetsh., 13 m. E. of Taunton on Riv. Parret; pop., 800; "Hanging Chapel" on archway; church of *Huish Episcopi* (15th cent. tower).

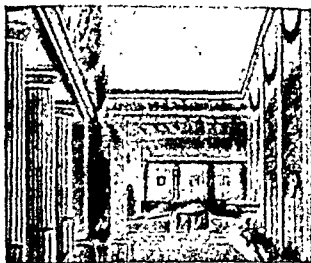
**Langres**, walled tn., dépt. Haute-Marne, France, on *Plateau de Langres*; pop., 9,500; cathed.; museum; cutlery, wine trade.

**Lang's Nek**: *see* LAING'S NEK.

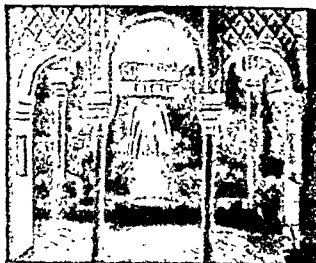
**Langton**, Stephen (d. 1228), Eng. cardinal; Abp. of Canterbury, 1207-28; champion of reform, assistd. in drafting *Magna Carta*, 1215; leader of opp. to papal exactions; secured recall of the legate Pandulf, 1221; introd. constitutions (still part of Eng. eccles. law) at Synod of Osney, 1222.



Cosmo Gordon Lang  
Archbishop of  
Canterbury



Roman Garden, Pompeii



Moorish Garden-court



Gardens, Versailles



Hampton Court



Rose Garden, Stowell Hill



White Lodge, Richmond



Paved Garden, London



Roof Garden, London

#### TYPES OF GARDENS

**Langtry**, Lily (1852-1929), *née* le Breton; Eng. actress, "Jersey Lily"; m., 1st, Ed. L., 1874; 2nd, Sir Hugo de Bathe, 1899; from 1881 appeared on stage under her own management in London and America.

**Language Survey.** The langs. of the world are classified into 5 main divisions, betw. wh., apart from occasional loan words, there appears to be little or no relationship. Within each division (*see* TABLE) are placed those individual languages or lang.-groups wh., in their phonology, morphology, and vocabulary, show interrelationship. Dead langs. are marked \*.

Langs. of White (Caucasian) races.

## I. Indo-germanic Langs. (Aryan).

- A.
  1. GREEK\*: Mod. Gr.
  2. LATIN\*: *Romancelangs.*—Ital.; Ruman.; Span.; Portug.; Provençal, Catalan; Fr.; Rhetic Romansch, Ladino.
  3. CELTIC: *Gaulish, Gaelic*—Ir.; Scot.; *British*—Welsh; Breton; Cornish.\*
  4. GERMANIC: *N. Germanic (Scandinavian)*—Norw.; Dan.; Icel.; Swed.; *E. Germanic*—Gothic;\* *W. Germanic*—Eng.; Fris.; Ger.; Flemish, Dutch.
  5. HITTITE.\*
- B.
  1. INDIAN: *O. Ind.*—Vedic\*; Sanskrit\*; *Med. Ind.*—Prakrit\*; Pali\*; Cinghalese: *Mod. Ind.*, Hindi; Bengali; Hindustani; Punjabi, etc.; Romany.
  2. IRANIAN: *O. Pers.*\*, Avesta\*, Pehlevi\*; Pers., Kurd, Pushtu, etc.
  3. ARMENIAN.
  4. ALBANIAN.
  5. BALTIC: Lithuanian; Lettish; O. Pruss.\*
  6. SLAVONIC: Russian, Ruthenian; Bulgar; Serb-Croatian; Slovene, Polish; Czech, Wendish, Serbian, etc.

## II. Hamitic and Semitic Langs.:

- A. HAMITIC—
  1. EGYPTIAN\*: Coptic.
  2. BERBER, etc.
- B. SEMITIC—
  1. E. SEMITIC, Babylonian\*; Assyrian.\*
  2. W. SEMITIC, Hebrew\*; Phoenician\*; Aramaic\*; Syriac; Arabic; Amharic, Abyssinian.

## III. Caucasian Langs.:

1. KIRGHIS.
2. GEORGIAN.

## IV. Dravidian Langs.:

1. TAMIL.

## V. Basque.

## Mongolian Langs.:

### I. Ural-Altaic:

1. FINNO-UGRIAN: Hungarian; Finnish; Eston.; Lappish.
2. ALTAIC: Turkish-Tartar; Mongolian; Tungu; Jap.; Korean.

### II. Austro-Asiatic Langs.:

1. MUNDA.\*
2. MON-KHMER: Annamese; Cambodian.
3. MALAY-POLYNESIAN: Indonesian Polynesian; Melanesian; Oceanic
4. INDO-CHINESE: Tibetan, Burmese; Chinese; Siamese.

### III. Arctic Langs.:

1. ALEUT-ESKIMO.

### IV. Sumerian Langs.\*

### Ethiopian Langs.:

1. SUDANESE: Senegambian; Hausa.
2. BANTU: Swahili; Dualla; Herero.
3. BUSHMAN.
4. HOTTENTOT.
5. GEEZ.

### American Langs.:

1. UTO-AZTEC.
2. IROQUIAN.
3. CARIBBEAN.
4. ARAUCANIAN.

### Australian Langs.:

1. AUSTRALIAN.
2. PAPUAN.

**Langue d'oc**, language using the form "oc" for "yes," as opposed to *Langue d'oïl* using "oïl" or "oui"; a collective name for Romance dialects spoken in Mid. Ages from Alps to Pyrenees; lang. of troubadours (*q.v.*) a syn. for Provençal (*q.v.*); name survives in dist. of *Languedoc* (Provence).

**Langur**, group of slender, long-tailed monkeys, natives of S. Asia; *Hanuman*, grey-white, black face; revered as sacred in India. Other species in Borneo and Malay Peninsula.

**Lankester**, Sir E. Ray (1847-1929), Brit. scientist; fndd. Marine Biological Assoc., 1884; *Science from an Easy Chair*, 1908-22.

**Lanner**, Joseph (1801-43), Austr. composer; creator of "Viennese Waltz."

**Lanner**, small Mediterranean falcon, gen. hue ashy-brown; formerly used in hawking; male known as *lanneret*.

**Lanolin**, natural grease in sheep's wool; used in purified form as a soothing ointment.

**Lansbury**, George (1859- ), Brit. Lab. politic.; 1st Comm. of Works, 1929-31; ed. of *Daily Herald*, 1912-22; leader of Opposition in Parlt., 1932.

**Lansdowne**, Henry Chas. Keith Petty Fitzmaurice, 5th marq. (1845-1927), Brit. statesm. (Lib.-Unionist); Under-Sec. for War, 1872-74, and for India, 1880; Gov.-Gen. of Canada, 1883-88; Viceroy of India, 1888-93; Sec. for Foreign Affairs, 1900-06 (Anglo-

Jap. Alliance, 1902, and Entente Cordiale, 1905; Unionist leader in Hse. of Lords, 1903; his unpopular proposals for ending World War led to his retirement, 1917.

**Lansing**, Robt. (1864-1928), Amer. diplomat and internat. lawyer; Sec. of State in Pres. Wilson's cabinet, 1915-1920; auth. of *Big Four and Others of the Peace Conference*, 1921, etc.

**Lansing**, cap., Michigan, U.S.A., at junctn. of Grand and Cedar rivs.; pop., 78,400; agric. coll. (fndd. 1850); motorcars; machinery.

**Lansquenet**, gambling card-game for any number of players.

**Lantern**, 1) portable or fixed transparent glass case enclosing a light as protection from wind, rain, etc.; upper pt. of lighthouse; 2) (archit.) openwork struct. of stone or timber, circ. or polygonal, erected on top of a tower or

ship; also, cord to wh. a jack-knife is attached, worn by sailors round the neck.

**Laocoon**, 1) in Gr. legend, Trojan priest; warned his countrymen agst. the wooden horse (*q.v.*); killed, together with his sons, by two serpents sent from the sea by Poseidon because he had profaned the temple of one of the gods. 2) Famous Gr. sculpture of 2nd cent. B.C., now in Vatican.

**Laodamia**, (Gr. myth.) dau. of Acastus and wife of Protesilaus; after latter was killed before Troy the Gods, at her request, restored him to life for a few hours, after which both died together; subj. of poem by Wordsworth.



Laocöon

LANGUAGE	USE	SPOKEN IN	BY <i>circa</i>
ENG.	Internat.	Gt. Brit. and Ir. (c. 46,000,000), U.S.A. (123,000,000), large pt. of Canada, Australia, other dominions, colonies; in commerc. form ( <i>pidgin Eng.</i> ) in Far East.	240,000,000
GER.	Internat.	Ger. (c. 63,000,000), Austria, E. Switz., large pt. of Luxemburg, Baltic countries, surrendered pts. of Ger. and Austria, U.S.A. (c. 9,000,000), Brazil (c. 6,000,000). Grps. in Czechoslov., Hungary, Rumania.	113,000,000
FR.	Internat. l. of diplomacy; Internat. Postal Union.	France (c. 44,000,000), most of Belg., Luxemburg, W. Switz., Fr. colonies, Canada; social and commerc. l. of Balkan countries, Near East, and pt. of S. America.	100,000,000
RUSS.		Europ. Russ. and Siberia.	100,000,000
SP.		Spain (c. 22,000,000), Canary Isles, former Span. territ. in S. Amer., Argentina, Bolivia, Chile, Uruguay, Peru, Ecuador, Colombia, Centr. Amer., Mexico, Cuba, Puerto Rico, Philippines.	80,000,000
PORT.		Port. (c. 6,000,000), Sp. Prov. of Galicia (c. 2,000,000), Port. Colonies (c. 8,000,000), Brazil (c. 35,000,000).	50,000,000

dome, or on roof of dwelling-house, an open tower; 3) (eng.) any lantern-shaped construction, esp. trundle wheel. **Dark l.**, L. with single opening wh. may be closed to conceal the light. **L.-fly**, hemipterous insect, so called because of the hollow, bladder-like structure into which the head is prolonged, and which was formerly believed to be luminous.

**Lanthanum**, rare chem. element, belonging to the cerium group; sym. La, at. wt. 138.90; dull grey metal.

**Lanugo**, the downy hair of newly-born children.

**Lanyard**, 1) short piece of thin rope or cord used to secure anything. 2) (Naut.) Lashing by which stays are secured to side of

**Laon**, cap., dépt. Aisne, France; pop., 19,400; fortress from Rom. times; Goth. cathed. (12th cent.); occupied by Germans 1914-18.

**Laos**, terr., centr. Indo-China, divided into **West Laos**, nominally under Siamese rule, area undefined; and, to E., **French Laos**, Fr. protectorate (89,166 sq.m.; pop., 855,146); rice, cotton, indigo; teak forests; gold, tin, copper, precious stones (little worked); cap. of Fr. L., Vien-Tiane.

**Lao-Tse** (6th cent. B.C.), Chin. philos.; fndd. Taoism (*q.v.*).

**Laparotomy**, (surg.) operation of opening the abdominal cavity to examine its interior in order that the necessary course of treatment may then be adopted.

**La Paz**, 1) dept. Bolivia, S. Amer., 40,685 sq.m.; pop., 723,900; mountainous (*Illimani*, 24,600 ft.; *Sorata*, 25,200 ft.); rubber, coffee, cocoa; gold, silver, copper, tin. 2) or **La Paz de Ayacucho** (alt. 13,100 ft.), cap. of Bolivia, on La Paz Riv.; cathed.; univ.; commercial centre; pop., 145,000.

**La Pérouse**, Jean François de Galaup, Comte de (1741-88), Fr. navigator and explorer; visited Alaska and Hawaii, 1786; Korea, Japan, and Philippines, 1787; lost after leaving Botany Bay, Australia; wreckage from his ship, the "Boussole," found on isl. in Pacific, 1826.

**Lapis lazuli**, semi-precious, bright blue stone; composed chflly. of sulphates and silicates of sodium and aluminium.

**Lapiths**, (Gr. myth.) people dwelling in Thessaly. Battle with Centaurs at marriage-feast of their kg., Pirithous; favourite subject of Gr. sculpture.

**Laplace**, Pierre Simon, Marquis de (1749-1827), Fr. astron. and mathem.; formulated theory of spherical harmonics.



Laplace

**Lapland**, N. part of Scandinavia, belonging to Norway, Sweden, and Finland; 154,000 sq.m.; inhab. Lapps; E. of *Lapp Alps* (6,955 ft.) is region of *tundras* (q.v.).



Lapp Tent

**La Plata**, cap., prov. of Buenos Aires, Argentina, 5 m. from port Ensenada, on Rio de la Plata, and 30 m. S.E. Buenos Aires; pop., 165,800; cathed., univ., museum, observatory, public park; meat-packing.

**Lappet-moth**, large brown moth resembling a dead leaf when resting with closed wings; larvae sometimes injurious to fruit trees.

**Lappish**: see LANGUAGE SURVEY, *Finn-Ugrian*.

**Lapsus linguae**, slip of the tongue.

**Lapua**, polit. movement in Finland with Fascist principles; rose into importance c. 1926.

**Laputa**, flying island in *Gulliver's Travels* (q.v.) inhabited by inconsequent pedants.

**Lapwing**, common species of plover, breeds throughout N. Europe and Asia; rounded wings,



Lapwing

eggs formerly sold commercially as "plover's eggs"; sale in Grt. Brit. now prohibited.

**Lapworth**, Charles (1842-1920), Eng. geologist; disc. evolutionary order of members of the graptolite fossil group, and so elucidated the geol. formation of the southern uplands of Scotland; this threw light on formation of many other areas.

**Laramie**, tn. on L. Riv., in S.E. Wyoming, U.S.A., pop., 8,600; agric., lumbering, stock-raising, oil; aerodrome.

**Larceny**, unlawful removal of another's possessions with intent to deprive him of them, and to convert them to one's own use; punishable in Gt. Brit. by penal servitude for from 5 to 14 years (*L. Act*, 1916). **Petty l.**, formerly, theft of goods below value of twelvepence. Cf. **EMBEZZLEMENT**; **ROBBERY**.

**Larch**, name of a group of coniferous trees; European l. (*Larix europaea*) is widely distributed; the leaves are deciduous; yields Venice turpentine; other species in Asia and N. America.

**Larding**, method of inserting strips of fat bacon or pork into surface of lean meat.



Larch

**Lares**, Rom. protective deities of the house; see **PENATES**; **LEMURES**.

**Larghetto**, (mus.) rather slowly.

**Largo**, (mus.) slowly, broadly.

**Larissa**, tn., Thessaly, Greece, on Riv. Salamvria (Peneus); cap., prov. of L. (2,925 sq.m.; pop., 278,500); pop., 24,000.

**Laristan**, dist., S. part of Fars prov., Persia; c. 27,000 sq.m.; pop., 90,000; barren salt steppes; camels, silk and cotton goods; chf. tn., *Lar* (pop. c. 10,000).

**Lark**, small migrant singing bird; widely spread over Old World, and in N. Amer.; nests on the ground. **Skylark** (q.v.) frequents fields and heathland; soars straight up while singing. **Woodlark** frequents fields near woods and undergrowth. **Crested l.**, with long feathers on head, frequents cultivated land near villages; fnd. in Europe, N. Africa, Asia.

**Larkspur**, *Delphinium ajacis*, grows wild in cornfields, also cultivated; bright blue blossoms in spikes; also pink and white.

**Larne**, seapt. tn., Co. Antrim, N. Ireland, on Lough Larne; mail service to Stranraer (Scotland); pop., 8,000.



Larkspur

**La Rochefoucauld**, François, Duc de (1613-80); Fr. moralist; *Maxims*, 1665; *Mémoires*, 1662; corresp. pubd. 1818.

**La Rochelle**, cap., dépt. Charente-Inférieure, France, on the Atlantic; pop., 41,500; fortified harbour; sea-bathing. Huguenot stronghold in 16th-17th centuries.

**Larousse**, Pierre (1817-75), Fr. lexicographer.

**Larsson, Carl** (1853-1919), Swed. artist.

**L'art pour l'art** (Fr.), art for art's sake.

**Larva**, (entom.) 1) caterpillar or worm-like stage of some insects (butterfly, moth, fly, etc.), bef. maturity; 2) early stage of development of some batrachia (tadpoles), mollusca, etc.

**Laryngitis, laryngology, laryngoscope:**  
see LARYNX.

**Larynx**, (physiol.) cup-shaped upper continuation of windpipe, the walls of wh. are formed by a number of cartilages; contains *vocal cords*. **Laryngitis**, inflammation of L., causes huskiness in the voice. **Laryngology**, science of diseases of the L. **Laryngoscope**, instr. invented by the singer, Garcia (1805-1906), for examining interior of L.; consists of a small mirror attached to a long handle.

**Las Casas**, Bartolom. de (1474-1560), Span. Dominican; champion of oppressed natives of America ("Apostle of the Indies"); *Brevisima relación de la Destrucción de las Indias occidentales*, 1539.

**Las Cases**, Emanuel, Marq. (1766-1842); Fr. writer; accompanied Napoleon I to St. Helena and took down his memoirs, *Mémoires de St. Hélène*.

**Lasker**, Emanuel (1868- ), Ger. chess master; world champion, 1894-1921.

**Laski**, Jan (1499-1560), Pol. statesm., ecclesiastic, and reformer; abp. of Gnesen, 1511; pleaded cause of Poland agnst. Teutonic Knights at Lateran Council, 1513; excommunicated for vehemence of opposition to Habsburg succession.

**Las Palmas**, 1) cap., Grand Canary, Canary Isls. (q.v.); pop., 74,000; Atlantic port. 2) Cape, W. Africa, betw. Ivory Coast and Liberia.

**Lassalle**, Ferd. (1825-64), Ger. Socialist; fndd. Gen. Ger. Working Men's Union, 1863; killed in duel. *The Working Man's Programme*, 1862.

**Lassen**, Christian (1800-76), Norw. orientalist and Sanskrit scholar; 1st to decipher and explain the Persian cuneiform characters; *Institutiones Linguae Præcriticæ*, 1837.

**Lassen Volcano**, nat. park (1916) in N. California, U.S.A.; 163 sq.m.; only act. volcano in U.S. proper; *Lassen Peak*, 10,453 ft.; cinder cone, 6,913 ft.; hot springs.

**Lasso**, Orlando (1532-94), Flem. composer, the "Prince of Music."

**Lasso**, noosed rope for catching animals, etc.

**Last**, Brit. and U.S. dry meas.; 10 quarters (80 bushels). **L. of hides**, 20 dickers (q.v.), or 200 hides. **L. of wool**, 39 cwt.

**Last Supper**, Sacrament (q.v.) of the Christian Churches; instituted by Christ—



The Last Supper, after Dürer

"In memory of Me" (Luke xxii); see EUCHARIST; HOLY COMMUNION; MASS.

**Latakia**, 1) govt., Syria, on Mediterranean: formerly *Alaouites*, or terr. of the Alawiyyin; 2,500 sq.m.; pop., 286,900. 2) Cap. of govt., seapt.; pop., 21,400; exports tobacco, olive-oil, sponges.

**Lateen**, triang. sail set on oblique movable yard (q.v.); used by small ships, esp. in Mediterranean Sea.

**Latency, Period of**, (med.) see INCUBATION.

**La Tène**, site of lake dwellings nr. L. of Neuchâtel at Marin (W. Switzerland), dating from 2nd Iron Age. **La T. Period**, c. 500 B.C. to A.D. 1.

**Latent heat**, (phys.) heat absorbed or emitted by a body or system without change of temperature. **L. h. of evaporation**, (phys.) amount of heat in calories (q.v.) req. to transform 1 gramme of a substance from liquid or solid to a vapour without incr. of temp. **L. h. of evap. of water** = 539 calories.

**Lateran**, palace, Rome; papal residence till 1377, now a museum. Said to have been orig. the house of the senator Plautius Lateranus, confiscated by Nero; presented by Constantine to the Pope, 313. *Scala Sancta* is staircase of 28 marble steps, ascended by penitents on their knees; leading to the papal chapel in the Lateran Palace. **St. John L.**, cathed. of the Popes and principal ch. of Rome; 18th cent. basilica built on the site of Constantine's basilica. **L. Councils**, five eccles. synods held in the Lateran. **L. Treaty**, 11 Feb., 1929, created the Vatican State (q.v.).

**Laterite**, a reddish deposit of earth or clay formed by surface decomposition of rocks; occurs extensively in some tropical countries.

**Latex**, milky juice of many plants. In cert. trop. trees, esp. *Hevea brasiliensis*, L. is source of rubber (q.v.); latex of poppy (*Papaver somniferum*) yields opium.



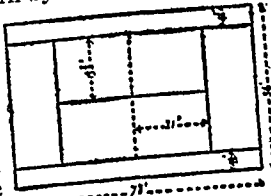
Lassalle

## LAWES

**Lawes, Henry** (1595-1662), Eng. composer, music to masques (Milton's *Comus*, etc.), songs, etc.

**Lawn**, fine thin linen fabric, used esp. for wide sleeves worn by Anglican bishops.

**Lawn tennis**, game with racquet and cloth-covered rubber ball for 2 or 4 players on a court ("grass" or "hard") crossed by a net. The first player to win 6 "games" (scored 15, 30, 40, game) wins the "set," except in the case of "5 all," when a lead of 2 games is required.



Lawn Tennis Court

**Lawrence, St.**, mart. in Rome 258; accdg. to tradition, roasted on gridiron.

**Lawrence, David Herbert** (1885-1930),

Eng. novelist; *Sons and Lovers*, *Kangaroo*. **L., Sir**

**Henry Montgomery** (1806-57), Brit. soldier; pres. of Board of Administ. in Punjab, 1849; agent of gov.-gen. in Rajputana, 1853; Chf. Commissnr. of Oudh, 1857; on outbreak of Indian Mutiny, organised defence of Lucknow, where he died of wounds.

**L., John L. M. Lawrence**, 1st bn. (1811-79), Eng. statesman and administrator; Chf. Commissnr. of Punjab, 1853; regained Delhi from mutineers, 1857; service during Mutiny earned him title of "Saviour of India"; returned to Eng., 1859; viceroy and Gov.-Gen. of India, 1864-69.

**L., Sir Thomas** (1769-1830), Brit. painter; P.R.A., 1820. **L., Thomas Edward** (1888- ) ("Aircraftsman Shaw") Brit. soldier, administrator, and archaeologist; organ. Arab revolt agst. Turks (1916-18); author of *Seven Pillars of Wisdom*, 1926; *The Revolt in the Desert*, 1927; etc.

**Lawrence**, tn., Massachusetts, U.S.A., on Merrimac Riv., pop., 98,000; textiles.

**Lawson**, Sir Wilfrid, Bt. (1829-1906), Brit. Radical politician and temperance leader; M.P., 1859; carried a local option resolution, 1880, '81, '83; pres. of United Kgd. Alliance (fndd., 1853); advocated disestablishment, disarmament, and the abolition of the House of Lords.

**Laxative**: see **APERIENT**.

**Layamon** (fl. c. 1200-10), Eng. priest and poet; author of the *Brut*, a verse-chronicle derived from *Brut d'Angleterre*, by Wace (c. 1155); edited by Sir F. Madden, 1847.

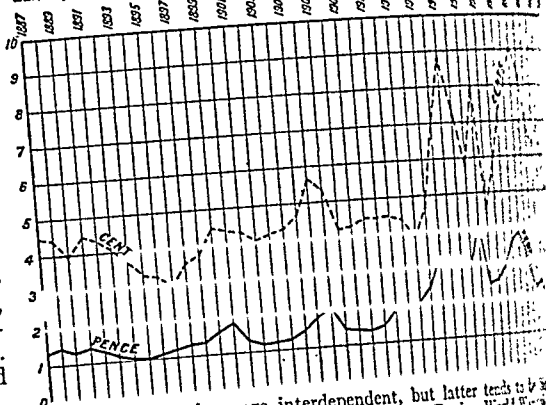
**Layard**, Sir Austen Henry (1817-94), Eng. diplomat. and archaeologist; excavated Nineveh.

**Layering**, (hort.) method of causing plant to strike fresh roots by forcing down a branch and covering with suitable soil.

**Lay days**, (shipping) period allowed for loading or unloading a vessel (short for "lay days"), within which no charge made for demurrage (q.v.). **L. figure**, 1) model made by painters to hang drapery upon; 2) person who plays no active part in affairs with which his name is connected. **L. priest**, SECULAR PRIEST.

**Layman** (Gr., *laos*, "people"), member of a ch. as distinct from its priesthood or clergy, one without the knowledge required by a named profession. **Houses of Laymen**, assemblies at wh. laity of the C. of E. meet for deliberation and to associate themselves with Convocation (q.v.); one in Province of Can-

LEAD (PRICE PER LB.)



English and American are interdependent, but latter tends to be less than Eng. equivalent owing to import duty. During World War I inflation partly obliterated by Eng. inflation.

bury, one in that of York; members by various diocesan conferences.

**Layton**, Sir Walter (1884- ) economist; represented Ministry of Finance on Milner Mission to Russia, 1917; Balfour Mission to U.S.A., 1917; *of Capital and Labour*.

**Lazarists**, members of the "C. of the Priests of the Mission," founded by St. Vincent de Paul, in Paris, 1617; of ministering to dwellers in country and villages, and training Catholic priesthood.

**Lazarus**, (N.T.) 1) L. of Bethany of Mary and Martha; restored to Jesus (John xi). 2) Beggar in *Dives and L.* (Lu. xvi); in Mid. As. saint of lepers.

**Lazarus**, oratorio by Schubert, 1820.

**Lazarus, Order of St.**, religious order founded in Jerusalem in 1115.

tending the sick, esp. lepers (*lazars*); spread over various European countries, chfly. France; abolished in 1830.

**Lazio, Latium**, region of It. on W. coast, incl. Rome; 6,631 sq.m.; pop., 2,385,203;illy, marshes on S. coast; agric., cattle, wine; tile industry.

**Lazulite**, a phosphate of aluminium and magnesium, one of the main constituents of pis lazuli.

**L.B.**, abbr. *Litterarum Baccalaureatus* (Lat.), Bachelor of Letters.

**Lb.**, abbr. *libra* (Lat.), pound weight.

**L.b.w.**, abbr. leg before wicket (cricket).

**L.C.**, abbr. Lower Canada.

**L.c.**, abbr. 1) *loco citato* (Lat.), at the place cited; 2) lower case, in typography, *not* initials.

**..C.C.**, abbr. London County Council.

**..C.H.**, abbr. Licentiate in Surgery.

**..C.J.**, abbr. Lord Chief Justice.

**..C.M.**, abbr. lowest common multiple: lowest figure, common to two or more numbers, in which their denominators can be divided.

**D.**, abbr. 1) Doctor of Letters; 2) *Laus* (Lat.), Praise be to God.

**d.**, abbr. limited.

**D.E.G.**, abbr. *Laus Deo et gloria* (Lat.), praise and the glory be to God.

**D.S.**, abbr. Licentiate in Dental Sur-

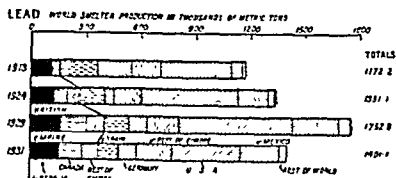
**a**, riv. (45 m.), N. trib. of the Thames, Beds; flows past Luton, Harpenden, Bedford, Ware, and Tottenham, to River below Blackwall; works of Metropolitan Water Board. Described in *Walcote's Angler*.

**a**, (text.) measure for yarn; 120 yds. a; 80 rounds of cotton reel; 300 yds. yarn.

**cock**, Stephen Butler (1869- ), Irish humorist and educationist; head of Sch. of Polit. Econ., McGill University; *verse Novels; Moonbeams from the Lunacy*, etc.

**d**, chem. elem.; sym., Pb; at. wt., 207.2; m.p., 327°C; soft bluish metal. Occurs as *litharge* (lead sulphide, PbS) in Australia, S.A. Used for making conduit pipes, shot, bullets, accumulators, and for roofing roofs; soluble compounds are "litharge" poison; small non-injurious amounts accumulate in body over months until present to produce very bad effects, fatal to cure. Oxides: *Litharge* or massicot, formed by heating metal in air at 300°C. Used in manufacture of oils and resins, and as constituent of glass. **Red lead**,  $Pb_3O_4$ , made by heating litharge at 350° and 500°C.; used as constituent, matches, flint glass, and pottery. **Peroxide**,  $PbO_2$ , made by action of strong agents (e.g., chlorine, hydrogen

peroxide) on litharge suspended in water. Forms the active mass of charged positive accumulator plate, being converted into lead sulphate,  $PbSO_4$ , during discharge. **White lead** is basic lead carbonate,  $2PbCO_3 \cdot Pb(OH)_2$ .



World Prodn. in 1929 some 50% higher than in 1913, but subsequent severe fall of prices has caused many rich ore-bearing mines in U.S.A. & Mexico to close down, so that 1931 U.S.A. prodn. only 60% of 1929 figure. Nevertheless, U.S.A. & Mexico are still largest producers.

important pigment made by action of carbon dioxide on lead in presence of acetic acid.

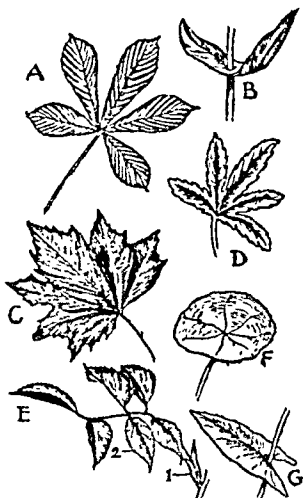
**Lead-burning**, autogenous welding (see WELD) of lead by means of oxy-acetylene flame. **L. lotion**, solution of basic lead acetate, used in treatment of inflammation. **L. pencil**, writing implement made of graphite (q.v.), usually cased in wood; known since 1350.

**Leaden-hall Market**, principal poultry market of London, in Leaden-hall Street; pres. bldg. opened, 1881.

**Leader**, Benjn. Williams (1831-1923), Eng. landscape painter; R.A., 1898; *Valley of the Liffey* (Tate Gallery).

**Leaf**, (bot.) natural outgrowth of stem of plants, with excep. of *algae* (seaweeds) and *fungi*.

Leaves are of var. kinds: foliage L., mostly green, cntg. chlorophyll; corolla of flowers,



Types of Leaf

- A Chestnut
- B Yellow wort—perforiate
- C Plane
- D Angustifolium—five lobed
- E Compound leaf: Rose (dog)
- F Nasturtium—peltate and obicular
- G Convolvulus—sagittate

1 Stipules

2 Leaflet



**La Thangue**, Henry Herbert (1859-1929), Eng. painter; R.A., 1912; *The Man with the Scythe*, in Tate Gallery.

**Lathe**, machine for producing articles of circular section in any material. Material to be turned held usu. in *chuck* at one end, turning in *head stock*; *tail stock* has sharp point agst. wh. piece to be turned presses. Tool held by hand supported on *rest*, or held in *slide rest*, which can be put in gear with *lead screw*, i.e., long, threaded bar rotating parallel to work. **Capstan I.**, also called **turret I.**, used for repetition work. Tools project from capstan or turret, wh. rotates about vertical axis; each tool is used in turn by pushing capstan towards work.

**Latifundia**, in anc. Rome, large landed estates.

**Latimer**, Hugh (c. 1485-1555), Eng. prelate and reformer; Bp. of Worcester, 1535; resgd. 1539, on acct. of Act of Six Articles; imprisd. in Tower, 1553; excommunicated, 1554; burned (with Ridley) at Oxford as a heretic.

**Latin**, branch of Indo-Europ. lang.; orig. spoken in Latium; became widespread through extension of Rom. Empire; basis of Romance langs.; lang. of Church and learning till Renaissance; still lang. of R.C. Church. **Dog or Monks' Latin**, decadent Lat. of Mid. Ages. **Low Latin**, popular Lat., esp. that of soldiery, from wh. Romance langs. developed. See LANGUAGE SURVEY, *Indo-Ger.*, A group.

**Latin America**, the Span.- or Portug.-speaking parts of Centr. and S. America.

**Latin Empire** (1204-61), see BYZANTINE EMPIRE; CRUSADES.

**Latinism**, peculiarity of Lat. lang. adopted by another language.

**Latin Monetary Union**: see MONETARY UNION.

**Latins**, anct. inhabts. of that part of It. known in class. times as *Latium*.

**Latitude**, (geog.) angular distance N. and S. from the Equator, measured on surface of the earth in degrees of the Meridian (*q.v.*). One degree of L. measures 68.7 m. at Equator, increasing to 69.4 m. at poles.

**Latitudinarians**, term first used about 1670 for those who took a broad view of Christian doctrine, untrammelled by literal or rigid interpretation of dogma.

**Latium**: see LAZIO.

**Latona**: see LETO.

**La Trappe**: see TRAPPISTS.

**Latten**, alloy of copper and zinc, resemb. brass, used esp. for monuments and effigies.

**Latter-Day Saints**: see MORMONS.

**Lattice leaf**, oblong-leaved, aquatic plant of Madagascar; leaves resemble network of veins beneath water; cultivated.

**Latvia**, Baltic repub. (formerly Russian;

part of Courland, Livonia, and Vitebsk) bounded N. by Estonia, S. by Lithuania, E. by U.S.S.R.; 25,384 sq.m.; pop., 1,900,000 (200,000 Russians, 95,000 Jews, 70,000 Germans, 60,000 Poles); surface level, marshy, and sandy; watered by Riv. Dvina; 1,000 lakes; pine forests; agric. and stock-raising. Cap., *Riga*; chf. ports: Ventspils (Windau), Liepaja (Libau). Russian from 18th cent.; repub. 18 Nov., 1918.

**Laud**, Wm. (1573-1645), Eng. prelate; Bp. of London, 1628; Abp. of Canterbury, 1633; loyal supp. of Chas. I; impeached for high treason by Long Parliament, 1640; imprisd. in Tower (1641); behd. on Tower Hill.

**Laudanum**: see OPIUM.

**Laudator temporis acti** (Lat.), one who praises past times, giving no credit to contemporary achievement.

**Lauder**, Sir Harry (1870- ), Scot. music-hall artist; knighted, 1919.

**Lauds**: see HOURS, CANONICAL.

**Laue**, Max von (1879- ), Ger. physicist, Nobel Prize (Phys.), 1914; discov. wave-nature of X-rays (*q.v.*) by proving that they are diffracted by atoms of crystal. Resulting interference pattern known as L.-diagram.

**Lauenburg**: see SCHLESWIG-HOLSTEIN.

**Laughing gas**, nitrous oxide ( $N_2O$ ), used as a general anaesthetic in surgery and dentistry.

**Laughing kingfisher**, **laughing jackass**, bird of kingfisher class fnd. in Australia; abt. 17 in. in length; mainly brown plumage mixed with greenish blue and white; feeds on reptiles (lizards, snakes), insects, and crabs.

**Launceston**, 1) Munic. bor. and mkt. tn., E. Cornwall, on borders of Devon; pop., 4,100; ruined cas., besieged in Civil War. 2) Tn., Tasmania, Australia; pop., 31,040; wool; apples; iron works; saw-mills; tin smelting; potteries.

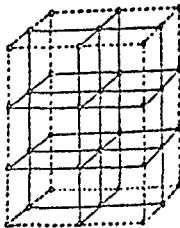
**Launch**, 1) to cause to slide from land to water; hence, send out.



Laud



Sir Harry Lauder



Laue Diagram



Launching of White Star Liner "Britannic"

dispatch; to begin an enterprise. 2) Largest of a man-of-war's boats, usu. fitted with motor, for work in harbour, to land parties, etc.; also a large, open pleasure-craft.

**Laundry**, place where clothes, bed-linen, etc., are washed, dried, and ironed. **L. work**, now carried out by washing-machine, consisting of drum revolving in cylindrical container; high-pressure steam acts as sterilizer. Drying effected by extracting water centrifugally and placing clothes in heated containers provided with electric fans. Ironing or smoothing and folding of clothes also performed mechanically. All laundries in Gt. Brit. are subject to **Factory and Workshops Act (1901)**. Persons sending to a L. clothes, etc., liable to cause spread of infections are subject to penalties, under the **Infectious Disease (Prevention) Act, 1890**, and **Public Health Act (1925)**.

**Laura**, lady of Petrarch's (*q.v.*) sonnets.

**Laurel**, name applied to several evergreen shrubs, particul. **common or cherry l.**, with lance-shaped, leathery leaves producing prussic acid; **sweet or bay l.**, with yellowish-green flowers and berries, formerly sacred to Apollo and used as token of peace and victory; **spurge l.**, small green-flowered shrub with black berries.

**Laurentian rocks**, (geol.) a formation belonging to the Archaean (*q.v.*) period, occurring in the L. Mountains of Canada; composed chfly. of gneiss and granite.

**Laurier**, Sir Wilfrid (1841-1919), Canad. Lib. statesm.; Pr. Min., 1896-1911; promtd. plan for nat. trans.-contin. railway.

**Laurium**, hilly dist., S. Attica, Greece; silver mines, famous in antiquity; now worked for lead and zinc.

**Lausanne**, cap., canton of Vaud, Switzerland, on N. shore of L. of Geneva (port: Ouchy); pop., 81,100; univ.; wireless broadcasting station; seat of Swiss Federal Tribunal; holiday resort. Treaty betw. Italy and Turkey, 18 Oct., 1912; treaty betw. Turkey and the Entente, 24 July, 1923.

**Laus Deo** (Lat.), praise be to God.

**Lausitz culture**, phase of mid. Bronze Age (*q.v.*) activity; named after **Lausitz**, dist. in centr. Germany; the dead cremated, and their ashes buried in urns under round barrows; elaboration of bronze implements.

**Lauterbrunnen**, vill. (2,634 ft.), canton of Berne, Switzerland, at foot of the Jungfrau; pop., 2,600. Mtn. rlys. to Scheidegg and Mürren. **L. Vall.**, 9.3 m. long, traversed by the Weisse



Lauterbrunnen Tal

Lütschine, with waterfalls (Staubbach, 980 feet).

**Lautrec**, Henri de Toulouse (1864-1901), Fr. lithographer and painter; illustrated Jules Renard's *Les Histoires naturelles*; painting style similar to Degas; died insane.

**Lava**, sticky, fluid substance (silicate) flowing from below earth's crust during volcanic eruptions; solidifies into *L.-cones* and *L.-fields*.

**Lavabo**, 1) (eccles.) ritual of washing celebrant's hands at offertory (*q.v.*), accompanied by repetition of Ps. xxvi, 6. 2) Fixed basin for washing hands; lavatory.

**La Valette**, Jean de (1494-1568), G. M. Knights of St. John; defended Malta agst. Turks, 1565.

**Lavater**, Joh. Kaspar (1741-1801), Swiss mystic; fndd. science of physiognomy (*q.v.*).

**Laybach**: see LJUBLJANA.

**Lavender**, sweet-smelling shrub of Medit. area; garden lavender (*Lavandula vera*) has spikes of small purple flowers. Distilled to produce an oil widely used in perfumery. Eng. (Mitcham) lavender is highly esteemed as producing most delicately scented oil. **L. cotton**, composite shrub, of Mediterranean lands; has scented, yellow flowers.

**Laver**, species of edible seaweed, rose to purple in colour; also a green variety.

**Laveran**, Charles (1845-1922), Fr. physician; isolated malaria microbe, 1880, and demonstrated its distribution by mosquitoes, 1882; Nobel Prize (Med.), 1907.

**Lavery**, Sir John (1856- ), Brit. portrait painter; R.A., 1921; represented in many national and important collections.

**Lavoisier**, Antoine (1743-94), Fr. chem., father of modern chem. science; gave oxygen (disc. by Priestley) its name; exec. in Fr. Revolution.

**Law**, Andrew Bonar (1858-1923), Brit. Cons. statesm.; mem. coaltn. Govt., 1915; Col. Sec.; mem. War Cabinet; Brit. Peace Plenipot., signed Tr. of Versailles, 1918; Pr. Min., 1922-23. **L., John** (1671-1729), Scot. financier and econ.; fndd. note-issuing bank in Fr. for the financing of the "Mississippi scheme"; vast speculation followed and bank failed. **L., William** (1686-1761), Eng. divine and mystic; tutor to Edward Gibbon, the Wesleys, etc.; author of the *Serious Call*, 1728.

**Law agent**, name given in Scotland to a solicitor act. for a party in a lawsuit or trial.



Lavater

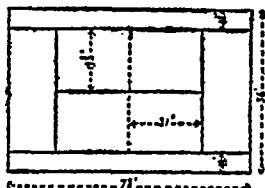


A. Bonar Law

**Lawes, Henry** (1595-1662), Eng. composer, music to masques (Milton's *Comus*, etc.), songs, etc.

**Lawn**, fine thin linen fabric, used esp. for wide sleeves worn by Anglican bishops.

**Lawn tennis**, game with racquet and cloth-covered rubber ball for 2 or 4 players on a court ("grass" or "hard") crossed by a net. The first player to win 6 "games" (scored 15, 30, 40, game) wins the "set," except in the case of "5 all," when a lead of 2 games is required.



Lawn Tennis Court

**Lawrence, St.**, mart. in Rome 258; accdg. to tradition, roasted on gridiron.

**Lawrence, David Herbert** (1885-1930), Eng. novelist; *Sons and Lovers*, *Kangaroo*. **L., Sir Henry Montgomery** (1806-57), Brit. soldier; pres. of Board of Administ. in Punjab, 1849; agent of gov.-gen. in Rajputana, 1853; Chf. Commissnr. of Oudh, 1857; on outbreak of Indian Mutiny, organised defence of Lucknow, where he died of wounds.

**L., John L. M. Lawrence**, 1st bn. (1811-79), Eng. statesm. and administrator; Chf. Commissnr. of Punjab, 1853; regained Delhi from mutineers, 1857; service during Mutiny earned him title of "Saviour of India"; returned to Eng., 1859; viceroy and Gov.-Gen. of India, 1864-69. **L., Sir Thomas** (1769-1830), Brit. painter; P.R.A., 1820. **L., Thomas Edward** (1888-) ("Aircraftsman Shaw") Brit. soldier, administrator, and archaeologist; organ. Arab revolt agst. Turks (1916-18); author of *Seven Pillars of Wisdom*, 1926; *The Revolt in the Desert*, 1927; etc.

**Lawrence, tn.**, Massachusetts, U.S.A., on Merrimac Riv., pop., 98,000; textiles.

**Lawson, Sir Wilfrid, Bt.** (1829-1906), Brit. Radical politician and temperance leader; M.P., 1859; carried a local option resolution, 1880, '81, '83; pres. of United Kgd. Alliance (fndd., 1853); advocated disestablishment, disarmament, and the abolition of the House of Lords.

**Laxative**: see **APERIENT**.

**Layamon** (fl. c. 1200-10), Eng. priest and poet; author of the *Brut*, a verse-chronicle derived from *Brut d'Angleterre*, by Wace (c. 1155); edited by Sir F. Madden, 1847.

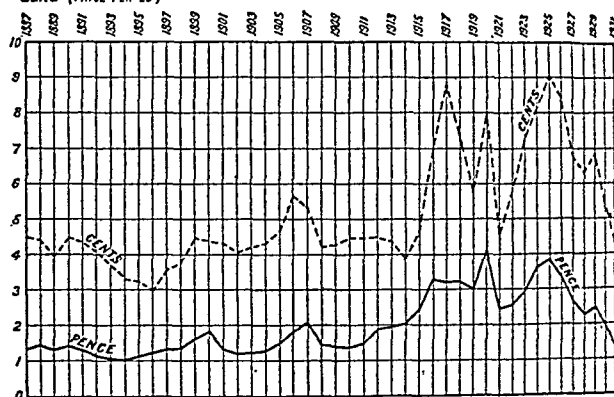
**Layard, Sir Austen Henry** (1817-94), Eng. diplomat. and archaeologist; excavated Nineveh.

**Layering**, (hort.) method of causing plant to strike fresh roots by forcing down cut branch and covering with suitable soil.

**Lay days**, (shipping) period allowed for loading or unloading a vessel (short for "delay days"), within which no charge made for demurrage (*q.v.*). **L. figure**, 1) model used by painters to hang drapery upon; 2) person who plays no active part in affairs with wh. his name is connected. **L. priest**, see **SECULAR PRIEST**.

**Layman** (Gr., *laos*, "people"), member of a ch. as distinct from its priesthood or clergy; one without the knowledge required by a named profession. **Houses of Laymen**, assemblies at wh. laity of the C. of E. meet for deliberation and to associate themselves with Convocation (*q.v.*); one in Province of Canter-

LEAD (PRICE PER LB)



English and American are interdependent, but latter tends to be higher than Eng. equivalent owing to import duty. During World War this relation partly obliterated by Eng. inflation.

bury, one in that of York; members elected by various diocesan conferences.

**Layton, Sir Walter** (1884- ), Brit. economist; represented Ministry of Munitions on Milner Mission to Russia, 1917; and Balfour Mission to U.S.A., 1917; *Relations of Capital and Labour*.

**Lazarists**, members of the "Congregation of the Priests of the Mission," fndd. 1624, by St. Vincent de Paul, in Paris, with object of ministering to dwellers in country towns and villages, and training candidates for priesthood.

**Lazarus**, (N.T.) 1) L. of Bethany, bro. of Mary and Martha; restored to life by Jesus (John xi). 2) Beggar in parable of *Dives and L.* (Lu. xvi); in Mid. Ages, patron saint of lepers.

**Lazarus**, oratorio by Schubert (*q.v.*), 1820.

**Lazarus, Order of St.**, relig. and milit. order founded in Jerusalem in 12th cent., for

tending the sick, esp. lepers (*lazars*); spread over various European countries, chfly. France; abolished in 1830.

**Lazio, Latium**, region of It. on W. coast, incl. Rome; 6,631 sq.m.; pop., 2,385,203; hilly, marshes on S. coast; agric., cattle, wine; little industry.

**Lazulite**, a phosphate of aluminium and magnesium, one of the main constituents of lapis lazuli.

**L.B.**, abbr. *Litterarum Baccalaureatus* (Lat.), Bachelor of Letters.

**Lb.**, abbr. *libra* (Lat.), pound weight.

**L.b.w.**, abbr. leg before wicket (cricket).

**L.C.**, abbr. Lower Canada.

**L.c.**, abbr. 1) *loco citato* (Lat.), at the place quoted; 2) lower case, in typography, not capitals.

**L.C.C.**, abbr. London County Council.

**L.Ch.**, abbr. Licentiate in Surgery.

**L.C.J.**, abbr. Lord Chief Justice.

**L.C.M.**, abbr. lowest common multiple: the lowest figure, common to two or more fractions, in which their denominators can be merged.

**L.D.**, abbr. 1) Doctor of Letters; 2) *Laus Deo* (Lat.), Praise be to God.

**Ld.**, abbr. limited.

**L.D.E.G.**, abbr. *Laus Deo et gloria* (Lat.), The praise and the glory be to God.

**L.D.S.**, abbr. Licentiate in Dental Surgery.

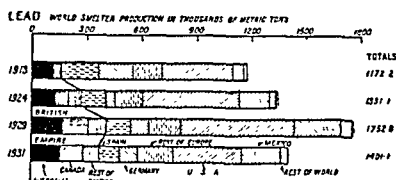
**Lea**, riv. (45 m.), N. trib. of the Thames, rises Beds; flows past Luton, Harpenden, Hertford, Ware, and Tottenham, to Riv. Thames below Blackwall; works of Metropolitan Water Board. Described in Walton's *Compleat Angler*.

**Lea**, (text.) measure for yarn; 120 yds. cotton; 80 rounds of cotton reel; 300 yds. linen yarn.

**Leacock**, Stephen Butler (1869- ), Canadian humorist and educationist; head of Dept. of Polit. Econ., McGill University; *Nonsense Novels*; *Moonbeams from the Larger Lunacy*, etc.

**Lead**, chem. elem.; sym., Pb; at. wt., 207.22; m.p., 327°C; soft bluish metal. Occurs as galena (lead sulphide, PbS) in Australia and U.S.A. Used for making conduit pipes, small shot, bullets, accumulators, and for waterproofing roofs; soluble compounds are "cumulative" poison; small non-injurious doses accumulate in body over months until sufficient present to produce very bad effects, difficult to cure. Oxides: *Litharge* or massicot, PbO, formed by heating metal in air at low temp. Used in manufacture of oils and varnishes, and as constituent of glass. **Red l.**, *minium*, Pb<sub>3</sub>O<sub>4</sub>, made by heating litharge in air betw. 350° and 500°C.; used as const. of paint, matches, flint glass, and pottery glazes. **Peroxide**, PbO<sub>2</sub>, made by action of oxidizing agents (e.g., chlorine, hydrogen

peroxide) on litharge suspended in water. Forms the active mass of charged positive accumulator plate, being converted into lead sulphate, PbSO<sub>4</sub>, during discharge. **White l.** is basic lead carbonate, 2PbCO<sub>3</sub>.Pb(OH)<sub>2</sub>,



World Prodn. in 1929 some 50% higher than in 1913, but subsequent severe fall of prices has caused many rich ore-bearing mines in U.S.A. & Mexico to close down, so that 1931 U.S.A. prodn. only 60% of 1929 figure. Nevertheless, U.S.A. & Mexico are still largest producers.

important pigment made by action of carbon dioxide on lead in presence of acetic acid.

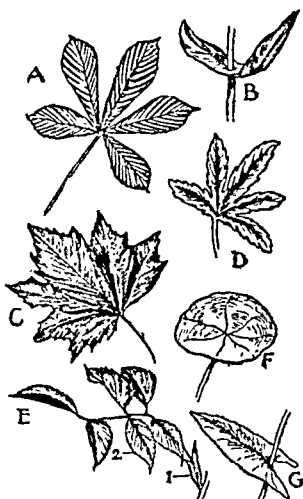
**Lead-burning**, autogenous welding (see WELD) of lead by means of oxy-acetylene flame. **L. lotion**, solution of basic lead acetate, used in treatment of inflammation. **L. pencil**, writing implement made of graphite (*q.v.*), usually cased in wood; known since 1350.

**Leaden-hall Market**, principal poultry market of London, in Leaden-hall Street; pres. bldg. opened, 1881.

**Leader**, Benjn. Williams (1831-1923), Eng. landscape painter; R.A., 1898; *Valley of the L l u g w y* (Tate Gallery).

**Leaf**, (bot.) natural outgrowth of stem of plants, with excep. of *algae* (sea-weeds) and *f u n g i*.

Leaves are of var. kinds: foliage L., mostly green, cntg. chlorophyll; corolla of flowers,



Types of Leaf

- A Chestnut
- B Yellow wort—perforate
- C Plane
- D Angustifol—five lobed
- E Compound leaf: Rose (dog)
- F Nasturtium—peltate and obicular
- G Convolvulus—sagittate

- 1 Stipules
- 2 Leaflet

petals, and calices; subterranean L., scales of bulbs and young shoots. L. organs of carbon-assimilation are supplied with veins and nerves, in striated or reticulated formation; may be single or composite and are of many diff. shapes: lanceolate, oval, etc.; edges may be entire, serrate, dentate, etc.; arrgd. on stem in diff. ways: alternately, opposed, diagonally.

**Leaf**, Walter (1852-1927), Brit. banker and scholar; chmn. of the London Chamber of Commerce (1887) and of the Westminster Bank; collab. with A. Lang and E. Myers in transl. of Homer's *Iliad*; pub. *Homer and History*, 1915; *Strabo on the Troad*, 1923; etc.

**Leaf-hopper**, small insect found on plants; has posterior legs adapted for jumping. **L.-insect**, orthopterous insect, remarkable for its close resemblance, in form and colour, to a leaf of a tree; found in Ceylon. **L.-rollers**, small moths and weevils whose larvae live in rolled-up leaves; injurious to forest trees.

**League**, old linear measure; Brit. and U.S. league, 3 m.,  $\frac{1}{2}$  degree; varies in different Eur. countries; marine L. = 6,075 yards.

**League of Mercy**, a charitable organisation, fndd. 1898 under royal charter, for collecting money on behalf of the Pr. of Wales's (later, King Edward's) Hospital Fund.

**League of Nations**, at Geneva, union of majority of States of world for safeguarding of internat. peace. Founded by the victorious and neutral nations, June, 1919. The covenant of League of Nations came into force upon ratification of Treaty of Versailles, Jan., 1920, and formed 1st part of peace treaties. Aus. was admitted at end of 1920; Hung., 1922; Ger., 1926. Not yet represented in the L. are U.S.A., Turkey, and Soviet Russ; Japan gave notice of resignation, 1933, to take effect after 2 years. *Organs of the L.*: 1) The Assembly of the L., composed of represen. of all the States making up the L. wh. meets annually in September. 2) The Council of the L., composed of 5 permanent members (Fr., Gt. Brit., Ger., It., Jap.) and 6 non-permanent, elective members. 3) The Secretariat of the L. *League organizations of an autonomous character*: 1) Hague Tribunal (*q.v.*); 2) Internat. Labour Office; 3) Internat. Institute for Intellectual Co-operation, etc. Under *Administration of the L.* are Saar District, Danzig; the Mandatory Districts (e.g., former Ger. colonies) of Eng. and other Powers, which are administered by order of League.

**Leah**, (O.T.) first wife of Jacob.

**Leamington Spa**, royal bor., Warwicksh., Eng., 2 m. E. Warwick (practically adjoining); watering-place, on Riv. Leam (trib. of

Riv. Avon); saline springs; pop., 29,700.

**Leander**, (Gr. myth.) beloved of Hero (*q.v.*).

**Leap year**, a year which, through the insertion of an intercalary day, Feb. 29th, contains 366 days. In Julian Calendar (*q.v.*) called *bissextile* (because the 6th day before the



Town Hall, Leamington

Kalends of March was reckoned twice), and occurred in every fourth year. In Gregorian Calendar (*q.v.*), this practice modified, so that, if a year was exactly divisible by 100, it must also be divisible by 400 in order to be reckoned as a leap year. The term possibly derives from the fact that, in a leap year, the Dominical Letter (*q.v.*) changes or "leaps" to the next in rotation after the intercalary day.

**Lear**, legendary Brit. king; see Geoffrey of Monmouth's *Chronicle*, on wh. Shakespeare's play is based.

**Lear**, Edw. (1812-88), Eng. artist and humorist; *Book of Nonsense*.

**Lease**, agreement by owner of immovable property that another shall occupy it for a cert. time on paymt. of rent; L. up to 3 yrs. may be by verbal contract, any other must be in writing and have a *term*, i.e., a definite beginning and end. Owner is the *lessor*; person to whom L. is granted is the *tenant* or *lessee*; owner retains reversion in property; lessee may, in cert. cases, make a *sub-L.* of part of his term.

**Leather**, substance made from skins or *pelts* of animals (green, fresh from animal; green-salted; dry-salted; dried). *Hides* from full-grown large animals, *kips* from young of large animals, *skins* from small animals. *Unhairing* removes hair and epidermis or outer skin, effected usually by treatment with lime and scraping. *Fleshing* removes fat and fleshy matter from inside of skin. **L. tanning**, many processes: vegetable tanning with many substances (oak-bark, quebracho, etc.), also synthetic substances, all similar to *tannin* (*q.v.*). *Mineral tanning* by alum, chrome alum; *oil T.* as "chamois" leather, a specially pliable form. Dyeing is usually effected with coal-tar dyes, with top coating of pigment. L. used for boots, belts of machinery, travelling bags, saddles, straps, bellows, etc.

**Leatherstocking**, nickn. of Natty Bumppo, hero of Cooper's (*q.v.*) Red Indian tales.

**Leavenworth**, oldest tn., Kansas, U.S.A., overlooking Missouri Riv.; pop., 17,450; cathed.; coal mining; bricks, machinery, stoves.

**Leaves of Grass**, collectn. of poems by Walt Whitman (1855-1856-1860); successively enlarged.

**Lebanon**, mt. range, Syria, highest part of Syrian plateau, 94 m. long, 18 m. broad, up to 10,500 ft. high. Cedar forests at S. foot. The **Lebanese Republic**, constituted 1920, forms part of Syria (q.v.); 3,620 sq.m.; pop., 840,050; cap., Beirut.



Cedar Forest, Lebanon

**Lebbaeus**, (N.T.) one of the Apostles; so named by Matthew; called *Thaddaeus* in Mark, and *Judas the brother of James* in Luke; see JUDAS.

**Lebel**, Nicolas (1835-91), Fr. officer; inv. **L. gun**, the magazine rifle of Fr. army, with cal. .315; adopted 1886, much modified since.

**Leblanc**, Nicolas (1742-1806), Fr. physician and chemist, invented now obsolescent process for manufacture of soda from common salt; committed suicide.

**Le Bourget**, Fr. Govt. airport, abt. 5 m. N.E. of Paris. Regular services to all chf. Eur. cities.

**Lebrun**, Albert (1871- ), Fr. statesm.; became member of the Chamber of Deputies, 1900, and of the Senate, 1920. Held office as min. for the colonies, of blockade, and (1918) of the liberated regions; president of the Senate, 1931, and of the republic, 1932. **L. Charles** (1619-90), Fr. artist, pres. of the Fr. Roy. Acad., and a director of the Gobelins manufactory. **L., Marie-Anne Elisabeth Vigée** (1755-1842), Fr. portrait-painter; examples of work in Louvre.

**Le Cateau**, tn., N. France, dépt. Nord, on Riv. Selle, 20 m. N.E. of St. Quentin; pop., 8,500; textiles. Battle betw. Brit. II Corps (Gen. Smith-Dorrien) and advancing Germans, 26 Aug., 1914; guarded retreat of the Allied armies.

**Lech**, r., trib. (161 m.) of Riv. Danube, Bavaria; rises in *Voralberg Alps*, flows through *Lechtal Alps* (Parsier Spitze, 9,974 ft.); joins Danube below Donauwörth; not navigable.

**Lechfeld**, plateau of Swabia and Bavaria, betw. Lech and Wertach, nr. Augsburg. Victory of Emperor Otto I over the Magyars, 955.

**Lecithin**, a phosphorized fat contained in animal and vegetable cell-protoplasm; found in blood, nerves, yolk of egg, etc.; used in medicine for its tonic properties. See LIPID.

**Lecky**, William Edward Hartpole (1838-1903), Irish historian; works incl. *Hist. of European Morals from Augustus to Charlemagne*, 1869; *Hist. of England during the Eighteenth Century*, 1878-90, etc.

**Leclanché element**: see GALVANI.

**Le Corbusier**, Jeanneret (1887- ), Swiss architect; exponent of "engineer-building", with the use of reinforced-concrete constructions; also elaborated town-planning scheme; *Urbanisme*, 1925.

**Lecouvreux**, Adrienne (1692-1730), Fr. actress, mistress of Maurice of Saxony, 1721. Refusal of Ch. to bury her in consecrated ground inspired Voltaire's poem on her death.

**Lectern**, reading-desk in ch., esp. that from which the lessons are read. **Lectinary**, sequence of, or list of, lessons appointed to be read in churches each day.

**Lector**, 1) person in one of the 4 minor orders (q.v.) of the R.C.Ch.; 2) professor at certain universities.

**Leda**, (Gr. myth) beloved of Zeus, who approached her in the shape of a swan; mother of Helen of Troy.

**Ledbury**, mkt. tn., Herefordsh., 14 m. E. of Hereford; pop., 3,300; 17th cent. timbered market house.

**Ledebour**, Georg (1850-1930), Ger. Soc.-Dem. leader; joined Haase in founding Indep. Soc.-Dem. Party to oppose continuance of World War; shared in 1918 revolution.

**Lederer**, Emil (1882- ), pol. econ.; ed. *Archiv für Sozialwissensch. u. Sozialpol.*

**Ledger**, in double-entry system of book-keeping, contains all business details (goods and personal accts.) wh. are transferred into L. from separate account-books. **L.-lines**, (mus.) short lines added above or below the staff for notes lying outside its compass.

**Ledum**, **Labrador Tea**, hardy, evergreen, white-flowered shrub allied to rhododendron; sometimes used in medicine.

**Ledwidge**, Francis (1891-1917), Irish poet and road-mender; killed in action on Western front, 31 July, 1917; *Songs of the Fields*, 1916; *Songs of Peace*, 1917; *Complete Poems*, 1919.

**Lee of Fareham**, Arthur Hamilton Lee, 1st visct. (1868- ), Brit. statesm.; presented Chequers (q.v.) to nation, 1921, as residence for Pr. Minister.

**Lee, Nathaniel** (1655-92), Eng. dramatist; works incl. *The Rival Queens*, 1677; *Milhrdates*, *King of Pontus*, 1678; *Massacre of Paris*, 1690.

**L., Robert Edward** (1807-70), Amer. gen.; defeated and captured John Brown (q.v.), 1859; third in commd. of Confederate army on outbreak of Civil War, 1861; successfully defnd. Richmond, 1862; surrendered to Grant at Appomattox, 1865; pres. of Washington College (now Washington and Lee Univ.), 1865-70. **L., Sir Sidney** (1859-1926), Brit. writer; ed. *Dict. Nat. Biography*, 1891-1917; author, *Life of William Shakespeare*, 1898 (rev., 1925); *Edward VII*, 1925.

**Lee**, 1) parish S.E. London, Eng., part met. bor. Lewisham. 2) Riv., Munster, I.F.S., drains into Cork Harbour; salmon fishing; length 50 miles.

**Lee**, (naut.) quarter towards which wind blows; side of ship away from wind.

**Lee Highway**, connecting Washington, D.C., with California, U.S.A., 3,141 m.; leads to many points of interest, incl. Shenandoah Nat. Park; Luray Caverns, and Wilson Dam, Muscle Shoals, Alabama.

**Lee-on-the-Solent**, seaside resort, S.E. Hants, 3 m. N.E. of Gosport; pop., 4,000.

**Leeboard**, (naut.) wooden or steel board, hung over side of sailing ship, taking place of deep keel in preventing drift to leeward when sailing close-hauled. L. is held against side of ship by pressure of water.

**Leech**, John (1817-64), Eng. caricaturist; on staff of *Punch*, 1841-64; *Etchings and Sketchings* by A. Pen, Esq., 1835; illustrations for *Oliver Twist*, *Ingoldsby Legends*, A'Becket's *Comic Histories*, etc.

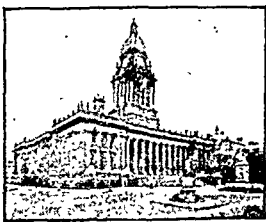
**Leech**, popular name for group of annelid worms, members of the sub-class *Hirudinea*, not unlike earthworms in appearance, but having a sucker at each end of the body, the frontal disk having the mouth in the centre. Aquatic in habit, frequenting ponds and sluggish brooks and marshes. Two most familiar species are the medicinal leech (*Hirudo medicinalis*), now rarely used for bloodsucking, and the horse-leech (*Aulostomum gulo*). In tropics many non-aquatic species, which infest the dense moisture-laden vegetation during the rainy season and are a plague to man and beast. A few species are marine.



Leech  
*Hirudo medicinalis*

**Leeds**, Thomas Osborne, 1st Duke of (1631-1712), Eng. statesm.; M.P. for York, 1665; cr. Visct. Osborne, and Lord Treasurer, 1673; cr. Earl of Danby, 1674; advocated repression of Rom. Caths.; impeached for corruption and embezzlement, 1678; resigned office, 1679; confined in Tower, 1679-84; supptd. William of Orange and cr. Marq. of Carmarthen, 1689; Duke of L., 1694.

**Leeds**, city in W. Riding of Yorks, Eng., on Riv. Aire; pop., 482,000; univ. (1904); chief seat of the cloth industry; steel working, locomotives, machinery. *Kirkstall Abbey* (q.v.), 3½ m. N.W.



Photo, C. H. Pickard and Son  
Town Hall, Leeds

**Lee-Enfield**, bolt-action rifle with magazine holding 10 cartridges; used by the Brit. Army in the World War.

**Leek**, mkt. tn., Staffs, 10 m. N.E. Stoke-on-Trent; pop., 19,000; silk-mills; remains of *Dieularesse Abbey* (1214), 1 m. N.

**Leek**, (bot.) cultivated liliaceous plant of onion family (*Allium porrum*); has small cylindrical bulbs, used as a vegetable. Wild L., or wild garlic (*Allium ursinum*), has leaves very sim. to those of lily of the valley.

**Lee-Metford**, bolt-action rifle with magazine holding 10 cartridges; used by Brit. army in the Boer War. Forerunner of Lee-Enfield.

**Leer**, tn., Hanover, Prussia, on r. bank of Riv. Leda, nr. junct. with Riv. Ems; pop., 12,300; port; school of navig.; ironworks, shipbuilding.

**Leeuwarden**, cap., prov. of Friesland, Holland; pop., 48,000; gold and silver ware, dairy produce, musical instruments.

**Leeuwenhoek**, Anton van (1632-1723), Dut. microscopist, gave 1st accurate description of red blood corpuscles, etc.

**Leeward Islands**, group, West Indies, part Lesser Antilles, N. of Windward Is.; divided betw. Britain, France, and Holland. Brit. possessions (715 sq.m.; pop., 122,300) include: Antigua (seat of govt.), Barbuda, St. Christopher, Nevis, Anguilla, Dominica, Montserrat; Fr. possessions: Guadeloupe, Martinique. The Dut. isls. (Saba, St. Eustatius, and S. part of St. Martin; N. part Fr.) form part of colony of Curaçao (q.v.). The Brit. and U.S. Virgin Is. (q.v.) border the archipelago on N.W.

**Leeway**, (naut.) motion of ship at right-angles to its length resulting from wind-pressure.

**Le Fanu**, Joseph Sheridan (1814-73), Irish writer and owner of the *Evening Mail*; works incl. *The House by the Churchyard*, 1863; *Uncle Silas*, 1864, etc.

**Lefèvre**, Pierre: see FABER, PETER.

**Left**, in politics, applied to parties having the wish and intention to change existing institutions; Communists gen. regarded as extreme Left, Fascists as extreme Right. See CENTRE; RIGHT.

**Leg** (anat.), one of the limbs supporting the body. In man, starts from hip-bone and consists of 3 main bones: femur, tibia, and fibula; femur is united to 2 last by knee-joint; terminates at ankle-joint. **L. Theory**, (cricket) method of bowling on the leg stump practised by Brit. team visiting Australia, 1932-33; much resented as "body-line bowling" by Australians, who declared it to be deliberate attempt to hit batsman; caused embittered controversy.

**Leg.**, (mus.) abbr. *legato* (q.v.).

**Legacy duty**: see DEATH DUTIES.

**Legal tender**, money wh. cannot legally be refused as pymt.; in U.K. gold coins to any amt., silver coins up to 40s., copper coins to 1s., and Bk. of Eng. notes from 10s. upwards.

**Legate**, (Rom. hist.) envoy; lieut. gov. of a



Leek

province; (mod.) a diplomatic repres. of Ch. of Rome.

**Legation**, collective term for legates or envoys commissioned to act for others; officl. residence of diplom. min. at a forgn. court.

**Legato**, (mus.) smooth, connected; opp. to *staccato*.

**Legend**, 1) chronicle of lives of saints formerly read at matins; stories of saints, esp. of marvellous nature; hence, any remarkable tale handed down from early times. 2) Inscript. or motto, as on coat of arms.

**Legg.**, (mus.) abbr., *leggiero* (Ital.), light and rapid.

**Leghorn, Livorno**, cap. and seapt., Tuscany, on Tyrrhenian Sea; pop., 140,000; canal to the Arno and to Pisa; cathed.; naval acad.; shipb.; trading centre. Also, name given to a breed of poultry (q.v.).

**Legion**, (Lat.) 1) milit. unit of anc. Rome, 4,500 to 6,000 men. 2) Expression meaning "a great number." 3) Societies of ex-soldiers of the World War; *Amer. L., Brit. L.*, etc. See also FOREIGN LEGION.

**Legion of Honour**, Fr. Order fndd. 1802 by Napoleon; 5 classes.

**Legitimacy**, polit. princ. that hered. rule lies of right, and unchangeably, in the direct line of the royal house first upon the throne; held by Jacobites in Eng. and adherents of elder Bourbons in France.

**Legitimation**, in England and Wales, by Legitimacy Act, 1926, in force 1 Jan., 1927, an illegitimate person becomes legitimate on marriage of parents, provided that they were in a position legally to marry at time of illeg. child's birth, and that father is domiciled in England or Wales.

**Legnano**, tn., Lombardy, It., on Riv. Adige; pop., 27,000; cotton and silk mills; machinery. Defeat of Frederick Barbarossa by Lombard League, 1176.

**Legouls**, Émile (1861- ), Fr. scholar and critic; collaborated with L. Cazamian in *Histoire de la littérature anglaise*, 1924; *Chaucer*, 1910; *Edmund Spenser*, 1923.

**Legume**, (bot.) pod, many seeded, of *Leguminosae*; splits into halves.

**Leguminosae**, order of papilionaceous plants, fruit of wh. grows in pods (see LEGUME); e.g., peas, beans, lentils.

**Leh** (11,500 ft.), cap., prov. of Ladakh and Baltistan, on trade route betw. India, Tibet, and Turkistan; pop., 2,500.

**Lehar**, Franz (1870- ), Austr. composer. *Taliana*, 1896; *The Merry Widow*, 1905; *The Count of Luxembourg*, 1919.

**Lehigh Valley Railroad**, U.S.A., operates chfy. in New York State; 1,362 miles.

**Lehmann**, Liza (1862-1918), Eng. singer and composer; prof. at Guildhall Sch. of Music, London, 1914; wrote a number of song cycles, incl. *In a Persian Garden* (from Omar Khayyām).

**Leibnitz**, Gottfried Wilhelm (1646-1716). Ger. philos. and mathematician, fndd. Berlin Acad.emy.

**Leicester, Robert Dudley**, Earl of: (1532-88), favourite of Qn. Elizabeth; m. 1st, Amy Robsart; 2nd, widow of E. of Essex.

**Leicester of Holkham**, Thomas Coke, 1st E. of (1754-1842), Eng. agriculturist ("Coke of Norfolk"); M.P., Norfolk, 1776-84, 1790-1806, 1807-32; supp. of Fox; greatly improved farming on his Holkham estates, esp. wheat-growing and breeds of cattle.

**Leicestershire**, midland co., Eng.; area, 830 sq.m.; pop., 541,800; undulating, watered by Trent, Soar, etc.; cattle and sheep breeding (woollen industry), agric., coal and iron in N.W.; great fox-hunting co. (Melton Mowbray, Market Harborough, etc.). **Leicester**, co. tn., pop., 239,100. Manuf. hosiery, boots and shoes, baskets; univ. college (branch of E. Midlands Univ.); Rom. remains.

**Leicester Square**, form. *L. Fields*, centre of London's theatre dist. Former resid. of Elizabeth, Qn. of Bohemia (d. 1662), George II, when Pr. of Wales, Sir J. Reynolds, Kosciuszko, etc.

**Leigh**, co. [bor., Lanc, Eng.; manuf. cotton, silk, glass, machinery; pop., 45,300.

**Leigh-on-Sea**, watering-pl., S. Essex, at mouth of the Thames; W. suburb of Southend-on-Sea (q.v.).

**Leighton**, Fredk., 1st bn. (1830-96), Eng. historical and portrait painter and sculptor; R.A., 1869; P.R.A., 1878-96; his *Bath of Psyche* (1890), *And the Sea Gave up the Dead* (1892), *Athlete Struggling with Python* (bronze, 1877), and other works, are in the Tate Gallery.

**Leighton Buzzard**, mkt. tn., S.W. Beds., 40 m. N.W. London; pop., 6,800; E.E. church; agric. and hunting centre; mkt. gardening, straw-plaiting.

**Leinster**, prov. in S. of I.F.S.; 7,622 sq.m.; 12 counties; cattle- and horse-breeding, mining (coal, copper); cap., *Dublin*.

**Leipzig, Leipsic**, largest tn., Saxony, at confluence of rivs. Elster, Pleisse, and Parthe; pop., 700,000; Supreme Court of the Reich; univ. (1409); rly. centre; airport; monument commemorating battle of L. (*Völkerschlacht*); two famous annual fairs; centre of Ger. bookselling trade; fur trade.



Leibnitz



Legion of Honour



Tn. since 12th cent.; fair since end of 15th cent. **L., Battles of** (*Battle of the Nations*), 16-19 Oct., 1813; defeat of Fr. under Napoleon I by Great Coalition (Pruss., Russ., Austria, Sweden); monument at L. to commemorate victory.

**Leith**, N. suburb and port of Edin., on Firth of Forth; third port in Scot.; extensive docks.

**Leith Hill** (965 ft.), Surrey, 4 m. S.W. of Dorking; summit property of Nat. Trust (1923).

**Leitmotiv**, (mus.) thematic sequence of notes or harmonies recurring freq. in a composition in assoc. with a definite concept or feeling, as in music drama, e.g., Siegfried's Sword-motive (Wagner).

**Leitrim**, marit. co., Munster, I.F.S.; area, 589 sq.m.; pop., 55,900; coast on Donegal Bay; interior mountainous; div. by Loch Allen, highest of lakes of Riv. Shannon; fertile valls.; agric.; coal, iron, lead; co. tn., *Carrick-on-Shannon*.

**Leix**, inland co., Leinster, I.F.S.; area, 663 sq.m.; pop., 51,500; surface mainly flat, with *Slieve Bloom Mtns.* (1,733 ft.) on N. border (*Offaly*); agric., dairy farming; co. tn., *Maryborough*.

**Lek**, riv., Holland, one of the arms of the Rhine (*q.v.*); joined by Nieuwe Maas (*see MEUSE*); flows past Rotterdam and Hook of Holland into North Sea.

**Leland**, **Charles Godfrey** (1824-1903), Amer. author; resided chfly. in London, 1869-80; *Hans Breitmann's Party and Other Ballads*, 1868; *English Gypsies*, 1873; *Practical Education*, 1888. **L., John** (c. 1506-52), Eng. antiquary; kg.'s antiquary, 1533; toured Eng., 1536-42; adjudged insane, 1550. *Itinerary*, first pubd. 1710; *Collectanea*, ed. by Thomas Hearne, 1715.

**Lely**, Sir Peter (1618-80), Dut.-Eng. portraitist; painter to Cromwell and court painter to Charles II.

**Leman, Lake:** *see* GENEVA.

**Le Mans**, cap., dépt. of Sarthe, France, on Riv. Sarthe; pop., 71,800; motorcar manuf.; dairy farming.

**Lemberg:** *see* LWOW.

**Lemming**, vole-like rodent, about 5 in. long, found in Scandinavia; periodically migrates in enormous hordes, stretching across country until they reach the sea, in wh. large numbers perish.



Lemming

**Lemnos**, Gr. isls. in N. Aegean Sea; area, 178 sq.m.; pop., 30,000; Gr. bpric.; cap., *Kastro* (pop., 2,000). *Mudros* (harbour), base of Brit. Dardanelles expeditionary force in World War.

**Lemon**, Mark (1809-70), journalist, playwright, and novelist, fndd. and ed. *The Field*; with Hy. Mayhew, fndd. *Punch*, 1841 (ed.

1843-70). *Hearts Arc Trumps; Self-Accusation; Love and War*.

**Lemon**, fruit of a citrous tree (*Citrus medica*), cultivated in Mediterranean countries; the juice contains citric acid, and the yellow peel an essential oil used as a flavouring. **L. grass**, S. Asiatic grass, the leaves of which are used medicinally in India; essential oil, obt. by distillation, known as oil of verberna. **L. sole**, edible flat fish, similar to sole, but smaller and of inferior quality; orange hue, brown-spotted.

**Lemonnier**, Camille (1844-1913), Belg. poet and novelist; *Un Mâle*, 1881; *Le Mort*, 1882.

**Le Moustier:** *see* MOUSTERIAN CULTURE.

**Lempriere**, John (c. 1765-1824), Eng. scholar; *Classical Dictionary*.

**Lemuel**, (O.T.) unidentified kg. mentioned in *Proverbs*, to whom his mother addressed series of admonitions.

**Lemures**, (Rom. myth.) restless spirits of the dead; opposed to Lares (*q.v.*).

**Lemurs**, genus of nocturnal mammals, forming 2nd division of the Primates and distinguished from Anthropoidea by many points in anatomy. Nocturnal and chiefly arboreal in habit; found chfly. in Madagascar, Comoro Islands, W. Africa.



Lemur

**Lena**, riv. (c. 3,000 m.), Asiatic Russia, rises in *Baikal Mtns.*, flows into Arctic Ocean.

**Le Nain**, family of Fr. painters: 1) **Louis** (d. 1648); 2) **Antoine** (d. 1648); 3) **Mathieu** (d. 1677); orig. members of Fr. Academy; works, chfly. depicting humble life, incl. *Boys Playing Cards; The Peasants' Meal*; absence of initials in signature (when found) makes identification of artist difficult.

**Lenard**, Phil. (1862- ), Ger. physicist; Nobel Prize (Physics), 1905.

**Lenclos**, Ninon de (1616-1706), Fr. courtesan; social leader of Paris in 17th cent.

**Lenglen**, Suzanne (1899- ), Fr. lawn-tennis player; won Ladies' Singles grass-court championship of world, 1919-23, '25; became professional, 1926; retired, 1928.

**Lenin**, Nikolai; orig. name *Vladimir Ilyich Ulyanov* (1870-1924), Russ. revlinary; headed Majority ("bolshevik") section of Russ. Soc. Dem. Party at split in 1903; advoc. uncompromising policy in Duma; di-



Lenin

rected Soviet revln., 1917; remained chief of Sov. govt. till death; respons. for dissolution of const. Ass., communization of Russia, New Econ. Policy (N.E.P.), and scheme of electrification. Embalmed body lies in mausoleum in Red Sq., Moscow.

**Leninakan**, Armen. fortress, near Turk. frontier.

**Leninograd**, second largest tn., Union of Soc. Sov. Repubs., formerly Russian cap., on mouth of Riv. Neva (frozen six mnths. yearly). Called St. Petersburg until World War and Petrograd, 1914-1924. Pop., 1,614,111. Fortress of Peter and Paul on isl., notorious pre-revolution prison for politic. offenders; univ. fndd. by Peter the Great, 1703; import. academies, library, scient. institutes, art galleries (formerly palaces of Czars). Seven rly. stations. L. accessible to seagoing ships during summer. Industries: text., leather, printing, engineering (Putilov wks.).

**Lennox**, 1) former name of Dumbarton-shire (q.v.). 2) See RICHMOND AND GORDON, DUKES OF.

**Leno**, Dan, stage name of George Galvin (1860-1904), comedian and impersonator; popular music-hall favourite, and a leading mem. of Drury Lane pantomime from 1888.

**Lens**, tn., dépt. Pas de Calais, France; pop., 30,160; coal mines; devastated in World War.

**Lens**, 1) (physiol.), transparent and elastic, bi-convex structure of the eye situated behind cornea (q.v.); it can be curved to a greater or lesser degree by contraction of muscles attached to it; thinner when eye is looking at distances and more nearly spherical when eye is looking at near objects, thus bringing objects into focus upon retina. 2) (Optics) Round disks, usu. glass, with curved surface: *concave* (hollow), *convex* (raised), *plain* (flat); there are 6 lens shapes: 1) bi-convex, 2) plano-convex, 3) concave-convex (convex more strongly curved than concave), 4) bi-concave, 5) plano-concave, 6) convex-concave (concave more strongly curved than convex). 1-3 are convergent lenses, thicker in the middle than round the edges; 4-6 are divergent lenses, thinner in the middle than round the edges. See OPTICS; FOCUS.

**Lent**, (eccles.) period of 40 days from Ash Wednesday till Easter, kept as a time of fasting and abstinence to commemorate the Temptation, Trial, and Crucifixion of Christ, and as preparation for Easter.

**Lentil**, *Lentilla lens*, vetch-like plant of S. Europe, widely cultivated for its nutritious seeds.

**Lento**, (mus.) slowly.

**Lenzerheide**, mtn. vall. in the Plessur Alps, canton of Grisons, Switzerland; 4,600-5,300 ft.; winter sports centre.

**Lenz's Law**, (elec.) propounded by H. Lenz (1804-65); relates to induction of electr. currents by other currents or by movements of magnetic fields; it states that direction of induced current is always such as to oppose the action which causes it; e.g., if current is induced in wire loop by pulling a magnet away from it, direction of current is such that it *attracts* magnet.

**Leo**, name of 13 popes, of whom the most important, historically, are: **L. I**, St. (440-61), *the Great*; protected Rome from Huns, 452, and Vandals, 455; promoted authority of Holy Sec. **L. IX** (1049-54), Easter synod, 1049, enjoined celibacy of clergy; broke with E. Church, 1054. **L. X**, Giovanni de' Medici (1513-21), nepotism, sale of indulgences, etc., led to beg. of Reformation with Luther's *Theses* (1517). **L. XIII** (1878-1903), scholar and statesman; encyclical *Rerum Novarum*, 1891, dealing with condit. of working classes; ended *Kulturkampf* with Germany; announced estab. of diocesan hierarchy in Scotland; allowed publication of Vatican documents.



Pope Leo XIII

**Leo**, (astron.) "the Lion," zodiacal constell. containing star Regulus; 5th sign of Zodiac (q.v.) ♌; see PL., ASTRONOMY, N.C.H., D.

**Leominster**, munic. bor., Herefordsh., on Riv. Lugg, 12½ m. N. Hereford, on site of 7th cent. monastery; pop., 5,700; Priory Church (Norm. to 15th cent.); cider, brewing, agriculture.

**León**, 1) mountainous dist. in N.W. of Old Castile, Spain, watered by the Douro; cap., L.; pop., 24,600, linen industry. 2) or *L. de las Adamas*; tn., Guanajuato, Mexico; pop., 54,000. 3) Prov. cap., Nicaragua, W. of Lake Managua; pop., 38,500; univ. 4) Prov. of Ecuador; 2,594 sq.m.; pop., 172,300; cap., *Latacunga*.

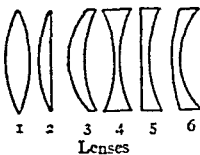
**Leonardo da Vinci** (1452-1519), Ital. artist, engin. and scient. Paintings: *Last Supper* (Milan); *Mona Lisa* (Paris).

**Leoncavallo**, Ruggiero (1858-1919), Ital. composer; opera: *Pagliacci*, 1892.

**Leonidas**, Kg. of Sparta; succeeded half-brother Cleomenes, c. 489 B.C.; sent to defend pass of Thermopylae agst. Xerxes; deftd. and killed after valiant defence.



Leonardo da Vinci



**Leonids**, or *November meteors*: see METEORS.

**Leonine**, Lat. verse, gen. alternate hexameter (*q.v.*) and pentameter (*q.v.*), rhymg. at mid. and end of each line.

**Leopard**, panther, large feline carnivore, yellowish with black spots; native of Africa, S.W. Asia. Hunting cheetah (*q.v.*), ounce or snow L., found in high mountainous regions of Centr. Asia.

**Leopardi**, Giacomo (1798-1837), Ital. lyric poet. *Oppressamento alle Morte*, 1816; *Filippo Ottonieri*, 1827; *La Ginestra*.

**Leopard's bane**, *Doronicum plantaginum*, herbaceous plant cultivated for borders; yellow flowers.

**Leopardstown**, vill., 2 m. S.W. Kingstown, I.F.S.; race-meetings Apr., June, Aug., Sept., Oct., and Nov.; steeplechases, Feb. and December.

**Leopold**, emperors: **L. I** (1640-1705), elected Kg. of Hungary, 1655; Kg. of Bohemia, 1656; emp., 1658; wars agnst. Turks and Louis XIV of France; war of Span. succession. **L. II** (1747-92), bro. of Marie Antoinette; succeeded, 1790; issued with Kg. of Prussia Decl. of Pillnitz, 1791, threatening intervention in Fr., but refrained from actual hostilities.

**Leopold**, kgs. of the Belgians: **L. I** (1790-1865), member of House of Coburg; uncle of Qn. Victoria; elected kg., 1831; consolidated newly formed kgdm. of Belgium; his son, **L. II** (1835-65-1909), fndd. and exploited Congo Free State, wh. was annexed to Belg., 1908.

**Leopold**, Prince of Anhalt-Dessau (1676-1747), Pruss. gen. and milit. reformer; served with distinction at Höchstädt, 1703; Blenheim, 1704; Cassano, 1705; etc.; field-marshal, 1712; captured Rügen, 1715; victorious at Neustadt, Jagerndorf, and Kasselndorf, 1745; known as "The Old Dessauer."

**Leopold II** (1797-1870), of Habsburg-Lorraine; Grand Duke of Tuscany; conceded constitution to Tuscany, 1847; forced to abdicate, 1859, when Tuscany was annexed to Sardinia.

**Leopold II**, Lake, lake, in W. Belgian Congo; drains into Riv. Congo; discovered by Stanley, 1882.

**Leopold**, Order of, highest Belg. order of knighthood, fndd. 1832.

**Leopoldville**, cap. Belg. Congo., on lower Congo; pop., c. 5,900.

**Lepanto**, Battle of, 7 Oct., 1571; naval victory of allied Venetian, Span., Genoese,

Sicilian, Neapolitan, and Papal fleets under Don John of Austria over the Turks under Ali; Turk. sea-power finally shattered. Named after L. (anc. *Naupactus*), scapt. in Gulf of Corinth, Greece.

**Lepidodendron**, fossil tree resembling club-moss, found in anthracite strata, with scaly leaf-scars on trunk and branches.

**Lepidolite**, scaly, translucent silicate; kind of mica (*q.v.*).

**Lepidoptera**, (entomol.) order of insects, including the butterflies and moths; insects with two pairs of scale-clothed wings and mouth-parts or proboscis of the suctorial type. Metamorphosis complete; larvae (caterpillars) herbivorous. A few species definitely beneficial to plants, but many injurious.

**Lepidosiren**, genus of Lungfish (*q.v.*) found in Amazon and neighbouring streams; limbs reduced to mere filaments; spends dry season in burrows.

**Lepidus**, Marcus Aemilius, triumvir with Antony and Octavian, 43 and 37 B.C.; deprived of power 36; d. c. 13 A.D.

**Leporello**, servant of Don Juan (*q.v.*); prominent in forwarding his master's schemes.

**Leprechaun**, (Irish myth.) gnome or fairy in the form of a small, wizened old man.

**Leprosy**, skin disease with formation of nodules or tubercles, often very painful; infectious and difficult to cure; lepers have been segregated from earliest historical times. Disease marked by falling off of the extremities; occurs mainly in tropical and subtropical climates.

**Leptocephalus**, transparent, leaf-shaped larvae of the eel (*q.v.*).

**Lepton**, Gr. copper coin, equiv. to 1/16 drachma, or abt. one-tenth of a penny or one-fifth of a cent.

**Le Puy**, cap., dépt. Haute-Loire, France, in volcanic dist. of Auvergne; pop., 20,000; 12th cent. cathed. on hill overlooking tn.; lace factories.

**Le Queux**, William Tufnell (1864-1927), Eng. novelist; foreign ed. of *The Globe*, 1891-93; corresp. of *Daily Mail* during Balkan War, 1908; *Secrets of Monte Carlo*, 1899, etc.

**Lerida**, cap. Span prov. of L. (4,690 sq.m.; pop., 326,600), at S. foot of E. Pyrenees; pop., 43,800.

**Lermontov**, Mikhail Yurevich (1814-41), Russ. poet and novelist; *Ismail-Bey*; *Hadji Abrek*; *Valerik*.

**Lermoos**, mt. resort (3,270 ft.) in the Tyrol, at foot of the Zugspitze.

**Le Roy le veult** (O. Fr.), the kg. wishes it; the formal royal assent affixed to bills after they have finally passed the Brit. Parliament.

**Lerwick**, cap. of Shetland Is.; pop.,



Leopard

4,200; northernmost tn. in Brit. Isles; sit. on Bressay Sound; fisheries; wool exported.

**Lesage**, Alain René (1668-1747), Fr. novelist; *Le Diable Boiteux*; *Gil Blas*.

**Lesbianism**, sexual relationship betw. women; see HOMOSEXUALITY.

**Lessos**, **Mytilene**, largest isl. in Aegean Sea, off coast of Asia Minor; 920 sq.m.; pop., 161,560; cultiv. of olives, figs, and vines; cap., Mytilene. Turkish from 1462-1912; Gr. since 1913.

**Lèse-majesté** (Fr.), affront to the dignity of the sovereign; high treason.

**Lesina**: see HVAR.

**L. ès L.**, abbr. Licencié ès Lettres (Fr.), Licentiate of Letters.

**Leslie**, John (1527-96), Scot. R. C. bp.; adviser to Mary Qn. of Scots; involved in Norfolk conspiracy, 1568; imprisoned in Tower until 1573; *De Origine Moribus, et Rebus Gestis Scotorum*, 1578.

**Lesno**, **Lissa**, tn., Posen, Poland; pop., 16,500; agric., machinery.

**Lesseps**, Ferdinand, Vicomte de (1805-94), Fr. diplomat. and engin.; blt. Suez Canal, 1859-69; began Panama Canal, 1881.

**Lessing**, Gotthold Ephraim (1729-81), Ger. critic and poet; paved way for revival of Ger. national literature; *Laokoon*, 1766; *Minna von Barnhelm*, 1767, etc.

**Le Sueur**, **Eustache** (1617-55), Fr. histor. painter; *Life of St. Bruno* (Louvre). **Le S.**, **Hubert** (c. 1595-1652), Anglo-Fr. sculptor; bronze statues at St. John's Coll., Oxford; equestrian stat. of Charles I at Charing Cross.



Lessing

**L'état, c'est moi** (Fr.), I am the State; saying doubtfully attributed to Louis XIV.

**Letchworth**, garden city (fndd., 1903), Herts, Eng.; pop., 15,000.

**Lethal chamber**, airtight receptacle into which poisonous gases are admitted for the painless destruction of animals; used in the State of Nevada for capital punishment.

**Lethe**, (Gr. myth.) river in Underworld from wh. the dead drank to obtain forgetfulness.

**Leto**, (Gr. myth.) goddess, mother of Apollo and Artemis; the Roman "Latona."

**Le Touret**, vill., Pas-de-Calais, France, 3½ m. E.N.E. Béthune; Brit. nat. cemetery with memorial to 13,479 missing (World War).

**Letter of credit**, open docmnt. authorizing holder to draw money from bank or bks., gen. up to a specified amt., wh. is debited to holder's acc. at his own bank. **Circular I.**

**of c.**, issued for convenience of travellers, is addressed to banks or firms in diff. places holder proposes to visit. **Is. of marque**, commissions authorizing privateering (q.v.) during times of war. Abol. 1856. **Is. patent**: see PATENTS.

**Letnish**: see LANGUAGE SURVEY, Baltic Languages.

**Lettow-Vorbeck**, Paul von (1870- ), Ger. gen.; c-in-c. colonial troops in Ger. E. Africa, 1914-19; *Meine Erinnerungen aus Deutsch-Ostafrika*, 1919.

**Letters de cachet** (Fr.), warrants of arrest signed by K. of Fr., by wh. obnoxious persons could be indefinitely imprisoned without trial. Abol. 1790.

**Letts**, Indo-Ger. race inhabiting Baltic Provs.; 1½ mill. in Repub. of Latvia.

**Lettuce**, herb with succulent, crisp leaves. Garden L. (*Lactuca sativa*) is main ingredient in salads. Wild L. (*L. virosa*), sometimes known as *L. opium*, yields a latex (q.v.) wh. when dried is used in folk med. as a soothing cough syrup; also as an anodyne to replace opium.



Letts

**Leu** (plural **lei**), Ruman. monetary unit, equiv. to 100 bani; worth abt. 9½d. (\$0.19) at par.

**Leucaemia**, **Leucocythemia**, (med.) abnormal and persistent increase in number of white corpuscles of the blood.

**Leucippe and Cleitophon**, Gr. romance by Achilles Tatius, in eight books, 5th cent. A.D.

**Leucite**, a crystalline rock-forming mineral, a silicate of aluminium and potassium, found chfly. in volcanic lavas.

**Leucocytes**, (physiol.) white blood corpuscles; play important part in resisting infections.

**Leucoderma**, (path.) deficiency of pigment, causing abnormal pallor of the skin.

**Leucorrhoea**, *fluor albus*, known as the "whites"; a watery or milky discharge from the vagina; common in many women, but not dangerous to health.

**Leucothea**: see LEO.

**Leuctra** (mod. Gr. **Parapungia**), vill., Boeotia, Greece, S.W. of Thebes, where Thebans under Epaminondas defeated Spartans (371 B.C.).

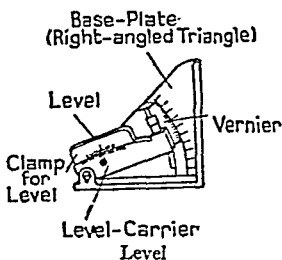
**Leva**, monetary unit of Bulgaria; at par value 673.659 l. equal to one pound sterling.

**Levant**, name given to countries on Mediterranean coast, E. of Italy; more particularly, coastlands of Asia Minor and Syria.

**Levee**, 1) orig. reception held by kg. during his morning toilet; now, Court held by Brit. sovereign attended only by men. 2) Name given in Southern States of the U.S.A. to a

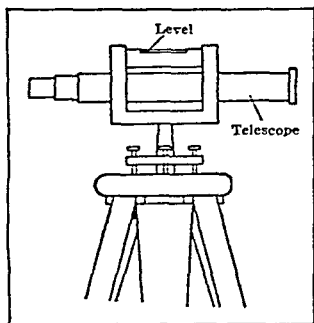
natural embankment of alluvium deposited by a slow-moving river in a flat plain, esp. of such rivers as the Mississippi, etc.; also an artificial embankment raised to prevent inundations.

**Level**, (bldg.) 1) altitude of any portion of a bldg. site (usu. indicated with ref. to an arbitrarily chosen zero or "datum"); 2) surveying instrument used in measuring foregoing (see **LEVELLING**); apparatus for finding true horizontal position. **L. crossing**, (rly.) passage across rly. lines level with track, not raised by bridge or tunnelled beneath.



**Levellers**, (Brit. hist.) 1) extreme party in Cromwell's army wh. sought to level all ranks and demanded the death of the kg.; acquired power abt. 1647; suppressed by Cromwell and Fairfax, 1649. 2) Body of Irish peasants formed in Limerick 1760; "levelled" the fences which had been used for enclosing the commons.

**Leveling**, (surveying) measuring the elevation of land with an instrument (level) mainly consisting of a telescope and two staves, from which the readings are taken.



Level

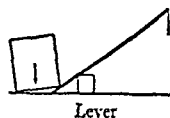
**Leven**, Alexander Leslie, 1st Earl of (c. 1580-1661), Scot. general and adventurer; in Swed. Army, 1605-38; commdd. Scot. Army invading Eng., 1640; 3<sup>rd</sup> Earl, and Capt. of Edinburgh Castle, 1641; joined Royalists after execution of Charles I; imprisoned in Tower, 1651; released at request of qn. of Sweden.

**Leven**, 1) police burgh and seapt., Fifesh., E. Scotland, on Firth of Forth, at mouth Riv. Leven; pop., 7,400; paper mills, flax-spinning, engineering; summer resort. 2) Riv. (16 m.), E. Scotland; from Loch Leven to Firth of Forth. 3) Riv. (7 m.), Dumbartonsh., W. Scotland; from Loch Lomond through indust. region to estuary of the Clyde. 4) Riv. (17 m.), W. Scotland, separating Argyllsh., from Inverness-shire; flows into the western Loch Leven (q.v.).

5) Riv. (11 m.), N.W. Lancs; from S. end of L. Windermere past Ulverston into Morecambe Bay. **Loch L.**, 1) lake, Kinross-sh., E. Scotland;  $3\frac{1}{2}$  m. by 2; max. depth 85 ft.; isls. include *Castle Isl.*, whence *Mary Qn.* of Scots escaped, 1568, and *St. Serf's Isl.*, with ruins of a 10th cent. priory. 2) Inlet (12 m.) of the sea, W. Scotland, separating Argyllsh. from Inverness-sh.; arm of Loch Linnhe.

**Lever**, Charles (1806-72), Brit. novelist, chf. of Irish and military life; travelled in Europe and Canada; *Harry Lorrequer*, 1839; *Charles O'Malley*, 1841; *Tom Burke of Ours*, 1844, etc.

**Lever**, lifting device; rigid body supported at one point (*fulcrum*), around which it can turn, and having applied to it at another point a force wh. overcomes an opposing force applied at another point; distances of forces from fulcrum are called the *arms* of the L.; effectiveness of a force, its *moment* (q.v.), is measured by its amount  $\times$  length of arm on wh. it acts. Thus a very heavy weight can be raised by lever operated by hand, e.g., crowbar. Used in all kinds of machines and tools.



Lever

**Leverhulme**, Wm. Hesketh Lever, 1st visct. (1851-1925), Brit. business man; started soap factory, 1886; Port Sunlight fndd., 1886; M.P., 1906-11; supported Lloyd George during coalition govt. 1918-22; created Bn. L., 1917; visct., 1922.

**Leverrier**, Urbain Jean (1811-77), Fr. astron.; calculated (1845-46) position of planet Neptune, subseq. observed by Galle at Berlin. Similar result achieved independently by Eng. mathematician, J. C. Adams.

**Levi**, 1) (O.T.) son of Jacob and Leah; progenitor of the Levites (q.v.); 2) (N.T.) son of Alphaeus, a publican (q.v.) better known as *Matthew*, the Apostle and Evangelist.

**Leviathan**, 1) (bib.) amphibious monster, apparently the crocodile; described in Book of Job. 2) Philosophical work by Hobbes (q.v.), 1651, in wh. he sets forth doctrine that the power of the State is absolute as against the individual.

**Levites**, (O. and N.T.) descendants of Aaron from whom priests were recruited; later acquired dominating position in the State.

**Leviticus**, (O.T.) 3rd bk. of Pentateuch; consists of laws relating to sacrifices and religious ceremonies.

**Levkas**, *Santa Maura*, one of the Ionian Isls., 110 sq.m.; pop., 30,000; identified by W. Dorpfeld (q.v.) with Homer's *Ithaca*; cap., **L.**, on N. coast; pop., 6,000.

**Levkosia**, (ancient *Nicosia*) capital of Cyprus; pop., 18,500; Gr. orthodox archbishopric.

**Levy**, act of taking by authority or force for publ. services as troops or taxes; thing levied: as army, tribute; (law), seizure of ppty. on executions to satisfy judgments. or on warrants for collection of taxes. See CAPITAL LEVY.

**Levy-Brühl**, Lucien (1857- ), Fr. ethnologist and philosopher, *History of Modern Philosophy in France*, 1899; *The Primitive Mentality*, 1923.

**Lewes**, George Henry (1817-78), Brit. philosophical writer and critic; *Biographical History of Philosophy*, 1845-46; fndd. (with Thornton Leigh Hunt) the *Leader*, 1850; *Life of Goethe*, 1855; first editor of *Fortnightly Review*, 1865-66; from about 1854 lived with George Eliot (q.v.).

**Lewes**, co. tn., Sussex, Eng., on Riv. Ouse, amid S. Downs; castle; pop., 10,800.

**Lewis**, Sinclair (1885- ), Amer. novelist; *Main Street*, 1920; *Babbitt*, 1922; Nobel Prize (Lit.), 1930.

**Lewis and Clark Expedition**, first overland expdn. across American continent, N. of Mexico (1804-06); led by Capt. Meriwether Lewis and Lieut. William Clark; explored Missouri, Yellowstone, and Columbia rvs.; reached Pacific, 15 Nov., 1805.

**Lewis Gun**, automatic rifle (light M.G.), air-cooled and gas-operated, carrying 47 or 97 rounds in a drum on top of breech.

**Lewisham**, met. bor., S.E. London, Eng., S. of Riv. Thames; middle-class residential distr.; pop., 219,900.

**Lewis-with-Harris**, isl., Scotland, largest of Outer Hebrides; 877 sq.m.; N. part of isl. (*Lewis*, or *The Lews*) belongs to Ross-sh., S. part (*Harris*) to Inverness-sh.; homespun ("Harris tweeds").

**Lex** (Lat.), law. **L. fori**, law of the court or jurisdiction; **L. loci**, law of the place, i.e., where a contract was made; **L. non scripta**, common law (unwritten); **L. scripta**, statute law (written); **L. situs**, law of the situation, (i.e., of place where the subject matter is); **L. talionis**, law of retaliation: an eye for an eye, a tooth for a tooth.

**Lexington**, 1) tn., Massachusetts, U.S.A.; pop., 9,450; residential; battle of L. first in American War of Independence (1775). 2) Tn., Kentucky, U.S.A., on Elkhorn Riv.; pop., 49,000; cattle markets.

**Leyden**, **Leiden**, tn. S. Holland, on Old Rhine, 6 m. from N. Sea; pop., 704,000; univ. (1575), museums, observatory; textiles, printing. B.place of Rembrandt. Besieged by Spaniards, 1573-4.

**Leyden jar**, glass vessel covered (except

for small part at top) inside and out with metal foil, forming elec. condenser (q.v.).

**Leys School**, Cambridge; Eng. public sch. for boys; fndd. by leading Wesleyans, 1874; 260 boys.

**Leyton**, munic. bor., Essex, Eng., part Greater London; pop., 128,300.

**L.F.P.S.**, abbr., Licentiate of Faculty of Physicians and Surgeons.

**Lhasa**, cap., Tibet, in fertile vall. of Kyichu, c. 12,000 ft. abv. sea-lvl., on N. slopes of Himalayas; pop., 20,000; sacred city of Buddhists and chf. place of pilgrimage; residence of Dalai-Lama; many temples (chf. shrine Jokhang) and monasteries (abt. 16,000 begging monks).

**L.H.C.**, abbr. Lord High Chancellor.

**L.H.D.**, abbr. *Litterarum Humaniorum Doctor* (Lat.), Doctor of Human Letters, i.e., classics.

**L'homme propose et Dieu dispose** (Fr.), Man proposes and God disposes.

**L.I.**, abbr. Long Island.

**Li**, chem. symbol of lithium.

**Li**, Chin. linear meas., 654 yds. (598.02 metres); and Chin. weight, .583 grains (.038 grammes).

**Lia Fail**: see DESTINY, STONE OF.

**Lianas**, (bot.) trop. woody, climbing plants.

**Liao-tung**, penins., Manchuria, dividing N. part of Yellow Sea into Bay of Korea and Gulf of Liao-tung; S. part occupied by Jap. leased terr. of Kwantung, and includes port of Dairen and naval station of *Port Arthur*; terminus of Manchurian Railway.

**Lias**, blue limestone; lower, oldest strata of Jurassic series, a blue fossiliferous limestone.

**Libau**: see LIEPAJA.

**Libel**, defamation published by any other means than by word of mouth, and calculated to bring a person into hatred or contempt; incl. writing wh. is blasphemous or seditious. Cf. SLANDER.

**Liberal**, (polit.) open-minded and progressive in policy as opposed to Conservative (q.v.). **L.-Unionist**, name adopted by Liberal opponents of Irish Home Rule, when bills to this effect were brought forward by Gladstone. See LIBERALISM; HOME RULE.

**Liberalism**, *politically*: theory that the State should encroach as little as poss. on freedom of the individual, its function being merely to afford protection and keep order. *In Economics*: Uncontrolled private enterprise of industry and commerce; free trade, free competition; 19th cent. liberalism (e.g., the Manchester School) was essentially capitalistic. *Ethically*: Liberty of thought, liberty of conscience, liberty of the Press, unhindered intellectual research and creation.



Leyden Jar



Sinclair Lewis

**Liberation, War of**, name given by Ger. to war of the Allies agst. Fr., 1813-14. It resulted in freeing of various German States from Fr. occupation and influence.

**Liberia**, Negro repub. W. Africa, on coast of Upper Guinea; 36,800 sq.m.; pop., 2 mill. (250 white); hot climate, marshy unhealthy coast; interior a plateau, with dense forests; exports palm kernels, coffee, rubber; cap., *Monrovia*. Fndd. in 1822 as colony for freed American slaves.



**Liberius**, St., Pope (352-366), favoured orthodoxy in controversy with Arians; refused to sanction condemnation of Athanasius; exiled for 2 yrs; refused to subscribe to confession of Council of Rimini, 359, where Arianism again prevailed.

**Liberté, Égalité, Fraternité**, "Liberty, equality, fraternity"; motto of the Fr. Rev., 1789.

**Liberty, Statue of**, the colossal statue erected in N.Y. Harbour in 1886; gift from



Statue of Liberty

France to U.S.A. Statue by Bartholdi; pedestal by Richd. M. Hunt.

**Liberalum veto**, unrestricted veto; by right of *l.v.* any one member of Polish diet could veto a measure.

**Libido**, literally, sexual desire; lust; fundamental principle in psychoanalysis (*q.v.*).

**Libonia**, *jacobinia*, Centr. Amer. shrub with leathery leaves and scarlet or yellow flowers.

**Libra**, "The Scales", zodiacal constell. visible in N. hemisphere in late summer, low in sky beneath Arcturus; 7th sign of Zodiac (*q.v.*),  $\simeq$ ; entered by sun at the autumnal equinox; see *Pl.*, ASTRONOMY, S.C.H., C. and D.

**Libration**, apparent oscillation of the moon about her axis; see MOON.

**Libretto**, text of an opera or operetta.

**Libreville**, cap. of Gabon, Fr. Equatorial Africa, formerly the French Congo; pop., 2,000; seapt. and naval station.

**Libya**, 1) anc. name of Africa (*q.v.*). 2) Italian colony, N. Africa, betw. Egy. and Tunis; divided into dists. of Tripolitania and Cyrenaica (*qq.v.*). **Libyan Desert**, largest and most desolate part of E. Sahara (few

oases), partly in Egy. and partly in Tripolitania.

**Licence**, 1) generally: permit or authorization. 2) Authority to produce or exploit patent rights or copyright of another. 3) Official certificate given to a professional person by a competent body to enable him to practise his calling.

**Licensed victualler**, a hotel- or inn-keeper licensed to supply food and drink (inclg. alcoholic refreshment) in accord with the



Modern Bar

laws relating to such business; in the 18th cent. the L. V. became more often a mere drink purveyor; but recently the number of inns and taverns supplying meals has increased. The term now applies to any licensed publican.

**Licensing laws**, laws regulatg. sale and hours of sale of alcoholic liquors and holding of public entertainments.

**Licentiate**, one licensed by univ., college, etc., to exercise profession.

**Lichen**, simple plant not differentiated into root, stem, and leaf, consisting of two unicellular organisms: one an alga, and the other a fungus.

**Lichfield**, city, Staffs, Eng.; cathed.; bplace. Dr. Johnson; brewing, mkt.-gardening; pop., 8,500.

**Lichnowsky**, Karl Max von, Pr. (1860-1928); 1912-14, Ger. Ambass. in London. Excluded from Pruss. Upper House, 1918, after publicatn. of *My Mission to London*.

**Licinius**, Flavius Galerius Valerius Licinianus (d. A.D. 324), Rom. emp. elevated to rank of Augustus by Galerius, 307; m. Constantina, sister of Constantine the Great; deftd. Maximinus, 313; twice deftd. by Constantine, 314; deftd. and killed in 2nd war with Constantine, 324.



Lichfield Cathedral

**Lick Observatory**, Mount Hamilton, Calif., U.S.A., constructed, 1887-88; named after James Lick (1796-1876), who bequeathed \$700,000 for its fndtn.; his body was laid under pier of 36 in. equatorial telescope, 1887; photographic and spectroscopic observation carried out by Univ. of California.

**Lictors**, anc. Rome attendants with fasces (q.v.) who accompd. highest officials.

**Liddell**, Henry George (1811-98), Eng. divine and classical scholar; with R. Scott, pub. Greek lexicon, 1843; *History of Ancient Rome*, 1855.

**Liddon**, Henry (1829-90), Eng. divine, follower of Pusey, Canon of St. Paul's, 1870; pubd. many volumes of sermons and a *Life of Pusey* (4 vols., posthum., 1893-97).

**Lido**, series of mudbanks formed of riv. silt, parallel to the shore and enclosing lagoons. Used esp. of the L. of Venice.

**Liebermann**, Max (1847- ), Ger. impressionist painter, and etcher: *An Asylum for Old Men*, 1881; *Flax Spinners*, 1887.

**Liebfraumilch**, Ger. white wine from neighbourhood of Worms.

**Liebig**, Justus, Bn. von (1803-73), Ger. chem., pioneer agric. chem. (artif. manures) and dietetics; disc. process for manuf. of meat extracts.

**Liebknecht**, Karl (1871-1919), radical soc. democrat; refused to vote War Credits, 1914; leader of Spartacists, 1918; arrested in Spartacist rising Berlin, 1919, and murdered. **Wilhelm** (1826-1900), father of K.; Ger. socialist; united Ger. Soc. sections; fndd. Ger. Soc.-Dem. party in Reichstag; ed. *Vorwärts*.

**Liechtenstein**, indep. principality betw. Vorarlberg, Aus., and Swiss cantons of Grisons and St. Gall; area, 61 sq.m.; pop., 12,000; cattle breeding, grain, fruit, vineyards; cap., *Vaduz*.



**Liège, Luik, Lüttich**, fortified tn. and provincial cap., Belgium, at junct. of rivs. Ourthe and Meuse; pop., 168,300 (with suburbs 253,000); univ.; techn. schools; guns, small arms, machinery, metals, hardware. Captured and occupied by Germans 16 Aug., 1914.

**Liegnitz**, tn., Silesia, Ger., cap. dist. of L. (5,250 sq.m.; pop., 1 $\frac{1}{4}$  mill.), nr. confluence of Katsbach and Schwarzwasser; pop., 73,200; textiles, machinery, leather. **Battle of L.**, 1241, the Mongols under Batu defeated the Germans and Poles near L.; called also battle of Wahlstatt.

**Lien**, (legal) right to hold and control property of another until a debt is paid or legal claim discharged.

**Liepaja, Libau**, seapt., Latvia, betw. Baltic and Sea of L.; cap. prov. of Courland;

pop., 57,240; naval harbour; school of navig.; exports cereals, dairy produce, timber. Occupied by Germans in 1915.

**Lietuva**: see LITHUANIA.

**Lieutenant**

(Fr., place holder, who takes place of captain), lower rank of commiss. officers in the army and navy. **L.-colonel**, **L.-commander**, **L.-general**, see OFFICERS. **L.-governor**, official ruling a district or province in a Brit. dominion or colony under a governor-general.

**L. of City of London**, one of several officials selected by ld. mayor and apptd. by Home Sec.; usu. aldermen, deputies, or M.P.s. **L. of the Tower**, deputy commandant of the Tower of London.

**Life**, 1) princ. pervading organic matter, enabling animals and plants to transform food into energy, to grow, and to propagate; 2) animated nature; living organisms as a whole; 3) period spent by an individual betw. birth and death. **L.-boat**, 1) specially constructed, highly buoyant boat, used for saving life from a shipwrecked vessel; 2) small boat, carried by larger vessel, to be used in case this has to be abandoned. See ROYAL NATIONAL LIFEBOAT INSTITUTION. **L.buoy**, device for enabling persons to float in water; usu. circular float of cork covered with canvas, to wh. a life-line is attached.

**L. guards** (1st and 2nd), senior regt. of Brit. Household Cavalry, formerly 1st and 2nd Regts. of L. Gds., amalg., 1922; 1st regt. orig. *His Majesty's Own Troop of Guards*.



1 Sub-Lieutenant; 2 Lieutenant; 3 Lieut. Commander.  
Royal Navy



1 Second Lieutenant; 2 Lieutenant; 3 Lieut. Colonel.  
British Army



First Lifeboat, 1803.  
Greathead, Tynemouth

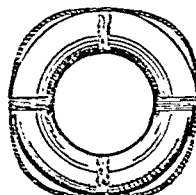
highly buoyant boat, used for saving life from a shipwrecked vessel; 2) small boat, carried by larger vessel, to be used in case this has to be abandoned.

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Motor Lifeboat, Showing Masts  
in Position—for Use instead  
of Engine



Lifebuoy



(taken on strength of Army, 1660); 2nd regt. orig. *Monk's L. Gs.* which became 2nd (the Qn's) troop, 1670. **L. insurance**, agreement to pay a sum of money in case of death or after a certain number of years (*endowment policy*) in return for regular payments (*premiums*). Amount of premium depends on period covered by L., age (and sometimes health and occupation) of insured persons, etc. *Kinds*: Ordinary life-L., unlimited amt.; industrial L., generally restricted to amts. designed to cover burial expenses; *group life L.*, undertaken by unions on behalf of their members, by newspapers for their readers, and recently by business concerns for their employees. **L. insurance companies**, business concerns, either limited cos. or co-op. societies for conducting of business of life insurance; earliest cos. fndd. in Eng. in 18th century.

**Liffey**, riv. Leinster, I.F.S.; flows through cos. Kildare and Dublin into Dublin Bay; length 50 miles; water esp. suitable for brewing of stout.

**Lift, elevator**, a hoisting machine; apparatus for carrying people and goods to different floors of a building; generally worked by means of wire ropes (electrically driven) or by hydraulic ram. Also worked on *Bucket-elevator* principle, in wh. a pair of endless chains, in continual motion, carry cages from floor to floor; passengers step into upward- or downward-moving cages while these are in motion.

**Ligament**, (physiol.) strong bundles of fibrous tissue, connecting joints, muscles, and bones.

**Ligan**: see FLOTSAM.

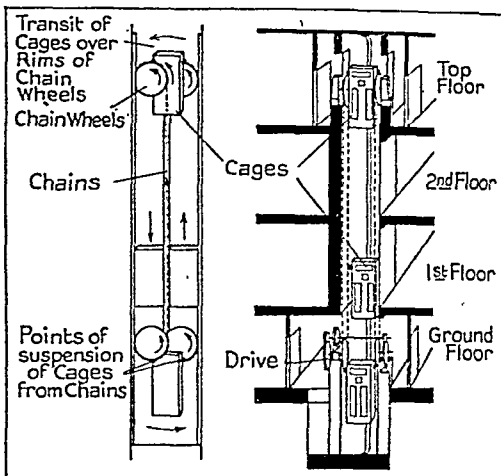
**Ligature**, (mus.) 1) a sign in mus. notation indicating that two or more notes are sung to one syllable. 2) (Med.) Thread of catgut or silk used for tying up arteries during operations. 3) (Typ.) Joining of two or more letters to form one character, e.g., ae, fi

**Light**, form of radiant energy wh. acts upon the optic nerve and makes vision possible; until recently regarded simply as very short electro-magnetic waves (Maxwell), by which most phenomena (especially interference, (*q.v.*) are explained. Other phenomena (photo-electricity) require it to be regarded as a stream of particles (*photons*). Since De Broglie's wave-mechanics, we await a reconciliation of the 2 views. The *velocity of L.* (measurement first attempted by Olaf Römer, 1676) is c. 186,325 miles per sec. (in a vacuum). Accdg. to theory of Relativity (*q.v.*), this is the limit of velocity for matter. **L. buoy**, steel, floating structure, c. 6 ft. diam.; may be either cone-, can-, or barrel-shaped; placed in navig. channels to mark shoals or sandbanks; often with flashing

light in its upper portion, sometimes combined with bell or whistle; the largest flashing buoys very similar to small, automatic lightships. See BEACON. **L. therapy**: see ACTINO-THERAPY. **L.-year** (*astron. unit of measurement*), distance traversed by L. during 1 yr. = approx. 5,852,700,000,000 miles, wh. at a scale of 10 million miles to the inch, would be represented by a line over 9 miles in length (*cf.* PARSEC).

**Lighter**, generic term for craft used to load and unload sea-going vessels.

**Lighthouse**, steel or masonry structure



Passenger Lift on Bucket-Elevator Principle

erected on promontories, capes, shoals, sandbanks, harbour entrances; provided with a flashing or fixed light at its apex and often with some form of radio-signalling device. The light is often of distinctive colour and may be automatic, but usu. has an operating crew of two or three men.

**Light metals and alloys**, aluminium and magnesium, and their alloys with zinc, copper, silicon, etc.; of increasing technical importance. Duralumin, magnalium, electron, and many others. Beryllium recently produced; gives valuable alloys with copper.

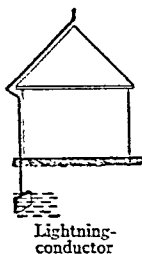
**Lightning**, sudden flash of light in the heavens due to discharge of elect. betw. 2 clouds or betw. cloud and earth; **forked L.**, a blinding flash, zigzag to the eye, but serpentine in photograph, usu. branched; **sheet L.**, the reflection or glow of very distant L. (*cf.* SUMMER LIGHTNING); **ball L.**, rare meteorological phenomenon resembling a moving ball of fire in the



Lightning

heavens and possibly occasioned by a meteor.

**L.-arrester**, apparatus attached to electric circuits, which renders harmless the effects of the high voltages and surges (*q.v.*) in the system caused by atmospheric electric discharges. A path is afforded by which discharge to earth of each line-conductor can occur; as soon as discharge is over, the insulation is restored. **L.-conductor**, metal rod projecting above roof on buildings and connected with earth, designed to carry lightning safely to earth without damage to the building; first used by Franklin, 1752.



**Light oils**, petrol ether, gasoline, benzine, ligroin. Light component parts occurring in the distillation of petroleum (about 15%); sp. gr. up to about 0.8 and b.p. 30-150 deg.

**Light Railway**, rly. for short-distance pass. and goods traffic, with gauge from 2 ft. up to standard; cost of running usually low, owing to comparative simplicity of working.

**Lights**, (use in navigation) steam vessels when under way carry white light on foremast, throwing light ahead and sideways, but not backwards. On the starboard (*q.v.*) they carry green light visible from right ahead to slightly more than at rt. angles, on same side only; on port (*q.v.*) a similar red light. A sailing-ship carries port and starboard lights only. Any vessel at anchor carries white light in fore part; vessel out of control carries two red lights, vertically, one below the other. **L., ceremonial use of**, found in early pagan and other religions; common to Eastern, R.C., and some Anglican Churches, *e.g.*, candles, sanctuary lamp kept burning over reserved consecrated elements.

**Lightship**, a moored vessel equipped with warning lights and often bells and fog-signals; stationed at sandbanks, etc., or where a lighthouse would be impracticable.

**Light year**: see LIGHT.

**Lignin**, (bot.) woody tissue of plant cell.

**Lignite**, brown very soft coal (fossil vegetable) more transformed than peat, but less than ord. coal. Mined on the surface in vast quant. in centr. Ger. and Bohemia. Burnt in power stations at mine, and as briquettes (*q.v.*) for domestic heating.

**Lignum vitae**, Jamaican smooth-barked, blue-flowered tree, with hard wood much used in turnery; stem exudes resin known as *gum guaiacum*, formerly widely used in medicine.

**Ligny**, vill., prov. of Namur, Belgium, where Blücher was defeated by Napoleon 16 June, 1815.

**Liguria**, *terri. divn.*, N.W. Italy, Gulf of Genoa, 2,097 sq.m.; pop., 1,433,500; flower and vegetable growing; divided into four depts., *viz.*: Genoa, Imperia, Savona, and Spezia. **Ligurian Republic**, name given to repub. of Genoa, 1797-1805. **Ligurian Sea**, part of Mediterranean betw. Elba and Genoa.

**Li Hung Chang** (1821-1901), Chinese statesman; suppressed Taiping rebelln., 1853, with troops com. by C. G. Gordon (*q.v.*); diplomatic repres. of China in Europe.

**Likin**, Chinese tax levied on articles in transit, similar to Fr. *octroi*; its abolition was provided for by the Anglo-Chinese agreement, 1902.

**Lilac**, ornamental garden shrub, with panicles of sweet-smelling flowers; the common purple variety is *Syringa vulgaris*; white, *S. persica*. In some parts of Eng. valerian is called *German Lilac*.

**Lillienthal, Gustaf** (1849-1933), Ger. pioneer of aeronautics; worked as archit. under Brit. Govt. in Australia; subseqtly. devoted himself to problem of bldg. flying machine on princ. of flight of birds; employed on research by Ger. Govt. during World War; wing profile of aeroplanes now in gen. use invtd. by him. His brother **Otto** (1848-96) was associated with him in his research work; killed in gliding accident. *Bird-Flight as Basis of Art of Flying*.

**Lilith**, (Hebr. myth.) Adam's first wife; also a female demon of Babylonia.

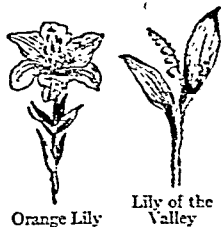
**Lille, Ryssel**, fortified cap. of dépt. Nord, France; pop., 201,600; univ.; citadel; Palais des Beaux-Arts (picture gallery); Nat. Sci. Institute; textiles, distilleries, dyeworks; rly. junction. Occupied by the Germans, 1914-18.

**Lilliburlero**, song very popular in William III's army during the war in Ireland, 1688; so called from its refrain *Lilliburlero buller; a la*; authorship ascribed to Thos. Wharton; its subject is the administration, as James II's lieutenant in Ireland 1687, of Talbot, Earl of Tyrconnel; the air is much older than the words, and was adopted by Gay in *The Beggar's Opera*.

**Lilliput**, island in *Gulliver's Travels* (*q.v.*) inhabited by diminutive human beings.

**Lilly, William** (1602-81), Eng. astrologer and prophet; issued annual series of almanacs, 1644-80; fell into disrepute after Restoration; *True History of Kg. James I and Kg. Charles I* 1651.

**Lily**, bulbous plant with beautiful large flowers; many decorative plants, *i.e.*, *Arum*,



*Tiger*, etc. **L. of the valley**, *Convallaria majalis*, small plant, grows in woods and also cultivated; bell-like, exquisitely perfumed flowers. At one time used in med. as a cardiac stimulant.

**Lima**, 1) cap., Repub. of Peru, S. America,  $6\frac{1}{4}$  m. from Pacific Ocean; pop., 220,000; univ.; exports silver, gold, hides, sugar, cotton. Fndd. by Pizarro, 1535; destroyed by earthquake, 1746. 2) Tn., Ohio, U.S.A.; pop., 42,300.

**Liman von Sanders**, Otto (1855-1929), Ger. gen.; com. Mil. Mission to Turkey, 1913; com. of Turk forces Dardanelles, Syria, and Palestine, 1915-16.

**Limber**, two-wheeled carriage to wh. the gun-trail is attached, in field artillery; a seat, and space for ammunition and heavy tools are provided.

**Limbo**, **Limbus**, intermediate condition or region betw. heaven and hell, to which, according to scholastic theology, the souls of unbaptized infants pass at death; *Limbus Patrum*, intermediate place where souls of the prophets and patriarchs awaited the coming of the Messiah; (fig.) a place of neglected and forgotten things.

**Limbourg**, 1) prov., N.E. Belgium, W. part anc. duchy of Limburg (*q.v.*); 930 sq.m.; pop., 367,700; contains coal-bearing moorland region of the Campine; cap., Hasselt. 2) Tn., N.E. Belgium, prov. of Liège; pop., 4,800.

**Limburg**, 1) anc. duchy, N.W. Europe, now divided (by Riv. Meuse) betw. Holland and Belgium: a) Prov., S.E. Holland; 850 sq.m.; pop., 550,600; agric., dairy-farming, coal; cap., Maastricht. b) Prov., N.E. Belgium: see LIMBOURG. 2) Tn., Hesse-Nassau, Germany, on Riv. Lahn; pop., 11,500.

**Lime**, 1) (bot.) linden tree; handsome tree with sweet-smelling yellow blossoms rich in honey. From the flower-heads a tea (*tilleul*) is made, much used in Fr. European L. is *Tilia europaea*. **L. fruit**, round, very acid fruit of the *Citrus acida*, a native of India, allied to the lemons. 2) (Chem.) Calcium oxide obtained by burning limestone (*q.v.*), and used in making mortar and for manure; known as *quicklime* or *slaked lime* respectively before and after being watered.



Lime Blossom

**Limehouse**, dist. nr. London Docks, with large Asiatic pop.; known as Chinatown.

**Limelight**, method, invtd. by T. Drummond (1797-1840), for signalling and picture-projecting, in wh. an oxyhydrogen flame plays on a pellet of lime and makes it incandescent.

**Limerick**, 1) co. in prov. of Munster, I.F.S.; area, 1,033 sq.m.; pop., 100,900. 2) Cap. of Co. L., on Shannon (docks); pop.,

39,500; anc. cathed.; salmon fisheries, lace making.

**Limerick**, form of nonsense verse consisting of 5 anapaestic lines: 2 of 3 stresses. + 2 of 2 stresses. + 1 of 3 stresses., rhymed aabba; 1st popularized by Ed. Lear (*q.v.*).

**Limes Germanicus**, fortified frontier wall erected betw. Rhine and Danube by Rom. Emper. Domitian, Trajan, and Hadrian, for protection against Germanic tribes.

**Limestone**, name of those rocks wh. are mainly composed of calcium carbonate; usually of organic origin. Limestones are burnt to produce lime; they are used also in preparation of portland cement, in the manufacture of glass and soap, and as fluxes in preparation of steel; some varieties are used for building and road making.

**Limit gauge**, measuring instrument used in machine construction for controlling piecework.

**Limited** (*com.*), having restricted liability. **L. companies**, joint stock companies in wh. a shareholder's liability is limited to amt. of share capital wh. he has subscribed; see CAPITAL. When co. is wound up, if debts amt. to more than available assets, creditors bear the loss. All L.cos. must be registd.; see COMPANIES REGISTRATION. **L. liability**, where individ. liability is limited to defined conditions and stated sum. Ant.: *unlimited liability*, wh. applies to cos. and partnerships unless duly registd. as *limited cos.* or *limited partnerships*. **L. partnerships**, in Gt. Brit. under Act of 1907, provision is made not for partnerships with limited liability, but for creation of one or more partners in a partnership (see PARTNER) with limited liability. There must always be one or more partners responsible to an unlimited extent for debts of firm.

**Limnaea**, common var. of pond-snail, with thin, horny, pointed shell; air-breathing.

**Limnology**, scientif. study of fresh waters (lakes and ponds) from both chem. and biol. standpoint, esp. of the living organisms (plant and animal) found in them.

**Limoges**, cap., dépt. Haute-Vienne, France, on the Vienne; pop., 98,200; manuf. porcelain (Limoges enamel).

**Limonite**, brown haematite (*q.v.*), an iron ore (*q.v.*); the colouring matter of brown rocks and clays.

**Limousin**, former prov., France; now part of dépt. of Haute-Vienne; former cap., Limoges.

**Limousine**, motorcar with permanently closed body.

**Limpet**, (zool.) marine mollusc with conical flattish shell, wh. adheres closely to stones or rocks.

**Limpopo**, riv., S. Africa; rises as *Crocodile Riv.* near Johannesburg; flows N.E. and E. on border betw. Transvaal and Bech-

uanaland and S. Rhodesia; then S.E. through Mozambique into Indian Ocean; length, 900 m.; navigable 100 miles.

**Linacre**, Thomas (c. 1460-1524), Eng. physician and scholar; fndd. College of Physicians, London, and lectureships at Oxford and Cambridge; instructed Sir Thos. More and Erasmus in Greek at Oxford; physician to Hy. VIII.

**Linares**, tn., prov. of Jaen, Spain, on Riv. Guadalimar, pop., 40,000; silver, lead.

**Lincke**, Paul (1866- ), Ger. composer; works include operettas, dance music, and students' songs.

**Lincoln**, Abraham (1809-65), Amer. lawyer and statesm.; 16th Pres., 1860-65; elected to Legislature, 1834; leader of new Republican party opposing extension of slavery, 1856; as Pres., carried on war with seceding States; 1862, emancipated all slaves within reach of Northern army; assassinated by actor Booth; commemorated by **L. Memorial**, Potomac Park, Washington, D.C., erected by U.S.A., 1922; by **L. Tower**, of Christ Church, Westminster Bridge Rd., London, Eng., 1876; etc.



Abraham Lincoln

**Lincoln**, 1) city and co. bor., cap. of Lincs, on Riv. Witham; pop., 66,200; magnificent cathed.; many antiquities; manuf. agric. implem.; Foss Dyke; canal to Riv. Trent. 2) Cap., Nebraska, U.S.A., on Salt Creek; pop., 76,000; univ. (1869); grain and cattle. 3) City, Ill., U.S.A.; pop., 13,000; university. 4) City, Argentina, pop., 46,000. **L. College**, Oxford, fndd., 1427, by Richard Fleming, Bp. of Lincoln. John Wesley was one of the associates of the college. **L. Highway**, betw. New York and San Francisco, U.S.A., 3,384 m.; memorial to Abraham Lincoln, 1913. **L. Judgment, the**, (C. of E.) decision of Abp. Benson of Canterbury on matters of ch. ritual; occasioned by prosecution of Edw. King, Bp. of Lincoln, in 1888 for alleged illegal acts of ritual; practically all the acts in question were pronounced legal.



Lincoln Cathedral

**Lincoln's Inn**, Inn of Court (q.v.) N. of Law Courts, London; old hall (1506); chapel (1623); fine library and gardens (**L.'s I. Fields**).

**Lincolnshire**, marit. co. on E. coast Eng.; area, 2,644 sq.m.; pop., 624,500. Div. into three "Parts": *Holland* (S.E.; fenland;

pop., 92,200); *Kesteven* (S.W.; woodlands; pop., 110,100); and *Lindsey* (N.; wolds or chalk downs; pop., 422,200). Rivs.: Trent, Witham, Welland. Surface mainly flat; fertile agric. country; important fisheries. Co. tn., *Lincoln*; largest tn., Grimsby.

**Lindisfarne, Holy Island**, isl. off coast Northumberland, Eng.; ruined Benedictine monastery, 1083; castle. **L. Gospels**, illuminated MS., now at Brit. Museum; early 8th cent.; produced in honour of St. Cuthbert by monks of L.; decorated in colour and gold; perfect condition.

**Lincs**, abbr. Lincolnshire.

**Lind**, Jenny (1820-87), Swed. singer; "The Swed. Nightingale." 1st appeared in Eng. as Alice in Meyerbeer's *Robert le Diable*, 1847; lived in America, 1850-52; returned to Eng., wh. was her home for remainder of her life; last public appearance, Düsseldorf, 1870.

**Lind-af-Hageby**, Emelie (1878- ). Swed. writer and humanitarian; nat. Brit., 1913; antivivisectionist; organized hospitals for wounded horses during World War.

**Lindbergh**, Charles A. (1902- ), Amer. aviator; made 1st flight New York-Paris, 20-21 May, 1927 (3,639 m.; 33½ hrs.); col., U.S. air service.



Lindbergh

**Lindsay**, (Nicholas) Vachel (1879-1931), Amer. poet; travelled on foot through U.S.A. reciting his own verses; pub. *General William Booth Enters Heaven*, 1913; *The Chinese Nightingale*, 1917; etc.

**Lindsey**, N. division Lincs, Eng.; Co. tn., Lincoln.

**Line**, 1) fundamental principle of maths.: concept with only one dimension (with length but without width or thickness); may be straight, curved, or broken; formed by the motion of a point. 2) In navigation, the Equator; accdg. to a naut. custom, seamen or passengers "crossing the line" for 1st time are usu. "baptized" in a tub of water. 3) Brit. and U. S. linear meas.,  $\frac{1}{12}$  inch. **L. block**, photo-engraving on zinc (known in printing trade as *zinc*) of a design in lines or masses without gradations of tone; the orig. drawing is transf. to zinc plate by photography, and the whites are eaten away with acid, leaving the lines and solid blacks standing in relief; then mounted on block to make "type-high" for printing. **L.-engraving**, art of cutting lines of varying depths and widths in a copper or steel plate with a burin, or graver, and producing a picture by filling the lines with ink and placing damped paper against the plate. The impression is made between the steel rollers of a copperplate press as in printing etchings (q.v.). **L's. of Communication**, (milit.) area extending

from immed. behind the front of an army to its base. **L. of force**, (phys.) of a gravitational, elec., or magnetic field; imaginary line in space, direction of wh. at any point corresponds to direc. of gravitational, elec. or magnetic force at that point. **L. of life**, line surrounding ball of thumb; in palmistry supposed to indicate length of life.

**Linear**, (math.) of one dimension; see LINE.

**Line ahead**, order of steaming of war-ships: the squadron steams in single file behind the flagship. When they steam abreast the order is called **L. abreast**.

**Linen**, 1) cloth made of flax; 2) clothg. and household articles made from L. thread, esp. underclothes, table-cloths, sheets, etc.

**Liners**, ships, usu. of at least 8,000 gross tons, carrying passengers and/or mails or cargo on regular routes, e.g., Southampton-New York, London-River Plate; irreg. traffic is undertaken by *tramp steamers* (q.v.).

**Ling**, 1) member of the cod family, usually from 4 to 6 ft. in length, with long barbel on chin, elongated body, fins narrow and very flexible; common on Brit. coasts, particularly off the Orkneys, Shetlands, and Faeroe Isles. 2) (Bot.) The common heath or heather (q.v.).

**Lingam**, Ind. symbol of fertility, repres. male organ. Ant.: *yoni*, sym. for female organ.

**Lingard**, John (1771-1851), Eng. R. C. priest and historian, vice-pres. of R.C. Coll. at Crookhall, 1794-1811; *History of England* (8 vols.), 1819-30; *Antiquities of the Anglo-Saxon Church*, 1845.

**Lingfield**, par. and vill., Surrey, 3 m. N.E. of East Grinstead; pop. (parish), 5,000; race-course at *L. Park*; meetings, Apr., May, July, Oct., Nov.; stpches., Jan., Feb., May, November.

**Lingua Franca**, mixed jargon used betw. French and other Western peop. and Arabs, Moors, etc.; any internat. dialect.

**Linguistics**: see PHILOLOGY.

**Link**, (surveying) 7.92 in.; one-hundredth part of a chain (q.v.).

**Linköping**, cap., prov. of Ostergötland, Sweden, on the Stanga and Kinda Canal; pop., 29,185; Luth. bpric.; cathed.; manuf. tobacco.

**Links**, grassy, undulating land, esp. grassy sandhills nr. the sea; specif., course laid out for golf, whether on the coast or inland.

**Linlithgow**, co. tn. and royal burgh, West Lothian; pop., 3,700; birthplace Mary Qn. of Scots (in L. Palace). **Linlithgowshire**: see WEST LOTHIAN.

**borealis**, trailing plant of order



Line Ahead

*Caprifoliaceae*, found in European and N. Asiatic and Amer. pine-forests; small, bell-shaped, pink flowers; used by Lapps as remedy for rheumatism.

**Linnaeus**, Charles (1707-78), Swed. botanist; devised Ln. system of classification; *Species Plantarum*, 1753.

**Linnean Society**, a learned zoological and botanical society, supplementary to the Royal Society (q.v.), fndd. by Sir J. E. Smith, 1788; granted royal charter, 1802; based on collections of Linnaeus (q.v.); occupies apartments in Burlington House (q.v.).

**Linnell**, John (1792-1882), Brit. painter and engraver: *Wood Cutters*; *The Windmill*; *The Last Load*.

**Linnet**, bird of the finch tribe; ranges throughout Britain, Europe, and into Asia; in summer the cock has red on breast and head; frequents furze-covered commons and open land.

**Linoleum**, material (used as floor covering, etc.) made by boiling linseed oil with lead or manganese dioxide (to make it harden more quickly), and mixg. it with mineral dyes, resin, and cork dust; strips of jute cloth are soaked in this mixture and allowed to dry; they are then soaked again, process being repeated until fabric is hard enough to stand being passed through heated rollers. **L. cut**, process of engraving similar to wood-engraving (q.v.) in wh. design is cut in L. instead of wood.

**Linotype**: see TYPE-COMPOSING MACHINES.

**Linseed oil**, dark yellow, fatty oil pressed from hemp-seed, wh. easily oxidises to gummy and finally hard mass; used for food, also in indus. for making linoleum and as chief component of oil paints.

**Lint**, soft linen having one side scraped to a woolly surface; used for dressg. wounds.

**Lintel**, (bldg.) horizontal beam across opening in wall, partic. door or window.

**Linus**, St., Pope (c. 67-c. 79): name appears at head of all lists of bps. of Rome as immediate successor to St. Peter; accdg. to *Liber Pontificalis*, he was martyred and buried in Vatican.

**Linz**, cap. of Upper Austria, on Riv. Danube; riv. port; commercial academy, State museum; textiles; pop., 103,000.

**Lion**, largest of great cats; ranges from S. Rhodesia to Persia and N.W. India. Entirely carnivorous, hunting prey at dusk or during night; male has abundant mane on head and shoulders. **L.-monkey**, (**L.-marmoset**), small golden-haired monkey inhabiting forests of Brazil. **L. of the Netherlands**, Order of the, Dutch civil order of merit, fndd., 1815.



Linnaeus

**Lion, Gulf of, Golfe du Lion**, bay in N.W. Mediterranean, S. of France.

**Lipa**, tn. in isl. of Luzon, Philippines; pop., 47,000; coca, tobacco, maize.

**Lipari Islands** (anc. *Aeolian Islands*), group of six large and 11 smaller volcanic isls. N. of Sicily (active volcanoes: Stromboli and Vulcano); fertile; exports sulphur and pumice stone; used as penal settlement for opponents of Fascism; cap., *Lipari*, on Lipari Island.

**Lipase**, a ferment, or enzyme, present in pancreatic juice which aids the digestion of fat. Fat is split by the lipase into glycerol and a fatty acid, e.g., oleic acid.

**Lipoid**, (physiol.) fat-like substance of the animal and vegetable cell; as opposed to fats, it is not saponifiable and often contains phosphorus or nitrogen (or both); lecithin, and cholesterol are *Ls.* present in nerve-substance, and cholesterol is also found in bile.

**Lipoma**, (med.) fatty tumour under the skin.

**Lippau, Battle of:** see *HUSSITES*.

**Lippe**, repub., Ger., area, 469 sq.m.; pop., 164,000; in the Weser basin; cattle breeding; cap., *Detmold*. Principality of Schaumburg-Lippe, 1720-1918.

**Lippi**, name of 3 Italian painters: 1) **Fra Filippo** (*Lippo*) (1406-69), frescoes in choir of Prato Cathedral; altar-piece for nuns of S. Ambrogio; *Virgin Adoring the Infant Christ*. 2) His son, **Filippino** (1457-1504), altar-piece for Nerli chapel in S. Spirito; *Virgin and Child between Sts. Jerome and Dominic*. 3) **Lorenzo** (1606-64), painter and poet.

**Lippmann**, Gabriel (1845-1921), Fr. physicist; Nobel Prize (Physics), 1912; conducted researches in colour-photography; invented a capillary electrometer, an astatic galvanometer, a collostast, etc.; elected F.R.S., 1908; pres. of Paris Acad. of Science, 1912.

**Lipton**, Sir Thomas (1850-1931), Brit. merchant and sportsman; frequent challenger (1899-1930) for the America's Cup with yachts "Shamrock."

**Liquation**, in metallurgy, seprtn. of 2 metals with diff. m.p. by a careful fusion of more easily melted components of the alloy in a *L. furnace*.

**Liquefaction of gases**, (phys.) effected by pressure and reduc. of temp. only poss. below critical temperature (*q.v.*). **L. of air:** see *LIQUID AIR*.

**Liqueur**, highly alcoholic beverage, sweetened and flavoured with herbs, etc. Gen. used in small quantities as an after-dinner cordial.

**Liquid**, body which exerts no permanent

or elastic resistance to forces, however small, tending to change its shape, but possessing cohesion between its particles. *L.* comes to rest in vessel of any shape with horizontal free surface or surfaces; hence level of liquid in tubes or vessels with communication below liquid surface is everywhere same; surface behaves as if covered with stretched elastic membrane, result of attraction of particles for one another (see *SURFACE TENSION*). All liquids when cooled sufficiently become solid, usually they freeze at definite temp. forming crystals, but sometimes become solid gradually (e.g., glass). All boil when heated sufficiently, i.e., when their vapour pressure becomes equal to that of atmosphere. No substance can exist as liquid above its critical temp. (*q.v.*). Most liquids are "isotropic", i.e., have like properties in all directions, but crystalline liquids or liquid crystals are known wh. have optical characteristics of crystals.

**Liquid air**, (phys.) air liquefies at critical temp. of  $-140^{\circ}$  C, and critical pressure of 39 atmospheres. Manuf. (Linde's method):

air compressed at 200 atmospheres is allowed to expand in counter-current cooler where by it is cooled and liquefied. Liquid air can be kept only in *Dewar Flasks* (*q.v.*), open, double-walled vessels with exhausted space betw. the walls. Used in blasting, when containers of cardboard filled with coal dust saturated with liq. air are caused to explode by a suitable detonator. Also used in mining operations, clearing work, etc.

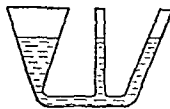
**Liquidambar**, sweet gum, deciduous tree ind. in Amer. and Asia Minor, producing fragrant gum used as perfume; wood used for veneering.

**Liquidation**, (finan.) winding-up of an enterprise and realization of assets to be distribtd. among creditors and shareholders. *L.* may be *voluntary*, i.e., freely decidd. by firm in ques., or *involuntary*, i.e., compelled by court of law. See *BANKRUPTCY*.

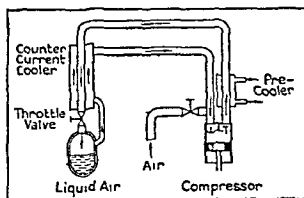
**Liquid fire:** see *GREEK FIRE*.

**Liquids**, (phon.) liquid or flowing sounds: *l, r*, sometimes *m, n*.

**Liquorice**, Span. sweetwood, dried rhizome and roots of *Glycyrrhizaglabra*; plant growing widely in S. Eur. and cultiwd. in



Liquid in Communicating Tubes and Vessels



Liquid Air



Sir Thomas Lipton

Sp. and It.; the juice is extracted and dried; demulcent and mildly expectorant; forms valuable ingred. in simple cough med. On acc. of its pleasant taste often employed to disguise nauseous-flavoured drugs, and to a small extent in confectionery.

**Lira**, Ital. silver coin and monetary unit, equiv. to *Fr. franc* (q.v.) = 100 centesimi, abt.  $\frac{9}{16}$  d. (\$0.19) at par.

**Lisbon, Lisboa**, cap. of Portugal, at mouth of the Tagus; strongly fortified; pop., 486,400; univ.; cathed.; fine squares, gardens, and streets; seapt.; docks; exports wine, fruits, oil, salt, cork, cattle, tin. Almost destroyed by earthquake on 1 Nov., 1755.

**Lissa**, 1) see VIS; 2) see LESNO.

**Lissauer**, Ernest (1882-), Ger. auth.; lyrics, essays; *Hymn of Hale*.

**List**, Friedr. (1789-1846), Ger. pol. econ.; *The Nat. System of Polit. Economy*.

**Lister**, Joseph Lister, 1st bn. (1827-1912), Eng. surgeon; 1st to use antiseptics in med. practice, 1865.

**Liszt**, Franz (1811-86), Hung. pianist and composer; championed Wagner (q.v.); joined Franciscan order, 1865; *Hungarian Rhapsodies*; *Dante and Faust* symphonies; *Die Heilige Elizabeth*.

**Li Tai Po** (701-762), Chin. lyric poet; *Ku T'ang Shih Ho Ch'ich*.

**Litany**, (eccles.) earnest prayer and supplication recited by priest, with recurring response repeated by congregation.

**Litchi, lée chee**, Chinese tree bearing round pulpy fruit enclosed in thin shell.

**Litterae humaniores**, (Lat.) abbr. *lit. hum.*; final honours exam. in classics and philosophy at Oxford University; familiarly called "Greats."

**Litera scripta manet** (Lat.), the written letter remains; i.e., the written word is more durable than the spoken word.

**Litharge**, lead oxide (PbO). See LEAD.

**Lithium**, chem. element; sym. Li, at. wt., 6.940; sp. gr. 0.53; m.p. 179°C; soft, white alkali metal; L. carbonate and chloride occur in certain artific. min. waters; formerly supposed to be a specific for gout.

**Lithography**, printing process inv. by Alois Senefelder, 1796; design to be produced is drawn or transferred to the stone or to a metal plate in a special greasy ink; treatment with acid hardens the ink and very slightly etches the rest of the stone or plate. In printing, the surface is kept moist with water which is absorbed by the blank parts and

repelled by the lines of the design, while the ink is repelled by the blank parts but adheres to the design. **Chromolithography**, same process used for colour printing; a separate stone or plate used for each colour. In **Photolithography**, the design is transferred to stone or plate photographically. **Offset l.**, design transferred to zinc or aluminium plate which is curved to fit the cylinder of a press having two other cylinders (besides inking and damping rollers), one of wh. is covered with a rubber blanket which receives the impression on its surface, to transfer it again to the paper which is fed on to the third cylinder; possible by this method to print on very rough paper. Tin-plate printing effected in much the same way.

**Lithopone**, white pigment, mixture of barium sulphate and zinc sulphide; non-poisonous and, if pure, does not turn black.

**Lithosphere**, solid part of the earth as distinct from the two envelopes of water and gas (hydrosphere and atmosphere); div. into *outer crust and nucleus*.

**Lithotomy**, (surg.) operation of cutting the bladder, usu. for removal of a stone or stones. **Lithotripsy**, operation for crushing a stone in the bladder.

**Lithuania, Lietuva**, southernmost of the Baltic repubs. succeeding to the Russ. Baltic Provs.; bounded N. by Latvia, E. by Poland, S. by Poland and E. Prussia, and W. by the Baltic. Area, c. 21,000 sq.m.; pop., 3,500,000. Coast-line only 12 m. long with autonomous terr. of Memel (q.v.). Interior forest and marshland watered by rivs. Memel (Niemen) and Viliya; cereals, flax, potatoes, cattle; rlys., 1,250 m.; cap., *Kaunas* (Kovno). Polish boundary still unsettled; large area, incl. Vilná (*Wilno*), L's prospective cap., disputed. Const.: *President* (7 yrs.) elected by Dict of 112 members. Hist.: Indept. grand duchy under Gedimin, 317; allied to Poland through marriage of Jagiello to Polish Queen Hedvig, 1382; Russian, 1795-1917; peace with Russia, 1920; with Allies, 1922. Seizure by Poles of Vilna in 1920 followed by Lithuanian annexation of Memel in 1923.

**Lithuanian Language**: see LANGUAGE SURVEY, *Baltic Languages*.

**Lit. Hum.**, abbr. *litterae humaniores* (Lat.), classics.

**Litmus**, organic chem. dye from var. lichens; used chemically as indicator (q.v.); turns blue with alkalis and red with acids; used either in solution or as strips of paper wh. have been soaked in the dye.

**Litre**, 1.75999 pints; the volume of 1 kilo. of pure water at its maximum density (at 4°C) and under standard atmospheric pressure (760 mm.). It is equivalent to 1.000027 cu. decimetres, or 61.025 cu. in.



Lister



Franz Liszt



**Little Entente**, polit. combination of Czechoslovakia, Poland, Rumania, and Jugoslavia, formed at close of World War.

**Little-go**, colloquial name for 1st public examination at Cambridge Univ. in series of exams. to be passed in obtaining B.A. degree.

**Littlehampton**, urb. dist. and seaside resort, W. Sussex, at mouth Riv. Arun; pop., 11,000.

**Little Masters**, school of Ger. copper-plate engravers of 16th cent., influenced by Dürer.

**Little oleander hawk-moth**, a green-winged species, sometimes known as the *Evening Primrose Hawk-moth*; larvae feed on evening primrose and willow-herb.



**Littleport**, parish, Cambs, 5 m. N.E. of Ely; pop., 4,500; championships of Nat. Skating Association (q.v.).

**Little Rock**, cap., Arkansas, U.S.A.; pop., 70,000; cotton; machinery.

**Littleton**, Sir Thomas (c. 1402-81), Eng. judge and writer; kg's sergeant, 1455; wrote a *Treatise on Tenures*, dealing with Eng. property laws, edited by Sir Edw. Coke ("Coke upon Littleton"), 1628-44.

**Littre**, Maximilian Paul Émile (1801-81), Fr. lexicog. and philosopher; *Dictionary of the French Language*, 1873; *Paroles de la philosophie positive*, 1859.

**Liturgy**, estabd. and prescribed formularies used in churches at public worship; esp. forms and services used in celebration of Mass. Oldest L.'s those of St. James, St. Basil, St. Chrysostom (still used by Eastern Church); Coptic L.'s; Roman Missal and its derivatives, e.g., Sarum and York Uses in England, and the Book of Common Prayer of the Anglican Church.

**Litvinov**, Maxim Maximovich (1876- ), Russ. revolvary.; joined Bolsh. section in split of Russ. Soc.-Dem. Party, 1903; escaped to England after abortive revln. of 1905-06; apptd. 1st. Sov. ambassador, 1917, not recognized by Brit. Govt.; apptd. Foreign Commissar, 1930.

**Livadia**, cap., Bœotia, Greece; pop., 12,885; cotton.

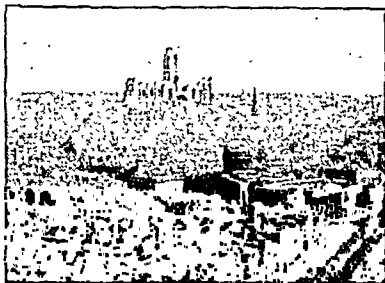
**Liver**, (physiol.) largest gland of body, situated on right side of abdomen under the ribs. Secretes bile; regulates metabolism of protein and carbohydrate; stores carbohydrates in form of glycogen; destroys harmful products of protein-breakdown. **Enlargement of l.**, swelling caused either by obstruction to blood-flow when heart is diseased, or by damage to L., as in cirrhosis (q.v.). Cancer of the l., generally result of cancer of stomach or bowels.

**Liverfluke**, trematodes sometimes found as parasites in large numbers in the liver of

sheep and other herbivorous mammals, causing a disease of the liver. Eggs pass out in excrements, and from them develop aquatic larvae which change form several times (intermediate host: marsh snail), and finally encyst in grasses, together with which they are swallowed by the final host.

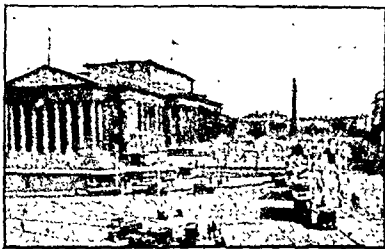
**Liverpool**, Robert Banks Jenkinson, 2nd E. of (1770-1828), Eng. statesm.; Foreign Sec., 1801; Sec. for Home Affairs, 1804; Sec. for War, 1809-12; Prime Min., 1812-27.

**Liverpool**, city in Lancs, Eng., at mouth of Riv. Mersey; pop., 855,500; third city in



Liverpool Cathedral

Gt. Brit. and second largest seapt.; extensive docks; shipp. and manuf., ropes, iron, chemicals, cotton; Angl. cathed. (unfinished, begun 1904), largest in Eng.; R.C. cathed.,



St. George's Hall, Liverpool

begun 1933; univ. (1903); classical Town Hall and many other important public buildings. Tunnels and ferries across Riv. Mersey to Birkenhead. Governed by corporation under lord mayor.

**Liverwort**, *Peltigera canina*, lichen used in folk medicine as a simple purgative.

**Livery**, in Mid. Ages, dress of retainers of a noble house; now male servants' uniform. **L. stables**, place where horses, and usu. carriages, are kept for hire.

**Livery companies**, 78 fraternities in the city of London originating from medieval craft guilds, but now enjoying no trade monopolies: their members (liverymen) are free-men of the City, and elect the lord mayor and sheriffs; their chief activity is the administration of charities, and of sums in support of



education, industrial and scientific research, etc., though a few (e.g., Goldsmiths and Fishmongers) still exercise public functions in connection with their trades. The twelve great companies in order of precedence (with number of liverymen) are: Mercers (228), Grocers (158), Drapers (180), Fishmongers (273), Goldsmiths (150), Skinners (197), Merchant Taylors (329), Haberdashers (325), Salters (146), Ironmongers (31), Vintners (201), Cloth-workers (168).

**Livia (Drusilla)** (58 B.C. to A.D. 29), married 1st, Tiberius Claudius Nero; 2nd, Augustus; Rom. empress; joint ruler with her s. Tiberius.

**Living languages**, langs. still spoken. Ant.: *Dead languages*: Lat., Anc. Greek, Aramaic, O.H. Ger., etc.

**Livingstone**, 1) David (1813-73), Scot. missionary and explorer in Africa; disc.

Victoria Falls, 1855; Lakes Shirwa and Nyasa, 1858-59, etc.; rescd. by Stanley (q.v.), 1871. 2) Cap. of N. Rhodesia, named after the explorer (*but see LUSAKA*). **L. Falls**, falls (70 ft.) in S. Congo, nr. Boma. **L. Mtns.** (10,400 ft.), range N.E. of L. Nyasa.

**Livistonia**, Asiatic and Australian fan palms, often cultivated in hot-houses.

**Livlus**, 1) **Andronicus** (c. 284-204 B.C.), introduced Greek literature to Romans through translations, by wh. he fndd. Latin epic poetry and drama. 2) **Titus** (59 B.C.-A.D. 17), Roman historian; wrote history of Rome, *Ab urbe condita libri*, in 142 books, of wh. only 35 are extant.

**Livonia**, former Russian Baltic Prov., on Gulf of Riga; former area, 18,150 sq.m.; in 1919 divided into Latvian prov. of *Vidzeme* (q.v.) and several dists. of Estonia. Colonized by Germans in 12th cent.; Polish, 1561; Swedish, 1621; Russian, 1721-1915; occupied by Germans, 1915.

**Livorno**: see LEGHORN.

**Livre**, obsolete Fr. monetary unit and weight. As money, it was divided in 20 sous, each = 12 deniers (*cf.* Eng. £.s.d., to wh. these orig. corresponded); depreciated early, became abt. equiv. to *franc* wh. replaced it as official monetary unit. As wt., value varied, different towns having different standards.

**Livy**: see LIVIUS.

**Lixiviation**, process of removing soluble from a mass of solid matter

(e.g., mineral ore) by repeated treatment with liquid (water, dilute acid, or alkali, etc.).

**Li Yuan-hung** (1864-1928), Chinese statesman; in navy during war with Japan; 1st Vice-Pres. of Chinese Republ., President, 1916-17, 1922-23, when forced to resign; tried to reunite China by peaceable means.

**Lizard**, S. penins. of Cornwall (200-350 ft.); fine cliff-scenery. **L. Head** is southernmost point of Eng., lat. 49° 58' N.; long. 5° 12' W.

**Lizard**, active reptile, of which 1,700 species are known, chfly. inhabiting warm and tropical countries. With the exception of the blind-worm (q.v.), all lizards have well developed limbs and tail; many are brightly coloured, and, except the few species belonging to the poisonous family, *Helodermatidae* of America, are harmless. Vary greatly in size from a few inches to 10 or 12 feet. Majority feed on insects; *see also* FLYING LIZARD; IGUANA; KOMODO DRAGON; MONITOR.

**Ljubljana, Laibach**, tn., Jugoslavia; pop., 41,700; univ.; cathed., museum; cotton and tobacco industries; tourist centre; cap. of Austrian Duchy of Carniola till 1918.

**Llama**, S. Amer. representative of the Old World camel; domesticated variety of the guanaco; (q.v.); bred as beast of burden and for its valuable wool. Of the two wild species, *vicuña* is the smaller.

**Llanberis**, slate-quarrying tn., Caernarvonsh., N. Wales, on Llyn Padarn (2 m. long), 9 m. E.S.E. of Caernarvon; pop., 2,500; at foot of Snowdon and of Pass of Llanberis (1,170 ft.; to Bettws-y-Coed).

**Llandaff**, city, Glam., S. Wales, Llama on Riv. Taff, 2 m. N.W. of Cardiff, of wh.

it forms part; pop., 13,300; the see dates from 6th cent.; 12th cent. cathed., restored, 1850.

**Llandovery**, bor. Carmarthensh., Wales, on Riv. Towy; coll. (1848); pop., 2,000.

**Llandrindod Wells**, tn. and inland watering-place, Radnorsh., centr. Wales; mineral springs; pop., 3,000.

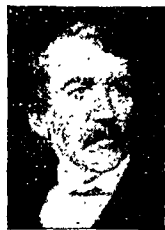
**Llandudno**, tn. and seaside resort, Caernarvonsh., N. Wales, betw. Great Orme and Little Orme; pop., 13,700.

**Llanelli**, co. bor., Carmarthensh. S. Wales; mkt. tn. and seapt.; manuf. iron, copper, tin; pop., 38,000.

**Llanfairfechan**, watering-pl. on N. Wales coast, N.E. Caernarvonsh., at foot of *Penmaenmawr* (1,553 ft.), 7 m. W.S.W. of Conway; pop., 3,200.



Livia



Livingstone



Llama



By courtesy of Cardiff City Council

Llandaff Cathedral

**Llangollen**, mkt. tn. and tourist resort, enbighsh., Wales, on Riv. Dee; pop., 300. Home of the "*Ladies of L.*" (at Plas Newydd): Lady Eleanor Butler (d. 1829) and on. Sarah Ponsonby (d. 1831).

**Llano**, one of the extensive plains or pampas in S. America.

**Llanthony Priory**, ruined monastery, 6 m. N.W. of Abergavenny, Mon.; fndd., 1107; estate bought in 1811 by W. S. Landor for an abortive scheme of social betterment.

**L. Monastery**, fndd. 1870 for Anglican Benedictines by Father Ignatius (q.v.).

**LL.B.**, abbr. *Legum Baccalaureus* (Lat.), Bachelor of Laws.

**Llewellyn**, two Welsh princes: **Ll. ap Iorwerth** (d. 1240), pr. of N. Wales; marr. dau. of Kg. John of Eng.; conquered S. Wales, and finally submitted to Henry II, 1237. **Ll. ap Gryffydd** (d. 1282), Pr. of N. Wales; warred with Henry III and Edw. I of Eng. after swearing fealty; slain in a skirmish, nr. Builth.

**Llewellyn**, Sir William (1863- ), Brit. painter; R.A., 1920; pres. of R.A., 1928; state portrait of Qn. Mary.

**Lleyn Peninsula**, S.W. penins. Caernarvonsh., N. Wales, betw. Caernarvon and Cardigan bays; well wooded; isolated hills The Rivals 1,845 ft.).

**Lloyd, Edward** (1815-90), Brit. publisher and newspaper proprietor; fndr., *Lloyd's Weekly News*, 1842 (title changed to *Lloyd's Sunday News* in 1921, and to *Sunday News* in 1924); owner *Daily Chronicle* from 1876.

... **Edward** (1845-1927), Eng. tenor singer; chorister, Westminster Abbey; gentleman of Chapel Royal, 1869; retired, 1900. **L., George Ambrose L.**, 1st bn. (1879- ), Brit. administrator; attaché to Brit. embassy, Constantinople, 1905; M.P., 1910-18, 1924-25; Gov. of Bombay, 1918-23; High Commissioner for Egy. and Sudan, 1925-29. **L., Marie** (1870-1922), Brit. music-hall artist; pre-eminent in songs of cockney humour: *Everything in the Garden's Lovely*; *I Do Like to Be Beside the Sea Side*; etc.

**Lloyd George**, David (1863- ), Welsh polit.; elected Lib. M.P. Caernarvon Burghs 1890; 1908, Chanc. of Exchequer, introd. land-taxing budget and national insurance; Min. of Munitions, 1915; Pr. Min. in Coalitn. Govt., 1916, resigned 1922; leader of Lib. Party till formatn. of Nat. Govt. 1931 when sections led by Samuel and Simon repudiated his direction.



Lloyd George

**Lloyd barrage**: see SUKKUR.

**Lloyd's**, marine insur. organisation; dates from end of 17th cent. and is named after

coffee-house owned by Edward Lloyd at wh. shipowners and underwriters met to do business; later estab'd. in other countries also. Not an insur. co. but an association of individ. underwriters. Also undertakes classification of ships; extension of signal and salvage systems; daily publication of *Lloyd's List* showing whereabouts of all ships. L. underwriters engage in all other types of insur. (except Life Insur.), but period of policies is limited to one yr. See MARINE INSURANCE.

**Lloyd's Bank, Ltd.**, Brit. bank, fndd. as Ll.'s Banking Co., Ltd., 1865; name changed to Ll.'s, Barnett's, and Bosanquet's, 1884, and to pres. title 1889; has absorbed many local banks. See BANKS, BIG

FIVE.

**Loach**, small teleostean fish of carp tribe, frequenting running streams; fairly common in England and on Continent; upper jaw furnished with three pairs of barbels. The allied **Spiny l.** takes its name from a pair of forked spines below the eyes.



Loach

**Load**, a measure varying according to material; in U.S.A. a timber measure (50 cu. ft.). **L. of hay**, 36 trusses; see TRUSS.

**Loading bridge**, bridge over railway line, roadway, etc., for loading and unloading large objects into or out of trucks, lorries, etc.; used in Germany.

**Loadstone mountain**, hill or mountain composed largely of rocks containing a high percentage of magnetic ironstone (cf. MAGNETOGORSK). Incidental in many old legends.

**Loam**, 1) soil for growing plants, containing sand, clay, and decomposed vegetable-matter. 2) Mixture of sand, clay, and straw used for making casting-moulds.

**Loan capital**, money raised by a company upon debentures (q.v.) as opposed to *share capital*. Int. on former must be paid irrespec. of rate of profit, while dividends are distribd. to shareholders in proportion to profits after loan interest, reserves, etc., have been deducted.

**Loanda**, cap. of Portug. colony of Angola, W. Africa; pop., 20,000; seaport.

**Loan word**, forgn. word incorporated in another language.

**Lobachevski**, Nik. Ivanovich (1793-1856), Russ. mathemat.; pioneer of modern geometrics; *Geometrische Untersuchungen zur Theorie der Parallellinien*, 1840, 1887; *Pan-géométrie*.

**Lobby**, a hall, anteroom, waiting-room; esp. the large hall in the Eng. House of Commons open to the public, in wh. members of the House interview their constituents and others; also the **Division l.**, the corridor to which members go to vote on a division.

**Lobelia**, herbaceous plant, blue-bell-shaped flowers; cultivated in borders. The

*great blue L.* is *Lobelia syphililica*. Variety *L. inflata* is used in folk med. as an expectorant and anti-asthmatic; also known as *Indian tobacco*.

**Lobengula** (c. 1833-94), Matabele kg.; opposed Christianity and civilization; accepted Brit. protection, 1888; revolt of Matabele, 1893; army deftd. and dispersed; L.'s capital, Buluwayo, taken.

**Lobito Bay**, port, Angola, Africa; terminus Benguela Rly. (q.v.); pop., 800.

**Lobster**, large crustacean, with long, slender body, formidable claws, and fan-shaped tail; lives in clefts in the rocks off shore; passes through a series of larval stages, and, when adult, continues to grow and cast its shelly armour periodically.



Lobster

**Lobworm**, chaetopod worm living in sand on seashore, dark bronze-green in colour with scarlet gill-tufts; useful as bait.

**Local**, pertaining to a partic. place or definite district. **L. authority**, generic name for gov. body of one of the administ. areas into wh. Eng. and Wales are divided. Councils of parishes, rural dists., urb. dists., bors., and counties. **L. education authority**, represntd. in Gt. Brit. by county councils and county bors.; bors. with pop. over 10,000, and urban dists. with pop. over 20,000 have autonomous powers in regard to elementary education, and may provide or assist higher education, under supervision of Board of Education. **L. government**, gov. by pers. or bodies (sometimes loc. elected, sometimes nominated by nat. Govt.) concerned with promoting loc. services or interests (e.g., water supply or drainage) as distinct from nat. services. **L. Government Board**, dept. of Brit. Govt. created 1871 to supervise loc. authorities (q.v.). Had centr. supervision of loc. finance, pub. assistance (q.v.) and pub. provision for promoting health. Merged in Ministry of Health, 1919. **L. option**, form of plebiscite (q.v.) for locally determining course of action. Specif. proposal adopted (not in Eng.) under wh. inhabitants vote on ques. of locally prohibiting alcohol. **L. taxation**: see RATES. **L. time, mean**, mean solar time (q.v.) on any given meridian; varies by 4 minutes for each degree of longitude; generally superseded by Zone Standard Time (q.v.).

**Locarno**, tn., canton of Ticino, Switzerland, on L. Maggiore; pop., 11,500; tourist resort. **L. Pact**, signed 16 Oct., 1925, by Gt. Brit., Fr., Belgium, Ger., and It., who mutually agreed to guarantee peace in W. Europe; confirmed W. Eur. frontiers as fixed by Treaty of Versailles.

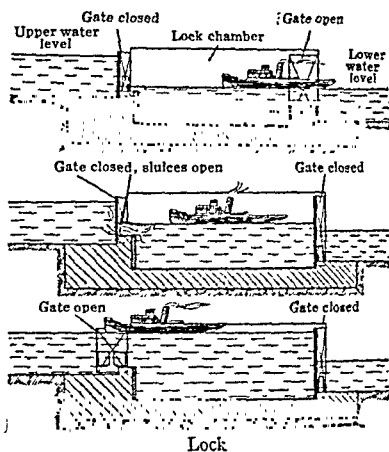
**Locative**, (gram.) oblique case, ans. to .. where?

**Lochaber**, dist., S. Inverness-sh., Scot.; includes Ben Nevis (q.v.) and L. hydro-electric works.

**Lochia**, (med.) discharge from the genital passages after child-birth, consisting of serum and blood: normal duration 2-3 weeks.

**Loch Lomond**, Stirlingsh. and Dumbartonsh., Scot., largest lake in Gt. Brit.; 24 m. by  $\frac{3}{4}$  to 5 miles, 27 $\frac{1}{4}$  sq. miles.

**Lock**, 1) (tech.) safety device for fastening anything; consists in main of latch (closing mechanism), catches (for obstructing the closing mechanism), and key (for freeing obstruction and actuating latch). Increased security usu. by means of tumbler-spring; key is cut to a pattern corresponding to arrangement and number of tumbler-springs. Keyless Ls.: **Letter L.** also **cipher L.**; the setting of the tumbler-springs effected by hand by means of letter indicators. For safes containing money and valuables there are also **time-ls.**, in which several clockwork



mechanisms keep the L. fastened until a desired moment of time. 2) (Naut.) Contrivance for passing vessels from one water surface to another at a different level; effected by equalizing enclosure with lock-gates at each end; filling water is let in thr. sluices that may be raised. In the case of great differences of level a series of locks (staircase) is used. 3) (Milit.) In firearms, operating mechanism at the breech.

**Locke, John** (1632-1704), Eng. philos.; *Essay Concerning Human Understanding*, 1690; *Thoughts on Education*, 1693; *A Paraphrase and Notes on the Epistles of St. Paul*.

**L., William John** (1863-1930), Brit. novelist and playwright: *The Morals of*



John Locke

*Marcus Ordeyne*, 1905; *The Beloved Vagabond*, 1906; *Ancestor Jorico*, 1929; play: *The Man from the Sea*, 1910.

**Lockhart**, John Gibson (1794-1854), Brit. writer and ed.; *Life of Sir Walter Scott*.

**Lockjaw**: see TETANUS.

**Lock-out**, cessation of work in an industry due to notice given by employers to men. Ant.: strike (*q.v.*).

**Lock-up**, (Stk. Exch.) security expected to appreciate in value ultimately, but not likely to rise in price or pay high dividend in near future.

**Lockyer**, Sir Joseph Norman (1836-1920), Eng. astronomer; director Solar Physics Lab., S. Kensington, 1885-1913; president Brit. Assoc., 1903-4; leader of many eclipse expeditions for the govt.; author of many works, incldg. *Chemistry of the Sun*, 1887; *The Sun's Place in Nature*, 1897; *Inorganic Evolution*, 1900; and *Stonchenge, etc., Astronomically Considered*, 1906.

**Loco citato** (Lat.), in the place cited; used in giving a literary reference.

**Locomotive**, engine for drawing wheeled vehicles on rails; driven by steam, electricity, oil, petrol, power gas, compressed air. **Steam L.**, consists of boiler, with fire-box, steam engine (*q.v.*) on under-carriage; fuel, coal or oil. Boiler usually fire-tube; steam pressure, 12-18 atm. usually super-heated to abt. 400° C. **Turbo L.**, driven by steam-turbines; also turbo-electric and Diesel electric, in which steam turbine or Diesel engine generates electricity, which then drives locomotive. **Electric L.**, power taken from over-head wires or third rail. **Compressed air L.**, mostly used in mines; air carried in cylinders. Fastest modern L. weighs 15-20 tons, speed 80 m.p.h., power 1,400-2,000 hp.; weight of train 4,000-5,000 tons; diameter of driving wheel 6-8 feet. Recent tests have been made of L. driven by *air-screw* attaining speed of abt. 150 miles per hour.

**Locomotor ataxia**: see TABES DORSALIS.

**Locris**, in anc. Greece, two districts on Gulf of Corinth and Euboean Channel respectively; inhab. by Locrians.

**Locum tenens** (Lat.), place-holder; substitute, esp. for a doctor or clergyman during his absence.

**Locus standi** (Lat.), ground to stand on; right to appear in a court, etc.

**Locust**, migratory tropical and sub-tropical grasshoppers, moving from place to place, in dense swarms, and devouring all vegetation when they settle. Various methods have been employed to destroy these swarms or the larvae: Trenches dug across their path when insects are in hopper stage; distribution of poisonous dust from aeroplanes, etc. **L.-tree**: see CAROB.

**Lode**, (min.) vein of ore contained in stratum of rock.

**Lodge**, Sir Oliver (1851- ), Brit. physicist, prominent as research worker in electrical energy, wireless telegraphy, etc., and as a believer in survival after death; 1st principal of Birmingham Univ., 1900-19; Albert Medal of Royal Society of Arts, 1919. **L., Thomas** (c. 1558-1625), Eng. author and dramatist; works incl. the romance *Rosalynde: Euphues Golden Legacie*, 1590, founded on the *Tale of Sir Gamelyn*, to which Shakespeare's *As You Like It* is much indebted.



Sir Oliver Lodge

**Lodge**, union of freemasons; *Grand Lodge*, head of all Lodges. Also, any unit of a federated society for friendly purposes (Buffaloes; old-fashioned trade unions).

**Lodi**, tn., in dept. Milan, Italy, on Riv. Adda; pop., 30,000; 12th cent. cathed.; majolica; Parmesan cheese. Scene of Napoleon's victory over the Austrians, 10 May, 1796.

**Lodolcea**, tall fan palm of the Seychelles Isles, with large fruit (sea coconut).

**Lodz**, 1) prov. Poland (area, 7,345 sq.m.; pop., 2,470,000). 2) Cap. of prov. Lodz; pop., 605,000 (incl. over 30,000 Ger.); on the Lodka; large textile industry (the "Manchester" of Poland); occupied by Germans, 1914.

**Loeb**, James (1867-1933), Amer. banker and philanthropist; fndd. Loeb Classical Library, 1912, and promoted Deutsche Forschungsanstalt f. Psychiatrie at Munich, 1st institution for study of causes of insanity.

**Loeffler**, Charles Martin Tornov (1861- ), Amer. composer; many important orchest. works. **L., Friedrich** (1852-1915), Ger. bacteriol.; isolated diphtheria bacillus, 1884; bacteria of erysipelas in pigs, 1882; showed foot-and-mouth disease caused by filterable virus, and inoculated successfully agnst. it.

**Loess**, fine siliceous and calcareous earth of brownish-yellow colour, found esp. in N. China, centr. U.S.A., and centr. Europe.

**Lofoten, Lofoden**, group isls. off N.W. coast of Norway; mountainous (up to 4,000 ft.); many narrow channels with strong currents and eddies, incl. Maelstrom (*q.v.*); cod and herring fisheries.

**Log**, (naut.) instrument for measuring speed of ships; modern L. consists of propeller, towed behind ship, with device for measuring speed on a dial; orig. piece of floating wood attached to knotted cord thrown out and reeled in at intervals. (see Ill. next p.).

**Logan, Mount**, peak, Yukon prov., borders Alaska, highest in Canada; 19,539 feet.

**Loganberry**, a hybrid betw. the raspberry and blackberry, first grown as a fruit-bearing shrub by Judge Logan of the Amer. bar in

1814; bears deep purple fruit resembling the raspberry in shape, but more acid in taste.

**Logaedic verse**, variety of trochees or iambic verse of dactyls + trochees, or anapaests + iambuses.

**Logarithm**, (math.) system to simplify arithmet. calculations; the log. of a no.  $n$  to

presents an early attempt to record and expand traditional teaching.

**Logic**, science of the laws of correct thought, originally formulated by Aristotle. 1) *Deductive or Formal L.* provides a basis for arriving at a particular conclusion from general truths, guarding against a possibility of fallacy; this form of argument known as *syllogism*. 2) *Inductive L.* starts with a range of hypotheses, partly observational and experiments to be even more valid; the universal truths of deductive L. is then built up to a conclusion.

**Logographi**, early Gr. writers of the 5th and 6th cents. B.C.

**Logos**. 1) (theol.) word in Gospel of St. John I, used for Christ, the Incarnate Word of God. 2) (Philos.) The conception of man as the inherent and controlling principle of the universe, or as the manifestation of the Supreme Being.

**Logwood**, the heart wood of *Hæmaphysalis*, a *Campeachum*, tree indigenous to Cuba, America, and cultivated in W. India; used as dyestuff and in med. as a mild astringent in diarrhoea and dysentery. Yucatan logwood (*Campeachy*) is considered to be the best.

**Lohengrin**, (Ger. legend) son of Parsifal; *the Knight of the Swan*. Title of opus by Wagner (G.A.), 1850. Elsa of Brabant, accused of drowning her brother, demands wonderful knight; calls on him to defend her in ordeal by battle; he appears; wins and marries her. She disobeys command never to ask his name, forcing him to reveal himself as son of Parsifal, and a kt. of the Holy Grail, and to leave her for ever.

**Lohenstein**, Dan. Kasper von (1633-88). Ger. poet; author of *Ciegefrida*, wh. is said to be 1st Ger. tragedy.

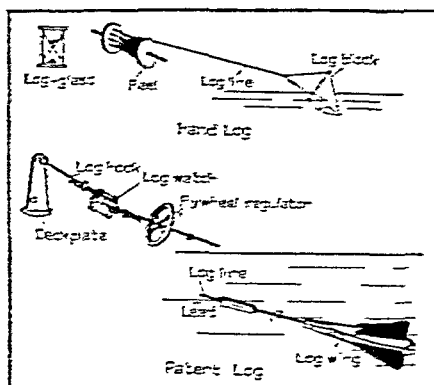
**Loir-et-Cher**, dépt., N. France. S.W. of Orléans; 1,178 sq.m.; pop., 211,592; horse-breeding, honey, stone quarries; pottery, woollens; cap., Blois.

**Loire**, 1) longest riv. in France; rises in the Cévennes and flows into the Atlantic, navig. for seagoing vessels up to Nantes; 545 m. long; connected by canal with the Saône and the Seine. 2) Dépt., France; 1,852 sq.m.; pop., 661,822; cap., St. Etienne. See also HAUTE-LOIRE.

**Loire-et-Haute-Loire**, dépt., W. France at Loire estuary; 1,603 sq.m.; pop., 68,072; sheep- and cattle-breeding, agric.; peat, anthracite, fisheries; shipb.; cap., Nantes.

**Loiret**, dépt., N. France; 1,630 sq.m.; pop., 342,679; agric. and forestry; pottery, weaving; cap., Orléans.

**Loisy**, Alfred (1857- ), Fr. Catholic theolog. and histor.; excomm. for work in higher criticism of Bible, 1908; *Les Évangiles synoptiques*, 1908; *Simples Réflexions sur le décret Lamentabili et sur l'encyclique Pascendi*.



Forms of Log

a base  $b$  is the exponent (G.A.) to which  $b$  must be raised to give  $n$ , thus if  $b = 10$  and  $n = 1,000$ , the log. is 3, because  $10^3 = 1,000$ . In common logs. (invented by Napier and Briggs in 17th cent.) the basic no. is 10. The log. of 10 is 1, and of 100 2, therefore log. of any no. betw. 10 and 100 is betw. 1 and 2, the log. of 75 being nearly 1.87506, and here the fig. 1 (the integral part) is termed the *characteristic*, and the decimal the *mantissa*. The processes of multiplying, dividing, and raising to a higher power are reduced to addition and subtraction by means of logarithms. The log. of a product equals the sum of the logs. of the factors, thus  $\log. (c \cdot b) = \log. c + \log. b$ ; the log. of a quotient equals log. of dividend minus log. of divisor, as  $\log. \frac{c}{b} = \log. c - \log. b$ ; other formulae are  $\log. a^x = x \log. a$ , and  $\log. \sqrt[n]{a} = \frac{1}{n} \log. a$ . *Natural or Napierian Logs.* take 2.718 . . . as the base. Logs. are grouped in tables up to a given power.

**Log-book**, ship's journal in wh. weather and princ. events of each watch (G.A.), etc., are recorded by successive officers of the watch.

**Loge**, (Fr.) box for spectators in theatre.

**Loggia**, (bldg.) open, pillared hall; terrace, roofed and shut in at ends, but open at one side; a garden room.

**Logia**, title given to a collection of the Sayings of Jesus discovered in Egy.; among the papyri from Oxyrhynchus were found (1897) a leaf with eight Sayings, in 1903 another with five more, and two fragments of unknown Gospels. Modern scholarship allocates the Sayings to the 2nd cent., and the Gospel fragments to early and late 2nd cent., respectively; the whole probably rep-

1908; *Les Mystères païens et le mystère chrétien*, 1914; *L'Apocalypse de Jean*, 1923.

**Lokeren**, tn., E. Flanders, Belgium; pop., 24,300; textiles.

**Loki**, one of the Aesir (g.v.) gods, representing the element of mischief and destruction in the Norse mythology.

**Lollards**, heretical sect, followers of John Wycliffe (d. 1384), whose struggle for liberalism within the Ch. foreshadowed the Reformation. *Lollards' Tower*, prison attached to episc. residences for detention of suspected heretics; cf. LAMBETH PALACE.

**Lombard**, Peter (c. 1100-1160), Ital. scholastic philosopher; Bp. of Paris, 1159; called "Master of Sentences" from his *Libri Sententiarum*, a compilation from the Fathers and, for long, a standard authority.

**Lombard loans**, **Lombard credits**, loans granted to bks. by centr. bks. on certain specified securities. Term used in U.S.A. and on Cont. of Eur. but seldom in England.

**Lombards**, Germanic race, settled in northern It. (*Lombardy*) A.D. 568; conqd. by Charlemagne in 774.

**Lombard Street**, London thoroughfare, from R. Exchange to Gracechurch St.; name from mediaeval Lombard money-lenders. Many great banks and offices.

**Lombardy**, prov. of N. Italy, in centr. Po basin; 9,190 sq.m.; pop., 5,545,000; very fertile; cap., *Milan*. **L. poplar**: see POPLAR.

**Lombok**, volcanic isl. (2,100 sq.m.) in Dut. E. Indies, betw. Bali and Sumbawa, separated from Bali by *Strait of L.*; San-karejan volcano, 12,460 ft. high; pop., 598,000 (mostly Mohammedan); rich tin deposits; cap., *Mataram*.

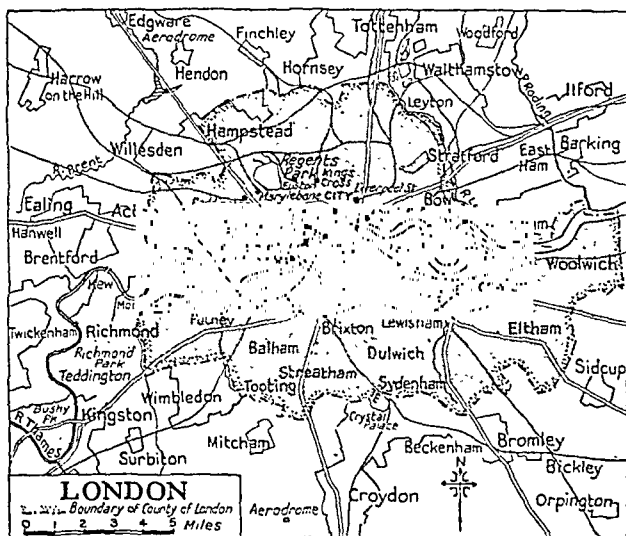
**Lombroso**, Cesare (1836-1909), Ital. criminologist and alienist; army surgeon, 1859; prof. of mental diseases, Pavia Univ., 1862; *The Criminal*, 1875; *The Man of Genius*, 1891.

**Lome**, cap. of former Ger. Togoland Protectorate, on Gulf of Guinea, W. Afr.; pop., 6,500.

**London**, "Jack," John Griffith (1876-1916); Amer. novel; *The People of the Abyss*, 1903; *Martin Eden*, 1909; *White Fang*, 1906; *South Sea Tales*, 1911.

**London**, adm. co., cap. of Eng. and

metropolis of Brit. Empire; world's greatest commercial and financial centre; 40 m. up Riv. Thames. **County of L.**, area 117 sq. m.; pop., 4,396,821; **Greater L.** (incl. parts of Kent, Surrey, Middx., Herts, and Essex), area c. 700 sq.m.; pop., 8,202,818 (largest city in world). L. is div. roughly into halves by Riv. Thames (many tunnels and bridges, incl. *London Bridge*, the oldest); over 400 rly. stations. Administratively div. into 2 cities and 27 met. boroughs. The **City of L.** (g.v.), the business and financial centre (with



*Bk. of England*), is oldest part (*Tower of L.*, 11th cent.); chief magistrate the Lord Mayor of L. *City of Westminster*, N. of Thames, includes Houses of Parliament and govt. offices, Westminster Abbey, Westminster Cathed., the Cenotaph, Buckingham Palace, and the West End, with its fashionable residential districts (Mayfair and Belgravia), theatres, clubs, and famous streets. *East End of L.* (incl. Whitechapel) is poorest and most unattractive quarter, though parts of the *Surrey Side* (i.e., S. of the Thames) are also very poor. Many fine and historic churches: St. Paul's Cathed., Westminster Abb.; palaces: Buckingham Palace, St. James's Palace, Marlborough House, Kensington Palace, Lambeth Palace (Abp. of Canterbury); museums: British Museum, Victoria and Albert Museum, London Museum; art galleries: National Gallery, National Portrait Gallery, Tate Gallery, Wallace Collection. Important univ.; famous public schools. Unrivalled series of parks and open spaces: Hyde Park, Kensington Gardens, Green Park, St. James's Park, Regent's Park (with Zoological Gardens), Victoria Park, Hamp-

stead Heath, Greenwich Park, etc. L. is greatest seapt. and greatest manuf. tn. in British Isles.

The Celtic *Llyn-dun* ("the fort on the lake") appears to have existed when Romans founded *Londinium* in A.D. 43. In 369, *Londinium Augusti* was cap. of Rom. Brit. Charters granted by William the Conqueror (1066) and by Kg. John (1214). Great Plague, 1665; Great Fire, 1666. See also separate headings.

**London**, tn., Ontario, Canada, on Riv. Thames; pop., 71,022; agric. and live-stock market; agric. machinery, chemicals, petroleum refineries.

**London clay**, (geol.) chief member of Lower Eocene (*q.v.*) strata in S. England; stiff blue or brown clay; varies in thickness from 50 to 450 feet. Not very suitable for brickmaking, pottery, etc., though it has been used.

**London County Council**, gov. body for Lond., exercising functions of prov. C.Cs. with others conferred by spec. Acts of Parl. Area stretches from Hammersmith to Woolwich and Hampstead to Dulwich, div. into 27 metropol. bors. (*q.v.*) and cities of London and Westminster. Headquarters, *County Hall*, on S. bank of Thames by Westminster Bridge; completed, 1932, from designs by Ralph Knott (*q.v.*); 750 ft. long, with over 900 rooms, inclgd. Council Chamber, Committee-Rooms and Library.

**Londonderry, Charles Stewart Vane-Tempest-Stewart**, 6th Marq. (1852-1915), Brit. statesm.; M.P. (as Visct. Castlereagh), 1874; Lord-Lieut. of Ireland, 1886-89; Postmr. Gen., 1900-02. Lord pres. of Council, 1903-05; opposed Home Rule Bill, 1912. **L., C. S. H. Vane-Tempest-Stewart**, 7th Marq. (1878- ), Cons. polit., M.P., 1906-15; Vice-Pres. of Air Council, 1920-21; First Comm. of Works, 1928-29; Sec. of State for Air, 1931.

**Londonderry**, 1) marit. co. in prov. of Ulster, N. Ire.; area, 801 sq.m.; pop., 94,500; agric., fisheries, linen factories. 2) **L., or Derry**, cap. of co., at mouth of Riv. Foyle; pop., 45,200; shipb.; manuf. linen, iron, leather. **Siege of L.**, 18th Apr.-30 July, 1689, when forces under Jas. II besieged the town held by 30,000 Protestants, who suffered greatly. Siege was raised when boom across Lough Foyle was forced and the tn. was revictualled from the sea.

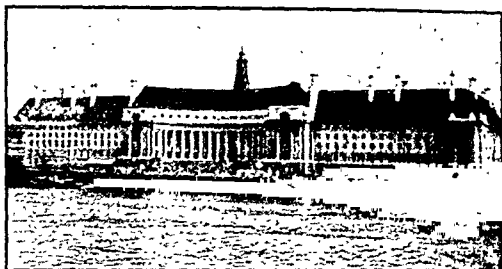
**London Gazette**: see GAZETTE.

**London Midland and Scottish Railway**, largest rly. in Gt. Brit.; formed by amalgamation (Rlys. Act, 1921) of London and N. Western, Midland, Lancs and Yorks, Caledonian Rlys.; serves Birmingham, Manchester, Liverpool, N. Wales (hence Ireland),

Glasgow, Edinburgh, Aberdeen, Inverness, and N. Scotland; mileage, 6,956. "Man-cunian," longest European run at over 60 m.p.h., start-to-stop, Wilmslow to Euston, 176.9 m. in 172 min., 61.7 m.p.h.

**London Museum**, Lancaster House, London, Eng.; collect. of objects of local hist. interest based on the Hilton Price collection of London antiquities, purchased by Brit. Govt. and lodged in Kensington Palace in 1912. Removed to Lancaster House (formerly Stafford House, residence of Dukes of Sutherland), 1914. Collection is arranged mainly chronologically and is representative of history of London from Roman times to present day.

**London and North Eastern Railway**,



County Hall

Headquarters of London County Council

Gt. Brit.; formed by amalgamation (Rlys. Act, 1921) of Great Northern, Grt. Eastern, Grt. Central Rlys., and also of N. Eastern, N. British and Grt. North rlys. of Scot.; serves East Anglia, Leeds, York, Newcastle, Edinburgh, Dundee, Aberdeen; mileage, 6,382. "Flying Scotsman," longest regular non-stop run in the world (392.7 m. in 7½ hours, 52.36 m.p.h.).

**London Passenger Transport Board** (L.P.T.B.), authority apptd. by Parl. 1933 to control London pass. traffic, amalgamated under its central authority; includes underground rlys. (Tube, District, Metropolitan, etc.), tramways, omnibus services. Controls an area of 85 m. from N. to S. and 57 m. from E. to W. of London. First chmn. Lord Ashfield (*q.v.*).

**London, Port of**, extends 69 m. along Riv. Thames from Teddington Lock (tidal limit) to a line drawn from Warden Point, Kent, to Havengore Creek, Essex; since 1909 admin. by **P. of L. Authority** (29 members). Docks on N. side of the riv.: *London and St. Katherine's* (123 ac.), *W. India and Millwall* (473 ac.), *E. India* (68 ac.), *Royal Victoria and Albert and King George V* (1,102 ac.); *Tilbury* (675 ac.); on S. side: *Surrey Commercial* (381 ac.). Overseas trade (1931): £505,189,000; ocean tonnage, 21,624,000 in, 19,440,000 out.

**London pride**, evergreen garden herb,

var. of saxifrage, with pinkish red-splashed flowers, native of Sp., Port., and Ireland.

**London Regiment**, Brit. territorial corps, 23 battalions; 1st four part of corps of Royal Fusiliers (*q.v.*); 5th Bn., London Rifle Brigade; 14th Bn., London Scottish; 28th Bn., Artists' Rifles; record office, Regent's Park Barracks, London, N.W.1.

**London, Treaty of**, name given to various international treaties: 1673, Holland agreed to honour Eng. flag in the narrow seas and to pay £300,000 towards expenses of the war; 1827, betw. Gt. Brit., France, and Russia, provided for self-government of Greece under Turkey; 1831, concerning the Belgian question; 1833, Gt. Brit. and Fr. agreed with Holland to make Belgium a separate kgdm. (ratified by treaty of 1839 betw. Austria, France, Gt. Brit., Prussia, Russia); 1841, *see* DARDANELLES; 1847, betw. Gt. Brit., Fr., Sp., and Port. to avert Portuguese insurrection; 1852, betw. Gt. Brit., Austria, Fr., Pruss., Russ., Swed., settling succession of Danish Crown; 1871, Powers agreed to nullify clause in Treaty of Paris, 1856 (*q.v.*), neutralising Black Sea; 1885 and 1913, betw. the Powers with reference to partition of Turkey; 1915, betw. Italy and the Allies, aiming at making Adriatic an Ital. lake in return for Italy's entry into the World War; 1925, a guarantee agst. aggression signed by Germany, Gt. Brit., Fr., Belgium; also similar agreement betw. Gt. Brit. and Italy.

**London University**, origtd. in movement started 1825 by Thos. Campbell (*q.v.*) and various prominent Dissenters, inspired by virtual exclusion of Dissenters from older univs., but developed on non-theological lines; Univ. College opened, 1828; King's Coll., 1831; women admitted to degrees, 1880; by Univ. of London Act, 1898, following bodies added to the constitution: Royal Holloway College, Egham; Bedford Coll., London; Westfield Coll., Hampstead; Imp. Coll. of Science and Technology; med. schools of chief London hospitals; London Sch. of Economics; South-Eastern Agricult. Coll.; Wye; Central Technical Coll.; East London Coll., and certain theological colleges. Headquarters now in Bloomsbury; foundation stone of new central bldg. laid by H.M. the King, 1933.

**Lone Star State:** *see* TEXAS.

**Long Beach**, tn., California, U.S.A., on Pacific coast; pop., 142,050; holiday resort; oil, gas, timber, fruit.

**Longchamps**, race-course, Paris, in Bois de Boulogne; flat-racing.

**Longeron**, (aeron.) fore-and-aft member of aeroplane framing.

**Longevity**, duration, prolongation of life. In *unicellular* forms (*bacteria*, *protozoa*), wh. propagate by division, practically unlimited;

in *multicellular* forms (higher grades of plants, animals) varies greatly. Trees may attain 400 yrs. or more; some fish (salmon, carp, pike) believed to live 100-200 yrs.; insects usu. short-lived (may-fly abt. 24 hrs.); some birds (parrot, raven), reputed to live abt. 100 yrs.; tortoise may live 200 yrs.; average life of horses 30 yrs. Duration of life in man varies accdg. to environment (climate, occupation, circumstances, etc.) and heredity; gen. estmtd. at 70-80 yrs; *see* EXPECTATION OF LIFE.



Longfellow

**Longfellow**, Henry Wadsworth (1807-82), Amer. poet; *Outre-Mer*, 1835; *Hyperion*, 1839; *Evangeline*, 1847; *Hiawatha*, 1855.

**Longford**, 1) inland co., Leinster, I.F.S.; area, 403 sq.m.; pop., 39,800; surface mainly flat or undulating, many bogs; agric., pasture, dairy farming, stock raising. 2) Cap. co. L.; pop., 3,700.

**Longhorn**, Brit. breed of cattle with long, drooping horns, white line on back; milk specially suitable for cheese-making.

**Longicorns**, genus of beetles having long antennae; larvae live in timber, boring long galleries. The species known as *Longhorn Beetle* (*Prionus coriarius*) is found in Gt. Brit., chfly. in oak woods.



Longicorn

**Long Island**, isl., New York, U.S.A.; 1,680 sq.m.; well wooded, some waste land; Queen's Borough (with Long Isl. City) and Brooklyn at W. extremity; separated from mainland by East Riv. wh. widens into L. I. Sound.

**Longitude**, angular distance betw. the meridian (*q.v.*) of any place and a given meridian (esp. that of Greenwich). One degree of L. at the Equator = 69.172 m., at lat. of London, 43.158 m., each degree representing 4 minutes of time. **L. oscillations** (phys.) take place in direction of transmission of a vibration; e.g., sound waves, in wh. waves of alternate rarefaction and compression of air travel in same direc. as that in wh. particles of air move.

**Long jump**, form of athletic contest, made either running or standing, into a shallow pit filled with sand; distance measured from take-off to heel-mark made on landing. Rec. (running L.J.) 26 ft. 2½ in., by C. Nambu (Tokio), 1931.

**Longleat**, seat (Marq. of Bath), Wilts, Eng., 4 ½ m S.E. Frome; built, 1547-80; picture gallery.

**Long of Wraxall**, Walter Hume Long, 1st visct. (1854-1924), Eng. Cons. politician; M.P., 1880; pres. Board of Agric., 1895-1900,



and of Local Govmt. Board, 1900-05; Colonial Secretary, 1916; introd. Franchise Bill, 1917; 1st Lord of the Admiralty, 1919-21.

**Long Parliament**, (Eng. hist.) 1640-60. Developed from Rump Parliament (*q.v.*) after 1647. Respons. for execu. of Charles I. Expelled, 1654; reassembled, 1659; dissolved, 1660.

**Longport**, parish of Burslem (*q.v.*), Staffs, in the Potteries; gave name to type of English china, first made by John Davenport (1793).

**Long primer**, a size of type; *see* POINT SYSTEM; TYPE.

**Long service and good conduct medals**, (Brit.) awarded to non-commissioned ranks of Brit. R.N. and Marines, after 15 years' service, with very good conduct. Gratuities may be granted acc. to rank. Fnnd., 1831; ribbon: purple with white edges. Also awarded to similar ranks in army after 18 years' service (gratuity, £5); warrant officers may receive medal but no gratuity. Fnnd., 1830; ribbon: crimson with white edges.

**Longus** (fl. 3rd cent. A.D.), Gr. poet; *Daphnis and Chloe*.

**Longwy**, tn. and fortress, dépt. of Meurthe-et-Moselle, France, nr. Belg. frontier; pop., 12,100; iron-ore deposits; iron and steel industry.

**Lonsdale**, Hugh Cecil Lowther, 5th E. (1857- ), succ. his brother in 1882; noted patron of all sports, esp. the turf, yachting, and pugilism; steward of the Jockey Club; founder and donor of the Lonsdale championship belts (£500, with pension of £1 per week, after 50, to boxer winning it three times) fought for under auspices of the British Boxing Board of Control.

**Lons-le-Saunier**, cap. dépt. Jura, France; pop., 12,660.

**Loos**, card-game for any number of players, with many variations.

**Looe**, seapt. and watering-pl., S. Cornwall, 9 m. S. of Liskeard; pop., 2,900.

**Loofah**, the dried fibrous skeleton of a tropical gourd (*luffa*); used instead of bath sponges, etc.

**Loom**: *see* WEAVING.

**Loon**, aquatic bird; *see* DIVER.

**Looping**, "looping the loop," trick flying, accomplished by keeping elevator of an aeroplane so far up that the machine finally passes the upward vertical path and falls (or flies) over backwards.

**Loos**, vill., Pas-de-Calais, France, suburb of Lens; Brit. memorial to 20,702 missing. *Battle of Loos*, Sept. 25-30th, 1915; Brit. and Fr. offensive; little ground gained at great cost.

**Loosestrife**, perennial herb, native of N. Hemisphere, with broad leaves and yellow

flowers; **Purple I.**, common Brit. wild flower, grows by waterside.

**Lope de Vega** *see* VEGA CARPIO, LOPE DE.

**Lop-nor**, **Lob-nor**, unstable lake, centr. Asia, in E. Tarim basin (E. Turkistan); moves N. and S.; the problem of this deviation solved by the Sven Hedin expedition in 1931.

**Loquat**, Japanese medlar, evergreen flowering shrub with small, reddish, clustered fruit of sharp taste.

**Lorca**, tn., Murcia, Spain; pop., 75,000; sulphur and iron mines.

**Lord**, used as less formal title of peers (*q.v.*) other than dukes; also as courtesy title-prefix to Christian and surname of younger sons of dukes and marquesses, and of eldest sons of earls and viscounts when their fathers have secondary peerages as barons. *Cf.* COURTESY TITLE. Peers below rank of dukes, judges of the Supreme Court, and lord mayors are addressed as *my lord*. **Is.** **temporal**, peers of Parliament other than bps.; **Is.** **spiritual**, abps. and such bps. as are peers of Parliament. **L. chamberlain**, Brit. ct. official, in charge of royal household "above stairs," and of all State ceremonies; licenses theatres (other than "patent" theatres, *i.e.*, Covent Garden, Drury Lane, and Haymarket) in cities of London and Westminster, and in certain London boroughs, Brighton, and Windsor; is responsible for licensing of stage-plays, through the Examiner of Plays. **L. chancellor**, orig. personal sec. of Eng. Kgs., usu. a priest. Became duty to deal with petitions, esp. those alleging miscarriage of justice in common law crts.; in 17th cent. office became vested in a layman, acting as judge administ. equity (*q.v.*). Now head of judicial system, apptg. other judges and presiding in Hse. of Lords. **L. chief justice**, pres. of Kg.'s Bench Division of Eng. High Court of Justice. **L. great chamberlain**, holder of hered. office having spec. duties at a coronation, opening of Parl., etc. **L. lieutenant**, Kg.'s princ. rep. in a co.; duties mainly ceremonial, but also relate to milit. and judic. business. **L. mayor**, title of honour assumed in mediaeval times by Mayor of London but elsewhere depending on grant from kg. Ld. mayors of Lond. and York (no others in Eng. and Wales) are entitled to be styled "Right Honourable." *See* MAYOR. **L. president of council**, Cabinet office filled gen. by a pers. (such as an ex Pr. Min.) incld. in govt. by reason of his prestige or experience rather than for performance of specific duties. *See* PRIVY COUNCIL. **L.**



Lord Mayor's Coach

**privy seal**, cabinet office in Gt. Brit. sim. to that of lord president of council (*q.v.*). **Privy Seal** orig. used for documents wh. kg. wished to keep secret, even from min. having custody of Great Seal (*q.v.*). **L. steward**, Brit. court official, first officer of royal household; in charge of all kg.'s officers and servants, except those of royal chapel, bed-chamber, and stables; duties now mainly deputized to Master of the Household.

**Lordosis**, (med.) concave or inward curvature of lower spine.

**Lord's Cricket Ground**, St. John's

Wood, London, hqtrs. of Marylebone Cricket Club and of cricket in general. Fndd. by Thomas Lord (1757-1832); opened, 1814;



Lord's Cricket Ground

pavilion contains unique collection of portraits, records, etc., connected with cricket.

**Lords, House of:** *see* HOUSE OF LORDS.

**Lord's Prayer**, form of prayer taught by Jesus Christ to His disciples (Matt. vi, 9-13; Luke xi, 2-4); frequently used in relig. services of most Christian churches; *see* PATER NOSTER.

**Lord's Supper, the:** *see* HOLY COMMUNION.

**Loreburn**, Robert Threshie Reid, 1st E. (1846-1923), Brit. lawyer and politician; M.P., 1880-1905; Solicitor-Gen., 1894; Attorney-Gen., 1894-95; Ld. Chancellor, 1905-12; largely respons. for Court of Criminal Appeal Act (1907); created Bn. L., 1905; Earl, 1911; *Capture at Sea*, 1913; *How the War Came*, 1919.

**Lorelei**, (Ger. legend) Rhine nymph. **L. Rock**, nr. St. Goar, on r. bank of Rhine; poem by Heine.



Lorelei Rock, in Rhine

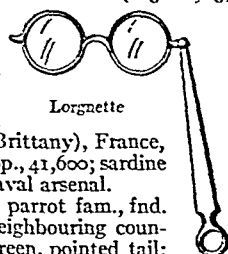
**Lorentz**, Hendrik Antoon (1853-1928), Dut. physicist; Nobel Prize (Physics), 1913; *La Théorie électromagnétique de Maxwell et son application aux corps mourants*, 1892; *The Einstein Theory of Relativity*, 1920.

**Loreto**, 1) tn., Ancona, Italy; pop., 8,000. Pilgrimages to the Holy House, the dwelling of the Virgin, which, according to legend, was carried by angels through the air from Nazareth to this spot. 2) Dept., N.E. Peru; 163,200 sq.m.; pop., c. 150,000; dense forest plain watered by Amazon tribs.; rubber; cap., *Iquitos*.

**Loretto**, public school, Musselburgh, 6 m. E. of Edinburgh, Scot.; orig. a prep. sch.;

acquired by Dr. H.H. Almond (1832-1903, hdmstr. for 42 yrs.) 1862.

**Lorgnette**, eyeglasses held on long handle.



Lorgnette

**Lorient**, tn. and seapt. Morbihan (Brittany), France, on Bay of Biscay; pop., 41,600; sardine fisheries; fortress, naval arsenal.

**Lorikeet**, bird of parrot fam., fnd. in Australia and neighbouring countries; prev. colour green, pointed tail; honey-sucker.

**Loris**, *slow-lemur*, small nocturnal arboreal mammal with very large eyes, no external tail; ranges from Malaya to Cochinchina, S. India, and Ceylon.

**Lorraine**, undulating land betw. the Vosges and the Rhine; slate mtns.; fertile arable land, watered by the Moselle and Meuse; coal, iron, and salt deposits; vineyards, hop-fields. Debatable territ. from earliest times; incorporated in kgdm. of France, 1766; annexed by Germany after Franco-Prussian War, 1871; Fr. again since 1918. Now divided among dépts. of Meuse, Meurthe-et-Moselle, and Moselle.

**Lorry**, properly, a wheeled vehicle for heavy loads, with flat deck, without sides or cover; used also to denote any heavy, esp. motor-driven, vehicle for goods transport.

**Lory**, magnificent, brightly hued parrot of Australia and the Malay Archipelago.

**Los Andes**, desert land in N.W. Argentina; volcanoes up to 19,700 feet.

**Los Angeles**, tn., California, U.S.A., pop., 1,300,000; univ. (1870); with Hollywood (*q.v.*) the centre of U.S.A. film industry; petroleum fields; meat-packing, fruit canning; sanatorium; seapt., San Pedro. **L. A. Aqueduct**, carries water from Owen's Riv., *Sierra Nevada Mtns.*, 223 m.; capacity: 280 mill. galls. per day.

**Loschmidt**, Joseph (1821-95), Ger. physicist and chemist.

**Lossiemouth**, police burgh and seapt., Moray, N. Scotland, at mouth of Riv. Lossie; pop., 3,000. B-place of J. Ramsay MacDonald (*q.v.*).

**Lost tribes**, the 10 tribes of Israel (Judah and Benjamin being omitted), wh. disappear from history at the Jewish Dispersion (7th cent. B.C.). Claims have been made that various modern peoples, esp. the Anglo-Saxon races, are their descendants.

**Lot** (O.T.), nephew of Abraham, whom he accomp'd. to Canaan; ancestor of Moab and Ammon; warned to escape from Sodom (*q.v.*) before its destruction. **L.'s wife**, who turned to look at doomed city, was changed into a pillar of salt (Gen. xix, 26).

**Lot**, 1) riv., Fr. (300 m.), trib. of the Garonne; rises in Cévennes; crosses dépt. of

L. 2) Dépt., France; 2,017 sq.m.; pop., 166,600; cap., *Cahors*.

**Lot-et-Garonne**, dépt., Fr.; 2,078 sq.m.; pop., 247,500; cap., *Agen*.

**Lothair**, name of 2 Rom. Emperors.

1) **L. I** (840-55), g.s. of Charlemagne; Emperor, Kg. of Mid. Franconia and It.  
2) His son: **L. III** of Supplinburg., Ger. Emp., 1125-37; colonization of East by Wettins and Alb. the Bear. **Lothair**, Kg. of: 1) France (941-86); succeeded father, Louis IV, 954; tried to recapture Lorraine, 978; quarrelled with Hugh Capet; 2) Lorraine (825-69), 2nd son of Emp. Lothair I.

**Lothian (The Lothians)**, distr. in S. Scotland, betw. Lammermuir Hills and Firth of Forth; includes E., Mid., and W. Lothian (*qq.v.*).

**Loti**, Pierre (1850-1923), pseud. of Louis Marie Julien Viaud; Fr. naval officer and novelist: *Pêcheur d'Islande*, 1886; *Le Mariage de Loti*, 1880.

**Lottery**, a distribution of anything by lot or chance, organized for either amusement or profit; esp. a gambling scheme in which certain tickets draw prizes and the rest are blanks. Sanctioned in Eng. as early as 1569 for various public purposes; suppressed in 1698 as a common nuisance; again authorised for govt. purposes, 1709; finally prohibited, 1826. The British Museum and the Adelphi were largely built by aid of lotteries. See also SWEEPSTAKES. **L. Bonds**: see BOND.

**Lotto**, Lorenzo (c. 1480-1556), Ital. painter; *Danaë*; *Transfiguration*; *Madonna and Saints*.

**Lotto**, game of chance played with numbered cards and disks.

**Lotus**, Egyptian and Indian water lily with large handsome flowers; *Nelumbo*. **L.-**



Lotus Flower

**eat**ers, (Gr. myth.) those who, as a result of eating the lotus, relapsed into state of indolent enjoyment.

**Lotze**, Rudolf Hermann (1817-81), Ger. philos. and physiologist; *General Pathology and Therapeutics as Mechanical and Natural Sciences*; *Microcosmus*.

**Loubet**, Émile (1838-1929), Fr. statesm.; Pr. Min., 1892; 7th Pres. of Fr. Republic;

1899-1906; representative of section of Republican party wh. demanded revision of Dreyfus case.

**Loudspeaker**, instr. used for telephone and wireless (*q.v.*); contains a membrane wh. is made to vibrate in various ways (electromagnetically, electro-dynamically, or electrostatically) in a manner so as to produce sound waves in the air corresponding to electr. current (speech current from wireless amplifier) used to feed speaker. Types: *Moving coil*, speech current traverses light coil placed in strong magnetic field, and firmly attached to light paper cone by which its movements produce air waves. *Electro-magnetic*, iron armature attached to cone, placed in magnetic field, and wound with coil receiving speech current. *Induction type*, iron armature moving in permanent magnetic field raised by speech current. *Electro-static*, light membrane of considerable area, set between metal grids; operated by electro-static attraction.

**Louis**, Kings: 1) *Bavaria*: **L. II**, the *Med* (1845-86), Kg. of Bavaria, 1864; patron of Wagner, for whom he built theatre at Bayreuth; committed suicide. 2) *France*: **L. I** (778-81-840), also Rom. Emp.; **L. II** (846-77-79); **L. III** (c. 863-79-82); **L. IV** (921-36-54); **L. V** (967-86-87); **L. VI** (1081-98-1137), *The Fat*; **L. VII** (c. 1121-37-80); **L. VIII** (1187-1223-26) invadd. Engl. agst.

John; **L. IX** (1214-26-70), St., in Crusades 1248, 1270; **L. X** (1289-1314-16), *The Quarrelsome*; **L. XI** (1423-61-83) reunited Fr.; **L. XII** (1462-99-1515); **L. XIII** (1601-10-43), son of Henry IV; **L. XIV** (1638-43-1715), son of L. XIII; the "Grand Monarch", "*Roi Soleil*"; made self absolute ruler, 1661; highest point of Fr. Monarchy; **L. XV** (1710-15-74), grt. gnd.-son of L. XIV; **L. XVI** (1754-74-93), grnd.-son of L. XV, exctd. in Fr. Revn.

**L. XVII**, titular kg., b. 1785, son of L. XVI, date and circs. of death uncertain; **L. XVIII** (1755-1814-24), bro. of L. XVI; restored after Waterloo.

**Louis d'or**, obsolete Fr. gold coin, worth 20 francs; name still surv. in colloq. speech in Fr. for 20 francs, in paper or gold.

**Louise of Prussia** (1776-1810), m. Kg.



St. Louis IX, King of France



Queen Louise with her two sons

Frederick William III of Prussia; mother of Emp. William I.

**Louisiana**, ("Creole", "Pelican") Sthrn. State, U.S.A., on Gulf of Mexico on both sides of Mississippi Riv.; 48,506 sq.m.; pop., 2,100,000 (50% Negro); marshy; cotton, maize, sugar; commerc. centre and port, New Orleans; cap., *Baton Rouge*.

**Louis Philippe**, of Orleans (1773-1850), the "citizen Kg." of Fr., 1830-48; he was 5th in descent from Philip, D. of Orleans, yngr. bro. of Louis XIV.

**Louis style**, styles of furniture current in France under Louis XIII-XVI. *Style of Louis XIII* (1610-43) corresponds to Eng. Jacobean. *Louis XIV* (1643-1713): carved, often veneered with tortoise-shell or oriental woods, and inlaid with ivory, bronze, or other metals; exemplified by Buhl (*q.v.*). *Louis XV* (1715-74): period of curves; commodes of serpentine shape with marquetry fronts, brass fittings, and marble tops; gilt chairs and settees with curved backs, arms, legs, and seats, often upholstered in Gobelin or Beauvais tapestry; corresponds to Eng. period of Chippendale (*q.v.*). *Louis XVI* (1774-93): straight lines, esp. in legs of chairs and settees, which are still gilt; Sèvres plaques, introd. on commodes; corresponds to period of Hepplewhite and Sheraton (*qq.v.*); *Jean Henri Riesener* (1734-1806), Fr. cabinet-maker, partly responsible for transition from Louis XV to Louis XVI.

**Louisville**, tn., Kentucky, U.S.A., on Ohio Riv., pop., 308,000; univ. (1859); tobacco; flour; cattle-breeding.

**Louisville and Nashville Railroad, U.S.A.**, operates in States betw. Cincinnati and New Orleans; 5,251 miles.

**Lourdes**, tn., dépt. Hautes-Pyrénées, France, at the foot of the Pyrenees, on Riv. Pau; pop., 9,000; place of pilgrimage to sacred healing spring in the Massavielle Grotto.

**Lourenço Marques**, cap. of Portug. E. Africa, on Delagoa Bay; pop., 37,300; rly. to Pretoria; fine harbour, coaling station.

**Louse**, small, wingless insect, blood sucker; parasitic on mammals. Three species attack man;

**Body-l.** lays eggs in seams of clothing;

**Crab-l.** lays eggs on hair and under-skin of body;

**Head-l.** lays eggs on the hair. Carriers



1. Head-louse. 2. Body-louse.  
3. Crab-louse.

of various diseases. **L.-flies**, degenerate members of the order Diptera; ectoparasites of birds and mammals; some wingless forms; a few live in beehives; larvae of the majority

born fully developed. **L. wort**, *Pedicularis palustris*, marsh-growing plant abt. 18 in. high, with crimson flowers and purple stem. *P. sylvatica* is smaller and has pink flowers.

**Louth**, 1) marit. co., Leinster, I.F.S.; area, 317 sq.m.; pop., 62,700; mainly flat; rivs.: Dee, Laggan, Boyne (S. boundary); agric.; fishing; co. tn., *Dundalk*. 2) Mkt. tn., Lincs, Eng.; pop., 9,700; 15th cent. church (spire 300 feet).

**Louvain, Leuven**, Belg. tn., Brabant: pop., 40,000; destroyed by Germans in World War, 1914; univ. (and famous library) burnt. Largely rebuilt.

**Louvois**, François M. le Tellier, Marq. de (1641-91); War Min. of Louis XIV; re-organized army.

**Louvre**, (archit.) small turret on a roof, formerly intended to admit light or allow smoke to escape from room below; also called *lantern*. **L. Palace**, group of bldgs. on rt. bank of Seine at Paris. Orig. hunting-seat of early Fr. kgs. (name said to derive from O. Fr. *louverie*, place infested by wolves). Became feudal fortress (c. 1200); demolished and replaced by palace in Ital. style (16th cent.); added to by successive monarchs till end 17th cent. Restored and made into National Museum by Napoleon I; damaged by fire in fall of Commune, 1871; restored and enlarged by Napoleon III. Main portion of L. contains one of finest art collections in Europe, incldg. sculpture (Venus of Milo, Winged Victory of Samothrace), paintings (Leonardo's *Mona Lisa*, works by Rubens, Van Dyck, masterpieces of Fr. and Ital. schools, etc.), bronzes, ivories, furniture, etc. New portion of bldg. occupied by Ministry of Finance.

**Louys**, Pierre (1870-1925), Fr. poet and novelist; *Aphrodite*; *Chansons de Bilitis*, etc.

**Lovage**, perennial herb, with small white or pink flowers and aromatic root; leaves used as pot-herb.

**Love-apple**: see TOMATO. **L.-bird**, popular name for several species of small short-tailed African parrot, generally green, and for the *budgerigar*, a small green Australian bird often trained to "tell fortunes" in streets and fairs by picking one from a number of paper slips with its beak. **L.-in-a-mist**, *Nigella damascena*, ranunculaceous garden plant; dissected leaves and light blue flowers. Various other vari. of *Nigella*; seeds of *N. sativa* are used as a condiment in the Near East. **L.-lies-bleeding**, annual herb, native to India, with drooping clusters of small crimson flowers.

**Lovelace**, Richard (1618-58), Eng. cavalier and poet; politic. pris., 1642, 1648; *To Althea from Prison*, 1642.

**Lover**, Samuel (1797-1868), Irish novelist, song-writer, and painter; *Songs and Ballads*, 1839; *Handy Andy*, 1842.

**Loving cup**, large drinking vessel, usu. of silver, with two or more handles, passed from one person to another, each of whom drinks in turn; this custom is a ceremonial survival of the days when it was advisable to have some reassurance that one's neighbour at table had no hostile intentions.

**Low Countries**: see HOLLAND. **L-frequency**, (elec.) alternating elec. current. Frequencies up to 100 used in house-to-house supply; higher frequencies than this would be termed "low" by comparison with *high frequency* (q.v.). **L. German**: see LANGUAGE SURVEY, *German*. **L. Sunday**, the 1st Sun. after Easter; prob. so called from the contrast of the lesser rites of the octave after the high solemnities of the festival.

**Lowe**, Sir Hudson (1769-1844), Eng. general; Governor of St. Helena during exile of Napoleon I; commanded forces in Ceylon, 1825-30.

**Lowell**, Amy (1874-1925), Amer. poet, critic, and lecturer; leader of Imagist group of Anglo-Amer. writers; *A Dome of Many Coloured Glass*; *Sword Blades and Poppy Seeds*; *John Keats*. **L., James Russell** (1819-91), Amer. diplomat and writer; 1st ed. of *Atlantic Monthly*; min. resident at crt. of Spain, 1877-80; Amer. min. in London, 1880-85; *Biglow Papers*; *Under the Willows*; *Democracy and Other Addresses*; *The Old English Dramatists*. **L., Percival** (1855-1916), Amer. astronomer; fndd. Lowell Observatory, Flagstaff, Arizona, U.S.A.; works incl. *Mars and Its Canals*, 1906; *Evolution of Worlds*, 1910; *Memoir on Saturn's Rings*, 1915.

**Lowell**, tn., Massachusetts, U.S.A., on Merrimac Riv.; pop., 100,250; iron, machinery, chemicals, cotton, wool.

**Lower Silesia**: prov. of Prussia; see SILESIA.

**Lowestoft**, co. bor. E. Suffolk, Eng.; seapt.; important fish mkt.; summer resort; easternmost tn. in Eng.; pop., 41,800.

**Loxodrome**: see RHUMB-LINE.

**Loyal Regiment** (North Lancashire), Brit. infantry regt.; union of old 47th Foot (raised 1740) and 81st Foot (1800); depot and record office, Preston; 21 battalions in World War (when it was known as Loyal N. Lancashire Regt.).

**Loyola**, St. Ignatius of (Iñigo López de Recalde) (c. 1492-1556), Span. soldier; fndd. Soc. of Jesus, St. Ignatius Loyola 1534, being its 1st general; beatified, 1609; canonized, 1628.

**Lozenge**, an equal-sided parallelogram having 2 acute and 2 obtuse angles; fig. of shape of a diamond at cards; (her.) a bearing

of this shape; also, the escutcheon of an unm. heiress or of a widow; (bldg.) one of a series of square slabs, set diagonally and overlapping each other. **L.-frieze**, diamond-shaped ornamentation. **L.-glass**, thick window glass with rhomb-shaped facets.

**Lozère**, dépt. S. France; 2,000 sq.m.; pop., 101,849; pasture-land, cheese, silk, chestnuts; cap., *Mende*.

**L.P.T.B.**, abbr. London Passenger Transport Board (q.v.).

**L.R.C.P.**, abbr. Licentiate, Royal College of Physicians.

**L.R.C.S.**, abbr. Licentiate, Royal College of Surgeons.

**L.S.**, abbr. *loco sigilli* (Lat.), place of the seal, on copies of documents.

**Ltd.**, abbr. Limited.

**Lu**, (chem.) symbol of lutecium.

**Lubbock**, Sir John: see AVEBURY.

**Lübeck**, 1) State, Germany, on the Baltic, betw. Mecklenburg and Holstein; 115 sq.m.; pop., 129,000. 2) Cap. of State, on Riv. Trave; pop., 122,000; free port; connected with Riv. Elbe by Elbe-Trave Canal; shipb.; mediaeval buildings; member of Hanseatic League. 3) Seaport of Oldenburg (q.v.), on the Baltic; arable land and pasture; 209 sq.m.; pop., 48,000; cap., *Eutin*.

**Lublin**, cap., dist. of L., Poland on the Bistritz; pop., 118,000 (many Jews); univ.; occupied by Austrians during World War, 1915.

**Lubricants**, substances designed to reduce friction and to prevent over-heating of parts of machinery that slide or rub agst. one another; lubricating oils, greases, graphite dry or mixed with oil; chief requisites are: cleanliness; freedom from acid; invariability; freedom from water; suffic. adhesion on sliding surfaces. They act by preventing actual contact betw. the surfaces. **Lubricating oils**, vegetable oils: *Colza O.*, *Olive O.*; animal: refined *Bone O.* for clocks; most mineral Os. are obtd. by distillation from petroleum: *light* lubricating, oils for sensitive parts of machinery (sewing-machines); *viscous* oils for large and heavy machines; *hot steam O.* (mineral O. with add. of animal fats) for cylinder lubrication.

**Lucan**, (Marcus Annaeus Lucanus), (38-65), Roman poet; wrote the *Pharsalia*, poem dealing with civil war betw. Caesar and Pompey.

**Lucas**, Edward Verrall (1868- ), Brit. essayist, novelist, publisher. "Wanderer" books, on London, 1906; Paris, 1909; Florence, 1912; Venice, 1914; Rome, 1926, etc.; edited *Letters of Lamb*.

**Lucas van Leyden** (1494-1533), Dut. painter and engraver; *Last Judgment*; *Card Players*; *Healing of the Blind Man*.

**Lucca**, tn., N. Tuscany, Italy, on the



St. Ignatius Loyola

Serchio; pop., 80,600; 11th-cent. cathed., many old churches and palaces. To N.E. are the *Lucca Baths*; hot chalybeate springs (86°-130°F.).

**Lucern**, *Medicago sativa*, leguminous plant, member of the pea and bean tribe; violet flowers; cultivated for fodder.

**Lucerne**, 1) cap., canton of L., Switzerland (575 sq.m.; pop., 189,400), on Riv. Reuss, at N.W. end of lake of L.; alt., 1,430 ft.; pop., 47,000; cattle markets; tourist centre. 2) **Lake of, or Vierwaldstatter See** (Lake of the Four Forest Cantons, *q.v.*); length 23½ m., max. breadth, 3 m., max. depth, 702 ft.; area, 43 sq.m. William Tell associations.

**Lucia di Lammermoor**, opera by Donizetti (*q.v.*) (1835), based on Scott's *Bride of Lammermoor*.

**Lucian** (c. 120-180), Greek satirist; rhetorical declamations, e.g., *The Tyrannicide*; *Dialogues*.

**Lucifer** (Lat.), light-bearer; the morning star; also, the Devil (Milton, *P.L.*, x, 426).

**Lucius**, name of 3 popes, of whom the most important, historically, are: **L. II** (1144-45), revolutionary repub. erected to deprive papacy of temporal power; papal supremacy over Portugal recognized. **L. III** (1181-85) condemned Cathari, Paterines, Waldensians, and Arnoldists at synod of Verona, 1184.

**Lucknow**, city, United Provs. of Agra and Oudh, India; cap. of Oudh and of dist. and division same name; on Riv. Gúmty; tomb of Asaf-ud-Dáula; manuf. gold and silver brocade, muslin; rly. centre; pop., 274,700. **Siege of L.**, during Indian Mutiny, May 30th-Sept. 19th, 1857; garrison relieved by Sir Colin Campbell.

**Lucetia**, legend. Rom. matron, violated by son of Tarquinius Superbus; stabbed herself; cause of the fall of Rom. monarchy.

**Lucretius** (97-55 B.C.), Rom. philos. poet; *De Rerum Natura*.

**Lucullan**, lavish, applied to a feast or banquet; term derived from Lucullus (*q.v.*).

**Lucullus**, L. Licinius (c. 114-57 B.C.), Rom. gen. and epicure; supported Sulla; praetor, 77; consul, 74; dftd. Mithridates, 67-66.

**Lucus a non lucendo**, Lat., a grove (*lucus*), from not shining (*lucendo*); a punning proverb from Quintilian, used where a name indicates a quality conspicuously absent in fact: e.g., *Greenland* from the absence of green.

**Luddites**, name chosen by machine breakers in N. England, 1812, from mythic. King Lud, or poss. from real leader masquerading under name Ned Ludd.

**Ludendorff**, Erich (1865- ), Ger. gen.; Ch. of Staff to Hindenburg, 1914;

joined Hitler's Nat.-Soc. (Nazi) party, 1923.

**Lüderitz, Angra Pequena**, tn. and bay, S.W. Africa; pop., 2,100; fisheries; rly. to interior.

**Ludgate**, old gate of city of London, said to have been erected on site of temple of



Lüderitz Bay

Lyd (the so-called Celtic Diana). The last gate, built 1586, was demolished 1760. **L. Circus**, constructed 1875 at junction of Fleet Street, L. Hill, New Bridge St., St. Bride St. and Farringdon St., on site of former Fleet Bridge (demolished 1786).

**Ludlow**, mkt. tn., Salop, Eng., on Riv. Teme; castle; pop., 5,600.

**Ludlow**, (printing) see TYPE COMPOSING MACHINES. **L. group**, (geol.) topmost division of British Silurian (*q.v.*) rocks; chfly. shales.

**Ludmilla**, St., wife of 1st Duke of Bohemia converted with him by S. Methodius; murdered c. 927 by her dau.-in-law, through question of succession to ducal crown.

**Ludolf**, Hiob (1624-1704), Ger. orientalist. Pres. of *Collegium imperiale historicum*; chf. works: *Sciagraphia historiae Aethiopicæ*; *Historia Aethiopia*.

**Ludolph's number**, (math.) numerical proportion of circumference to diameter of the circle, named after the mathematician Ludolph van Ceulen (*Collen*), 1540-1610, repr. by Greek letter  $\pi$  (pron. *pi*) = 3.14159265 . . . or approx.  $3\frac{1}{7}$ ; circumference of circle is expressed by  $2\pi r$ , i.e.,  $2\pi \times r$  radius; area is  $\pi r^2$ .

**Ludwig II**, Kg. of Bavaria, see LOUIS.

**Ludwig, Emil (Cohn)** (1881- ), Ger. dramatist and biographer; *Wilhelm II*; *Bismarck*; *Napoleon*; *Goethe*; *The Son of Man*; forced to leave Ger. after Nazi revn., 1933. **L., Karl Friedrich Wilhelm** (1816-95), Ger. physiol., *Text-book of Physiology*. **L., Otto** (1813-65), Ger. novelist and tragic-dramatist; *The Hereditary Forester*.

**Ludwigshafen**, tn., Palatinate, Ger., on the Rhine opposite Mannheim; pop., 107,700; riv. port; aniline dyes, soda factories; trading centre.

**Lugano**, 1) lake, Switzerland and N. Italy, in region of the *Lugano Alps*; 885 ft. abv. sea-lvl.; 19 sq.m., max. depth, 950 feet. 2) Tn., Switzerland, N. end of Lake L., at foot of Monte San Salvatore; pop., 14,300; tourist centre.

**Lugard**, Frederick John Dealtry L., 1st bn. (1858- ), Brit. soldier and administrator; Afghan War, 1879-80; Sudan campaign, 1885; administrator of Uganda,



Lucern

1889-92, and later of Northern Nigeria, and (1914-19) Gov.-Gen. of Nigeria; Brit. mem. of Perm. Mandates comm., League of Nations, 1922.

**Lugger**, small vessel carrying two or three masts, with a running bowsprit and lug-sails.

**Lugo**, 1) prov., Galicia, N.W. Spain, area, 3,810 sq.m.; pop., c. 461,000; 2) tn., cap. of prov. and former cap. of Galicia; pop., 37,000; cathed.; sulphur springs; textiles, tanning.

**Lug-sail**, a square sail bent upon a yard that hangs obliquely to the mast at one-third of its length.

**Lugworm**: see LOBWORM.

**Lulni**, Bernardino (c. 1470-c. 1531), Ital. painter; pupil of Leonardo da Vinci; *Virgin with Child and St. John*; *Marriage of the Virgin*; *Adoration of the Magi*.

**Luitpold** (1821-1912), 3rd son of Louis I of Bavaria; Pr. Regent, 1886, when Louis II became insane.

**Luke**, **St.** (N.T.), author of 3rd Gospel and Acts of Apostles; physician; companion of Paul on some of his journeys and in imprison-



St. Luke the Apostle

ment; St. Luke's day, Oct. 18th; symbol: ox. **Gospel of St. L.**, written in Grk., c. A.D. 64; based on earlier Aramaic material; most complete of 4 Gospels.

**Lull**, **Lully**, Raimon, "*Doctor illuminatus*" (1234-1315), Catalan mystic, author and missionary; *Ars veritatis inventiva*; *El Desconort*; *Lo Cant de Ramon*.

**Lully**, Jean-Baptiste (1632-87), Fr. composer; introduced Fr. style of opera; *Misericorde*; *Armide et Renaud* (1686), etc.

**Lumbago**, inflammation of muscles of lower part of the back, often rheumatic in origin.

**Lumbar puncture**, the insertion of a needle into spinal canal in lumbar region to withdraw cerebro-spinal fluid; for diagnosis of diseases

of spinal cord and brain; or to relieve pressure within spinal canal.

**Lumber**, felled trees or timber roughly prepared for market. **L. Jack**, man dealing with lumber, esp. in transit from forest by rail or water (rafting).

**Lumen**, unit of light flux; flow of light into unit solid angle from a standard candle, i.e.,  $\frac{1}{4\pi}$  of total light emission, or light recd. by unit area of sphere of unit radius drawn around candle as centre.

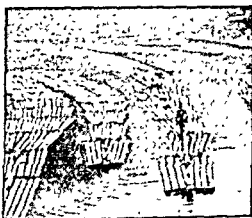
**Lumière**, **Auguste** (1862- ), and his bro. **Louis** (1864- ), Fr. photo-chemists; made important developments in cinema and colour photography.

**Luminescence**, (phys.) gen. term for emission of visible light otherwise than as a result of high temp. Commonest is *photo-L.*, in wh. exposure to light causes a body to emit light of a characteristic colour. There are 2 kinds, *fluorescence* and *phosphorescence*. In *fluorescence*, body radiates a light of longer wavelength than the exciting light, and only so long as the latter is acting. Ultra-violet light thus excites visible fluorescent light, a fact made use of in practical work. Uranium glass is strongly fluorescent; the green discharge tubes used for advertising are made of it. Common paraffin oil fluoresces, in daylight, a violet-brown. X-rays also excite fluorescence; for instance, in barium platino-cyanide, which is used for making screens for direct observation by X rays. *Phosphorescence* continues for a greater or less time after exposure to light; luminous paint (not that containing radium) is an example. *Thermoluminescence* occurs in some solids when gently heated; *triboluminescence*, in crystals, e.g., cane sugar, when broken; *cristallo-L.*, during crystallization; *chemi-L.* in chem. action, e.g., the slow oxidation of yellow phosphorus by air. Cathode rays excite brilliant L. in many minerals. Certain organisms (esp. marine) are luminescent.

**Luminous organisms**, animals and plants (fungi) producing phosphorescent light in their life process: deep-sea fauna, insects (glow-worms), noctiluca, and bacteria (found on dried smoked fish, decomposing animals, etc.); see PHOSPHORESCENCE. **L. signals**, signs for transmitting messages, or warnings, used for ships, aeroplanes (lanterns showing position), railways, roads, etc.

**Lumpsucker**, large-headed, clumsy-looking fish of the family *Cyclopterus*, distinguished by the presence of a sucker on the lower surface of the body, supported by rudiments of the pelvic fins. By means of this organ, the L. attaches itself securely to rocks on the floor of the sea, and is thus safe from the buffeting of the waves.

**Luna** (Gr. Selene), in Rom. myth., moon goddess.



Rafting Timber

**Lunacharsky**, Anatoly Vasilievich (1875- ), Russ. politician, author, and dramatist; deported to Vologda, 1898; took part in Bolsh. revln. of 1917; close associate of Lenin; People's Commissar for Educ. since beginning of revln. *Vasilisa the Wise; Faust and the City; The Magi.*

**Lunacy**, insanity (*q.v.*); intermittent form of madness formerly believed to be regulated by phases of moon. Under Engl. Lunacy Acts (1890-1922) a person cannot be detained as a lunatic without an order by a magistrate, accompnd. by 2 medical certificates. The Mental Treatment Act (1930) provides for "temporary treatment" of persons suffering from mental disease, without certification.

**Lunar caustic**, former name for solid nitrate of silver, once much used in medicine as caustic. **Lunar cycle**: see CYCLE.

**Lunar distance**, angular distance of moon's centre, or a planet or star near the ecliptic, from sun; used to calculate longitude at sea.

**L. tables**, charts for determining position of moon at any given time, past or future.

**Lunation**, interval betw. 2 successive new moons.

**Lund**, tn., Malmöhus, Sweden, 12th cent. cathed.; univ. (1668); observatory; iron smelting, sugar refining, gloves.

**Lundy Island**, small isl., Bristol Channel, Eng., area, 16 sq.m.; pop., c. 50.

**Lüneburg**, cap. dist. of L. (4,380 sq.m.; pop., 600,000), Hanover, Prussia, on the Kalkberg (215 ft.), a limestone hill overlooking Riv. Ilmenau; pop., 29,000; mediaev. bldgs.; salt-works, petroleum springs, chalk quarries. **Lüneburger Heide**, largest heath in Germany, betw. rivs. Alder and Elbe; *Wilseder Berg*, 560 ft. (game preserve); sheep farming, bee keeping.

**Lunette**, (bldg.) segmental aperture in concave ceiling to admit light, or wall space in sim. position adorned with painting or sculpture.

**Lunéville**, tn., dépt. of Meurthe-et-Moselle, Fr.; pop., 23,260; textiles, hosiery, gloves. **Treaty of L.**, 1801, betw. Fr. and Ger. Confederation; gave left bank of the Rhine from Switz. to Holland to France.

**Lung**, organ of respiration, situated on either side of chest; right L. has 3, the left 2 lobes. **L. alveoli**, or bladders, the thin-walled blind ends of smallest bronchial passages. **Apices of L.**, top section of L. enclosed by 1st rib; often starting-point of tuberculosis. **Abscess of the L.** is accompnd. by high fever; may burst into bronchial passages and be coughed out, otherwise an operation to drain the abscess is necessary.

**Bleeding of the L.**: see HAEMOPTYSIS. **Inflammation of L.**: see PNEUMONIA. See also: EMPHYSEMA; EMPYEMA; PULMONARY INFRACT; TUBERCLE.

**Lung-fish**, members of the sub-class *Dipnoi*, abundant in past geological epochs, now represented by three species, Australian, S. American, and African, all included in one family, the *Lepidosirenidae*.

Body thick and spindle-shaped, with large, overlapping, horn-like scales; gills small and compressed; air bladder peculiar in structure and capable of functioning as a lung.



Lung-fish

**Lunging rein**, long rein for showing off a horse's paces at shows, etc.

**Lungs of oak**, large brownish lichen, growing on bark of old trees, esp. oak, formerly used medicinally for lung troubles; also produces dye for yarn.

**Lungwort**, Jerusalem cowslip, perennial herb, native to Europe, with clustered pink flowers, later turning blue; garden variety has pale purple flowers.

**Lunisolar**, term applied to period of time dependent conjointly upon motion of the moon and apparent motion of the sun; thus a **l. year** is a tropical year dependent upon the sun for its total length, but upon the moon for calculating the incidence of periods and dates within the year.

**Lunn**, (Louise) Kirkby (1873-1930), Eng. mezzo-soprano; with Carl Rosa Company for three years; appeared in opera at Covent Garden, 1902; toured Europe, America, Australia, and New Zealand as concert singer.

**Lupercalia**, anc. Rom. festival (Feb. 15th) of expiation, marked by sacrifices and cerem. rite of striking worshippers with thongs cut from victims' skins.

**Lupin**, large genus of fabaceous herbs; variety *Lupinus albus* used as fodder. Some varieties are poisonous, owing to presence of the alkaloid lupinidin; also cultivated as a garden plant.

**Lupus**, 1) (astron.) "the Wolf," constell. E. of Centaurus (see PL., ASTRONOMY, S.C.H., C-D). 2) (Med.) Tuberculosis of skin, esp. on face; produces unsightly changes, e.g., parrot-nose.

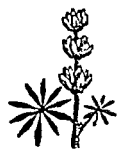
**Lupus in fabula** (Lat., Terence), the wolf in the fable, i.e., "Speak of the Devil," etc.

**Luray Cavern**, Virginia, U.S.A.; beautiful formation of rock columns, stalactites, and stalagmites. *Hollow Column*, 40 ft. high, 30 ft. in diam., has passage from top to base.

**Lurcher**, cross-bred dog, resembling greyhound (*q.v.*), but with heavier body and rougher coat; used chfly. by poachers.

**Lusaka**, projected cap. of N. Rhodesia, sit. 80 m. S. of Broken Hill, on rly. from Livingstone (*q.v.*).

**Luslad**, Port. epic by Camoëns (*q.v.*), celebratg. Vasco da Gama's voyage to India via the Cape.



Lupin



**Lusitania**, anc. Rom. prov., corresponding to mod. Portugal.

**Lusitania**, Brit. liner sunk 7 May, 1915, off the coast of Cork by a Ger. submarine; 1,198 (inclgd. 124 U.S. citizens) drowned; commencement of general U.S. hostility to Germany.

**Lustre**, power to reflect light brilliantly. **Metallic l.**, characteristic result of reflecting power and great capacity. **Lustres**, cut-glass pendants and other decorations chfly. used in chandeliers.

**Lustrum**, orig. purificatory sacrifice made every 5 years by the censors in anc. Rome; hence, a period of five years.

**Lusus naturae** (Lat.), freak of nature.

**Lute**, 1) (mus.) very ancient instr. played by plucking the strings. 2) (Tech.) Cement or other plastic material used for making joints in pipes, etc., gas- or water-tight.

**Lutecium**, chem. element; symbol Lu, at. wt. 175.0, very rare member of yttrium group (*q.v.*).

**Luther, Hans** (1870- ), Ger. statesm.; Reich Chancellor 1925-26; as Fin. Min. stabilized currency and concluded Dawes Loan. **L., Martin** (1483-1546), Ger. religious reformer; theolog. and Augustin. friar; publ. theses attacking papal sale of indulgences, 1517; excommun., 1520; estab. new reformed worship; protected by various princes, converts to evangelicalism. **Lutheran Churches**, Prot. evangel. relig. bodies based on teaching of Martin Luther (*q.v.*) and partic. on the Confession of Augsburg (*q.v.*). Lutheranism quickly declined after its formation, but was revived by the Pietists (*q.v.*) in 17th and 18th cents. Luth. Ch. of Germany is outcome of a union betw. Luth. and Calvinistic confessions. State relig. in Germany, Denmark, Norway, Sweden; strongly repr. also in U.S.A. and Canada. First world convention of all Luth. Chs. held at Eisenach, 1923.

**Luton**, munic. bor., Beds, Eng.; straw-plait industry; motorcar works; pop., 68,500. **Lutrin, Le**, mock-heroic poem by Boileau-Despreaux, in six cantos (1674), model for Pope's *Rape of the Lock*. **Lutyens**, Sir Edwin L. (1869- ), Brit. archit.; designed the Cenotaph, New Delhi, R. C. Cathed., L'pool., etc.; R.A., 1920.

**Lützen**, tn., Saxony, Prussia; pop., 4,200. *Battles of L.:* 1) Defeat of Swedes, under Wallenstein, by Gustavus Adolphus, who was killed, 1632. 2) Victory of Napoleon over allied Prussians and Russians (also called B. of Grossgörschen), 1813.

**Lux**, unit of illumination; illumination produced per sq. metre by a standard candle at distance of 1 metre. See ILLUMINATION, ARTIFICIAL; PHOTOMETRY.

**Luxation**, (med.) dislocation; displacement of bones or an organ from its normal position.

**Luxembourg**, prov., S.E. Belgium, in Ardennes; 1,700 sq.m.; pop., 222,000. Cap., Arlon; agric.; mining (iron ore). **L., Palace of**, on S. bank of Seine, at Paris. Built by Marie de' Medici (1615); inhabited by various members of Bourbon family; after Fr. Revolution became Palace of Directory; since 1879 used as place of assembly for Senate. Part of building consists of galleries containing works of art by living painters and sculptors, where they remain for 10 years after death of artist, when some are removed to Louvre.

**Luxemburg**, Rosa (1875-1919), Ger. revolutionary and communist; with Karl Liebknecht (*q.v.*) led Spartacist revolt in Berlin, 1919; killed while under arrest;

**Luxemburg**, 1) Grand-duchy, N.W. Europe, betw. S.E. Belgium and Ger.; 998 sq.m.; pop., 295,000; table-land in S.E. Ardennes, watered by rivs. Sauer and Moselle; agric., cattle-breeding; coal, iron, steel, woollens. *History:* Part of Holy Roman Empire, 963-1443; from 1443-1815 passed successively into Spanish, Austrian, and French possession. By Congress of Vienna (1814-15), L. was created a Grand Duchy and incldd. in German Confederation. By Treaty of London (1867), it was declared neutral territory. After a referendum to decide its political future (1919), L. retained its status, with econom. union, abolishing customs barriers, with Belgium; this agreement (1921) to hold good for 50 years. Reigning grand-duchess, **Charlotte** (1896- ), dau. of William, Grand Duke of L., Duke of Nassau. 2) Cap. of grand-duchy L., pop., 52,000.

**Luxor**, vill., Upper Egypt, nr. anc. Thebes, on the Upper Nile; ruined temple, with great colonnade.

**Luxury trades**, industries supplying articles not essential to existence. **L. tax**, duties imposed on such articles, in order to obtain increased revenue from wealthier classes, or to limit expenditure.



Sir E. Lutyens



Lute-player



Luther as a Monk



**Luzon**, largest of Philippine Isls.; 41,232 sq.m.; pop., 5,680,500; cap., *Manila*.

**Lwow, Lemberg**, tn., Poland, cap. prov. of L. (10,430 sq.m.; pop., 2,718,014); until 1918 cap. Austr. crownland of Galicia; univ.; tech. and vet. colleges; trading centre; pop., 239,700.

**LXX**, Septuagint Version (Bible).

**Lyautey**, Louis Hubert (1854- ), Fr. marshal and colonial administ.; as H. Com. and Res.-Gen. consolidated Fr. protectorate, Morocco, 1912-17; Min. of War, 1917; ret. to Morocco, 1918-25, subd. Riff revolts under Abd el-Krim.

**Lycanthropy** (Gr.: wolf-man), 1) fabulous change of human being into wolf or other animal, common subject of folklore legends; see *WERWOLF*. 2) Form of insanity in wh. patient believes he has become, and behaves as, an animal.

**Lycée**, State-maintained secondary school, in France.

**Lyceum**, 1) gymnasium in anc. Athens, where Aristotle walked and taught (Peripatetic School). 2) Former U.S. institution, embodiment of a scheme for international propagation of learning, fndd. at New York, 1831, with branches all over N. America. Linked with the Chautauqua (q.v.). 3) See *LYCÉE*.

**Lych gate** (corpse gate), porch or roofed gateway leading into churchyard, under which coffin was placed at funeral to await arrival of priest.



Lych Gate

**Lychnis**, see *RAGGED ROBIN*; *CAMPION*.

**Lycopodium**, herbs of the family *Lycopodiaceae*; the spores of *L. clavatum*, or stag-horn moss, are known as *L. powder* and, being inflammable, are sometimes used in fireworks.

**Lycurgus**, 1) (c. 825 B.C.) Spartan legislator. According to traditn. author of Sparta's laws and institutions. 2) Attic orator and statesm., 4th cent. B.C.

**Lydd**, munic. bor., Kent; pop., 2,800; from 13th cent. a "member" of the Cinque Port of Romney, though now 3 m. inland; artillery ranges; place of manuf. of lyddite.

**Lyddite**, a high explosive, composed princ. of picric acid (q.v.); used in shells.

**Lydford**, vill. (Saxon city), W. Devon, 7 m. N. of Tavistock; pop., of parish (incl. large part of Dartmoor), 2,250. Ruined cas. contd. Court and prison of the stannaries (q.v.); the Crt. was said to act on the principle of hanging first and trying afterwards (*L. Law*).

**Lydgate**, John (c. 1370-1451), Eng. poet; *Falls of Princes*; *Troy Book*; *Temple of Glass*.

**Lydia**, anc. dist. W. coast of Asia Minor; cap., *Sardis*; kgdm. of Croesus (q.v.).

**Lye**, solution in water of caustic soda, caustic potash, ammonia, caustic lime.

**Lyell**, Sir Charles (1797-1875), Brit. geologist; pres. of Geol. Soc., 1835; '36, '49, '50, and of Brit. Assoc., 1864; opposed catastrophism in geology; *Principles of Geology* (3 vols.), 1830-33; *Elements of Geology*, 1838; *The Antiquity of Man*, 1863.

**Lyly**, John (1554-1606), Eng. dramatist and novelist; championed bps. in Martin Marprelate controversy (q.v.); M.P., 1589; chf. brought into prominence the affected style, named from it "Euphuism."

**Lyne Regis**, co. bor. and seaside resort, Dorsetsh., Eng.; pop., 2,600. Landing of Monmouth, 1685; fossil ichthyosaurus discovered, 1811.

**Lymph**, (physiol.) 1) fluid in interstices of tissues wh. collects in the lymphatic vessels and is brought by them thr. the thoracic duct to the blood-stream. 2) Thick fluid of cow-pox pustules; used in vaccination (q.v.) against smallpox.

**Lymphangitis**, (med.) inflammation of lymph glands, e.g., those of neck in tuberculosis; those of groin in venereal diseases.

**Lymphocytes**, (physiol.) lymph-cells, a type of white blood corpuscle.

**Lympne**, vill., S. Kent, 3 m. W. of Hythe, Rom. *Portus Lemanis*; pop., 500; airport; *L. Castle* (modern) incorporates a 15th cent. castle.

**Lynch law**, capital punishment irregularly administered by mob. Origin of term doubtful; variously credited to Jas. Lynch, of Piedmont, Va., who is said to have had recourse to it in 1688; to John Lynch, a farmer of N. Carolina, of abt. same date; and to Col. Chas. Lynch (1736-96), a Virginia planter. "Judge Lynch" is a personification of lynch law.

**Lyndhurst**, John Singleton Copley, Baron (1772-1863), Eng. lawyer and statesm.; M.P. for Ashburton, 1818-26; for Cambridge Univ., 1826-27; solicitor-gen., 1819; attorney-gen., 1824; master of the Rolls, 1826; lord chancellor, 1827-30, 1834-35, and 1841-46.

**Lyndhurst**, vill., Hants, Eng.; pop., 2,500; adm. centre New Forest.

**Lyne**, Joseph Leicester (1837-1908), Eng. clergyman; ordained, 1860; adopted name of *Ignatius of Jesus*, 1863; fndd. religious community under Benedictine rule at Llanthony Abbey, Wales; became famous as preacher; vigorous upholder of orthodoxy; publ. *Tales of Llanthony*; *Brother Placidus*; hymns and poems.

**Lynn**, tn., Massachusetts, U.S.A.; pop., 102,300; boot and shoe trade.

**Lynton and Lynmouth**, seaside resorts, N. Devon, Eng.; pop., 2,000.

**Lynx**, feline carnivore; black ear-tufts; very short tail. **Common l.** ranges over Europe and N. Asia; **Desert l.** in Asia; **Canadian l.** in N. America; valuable fur.

**Lyonesse**, legendary country connected with the Arthurian Romances, esp. with Tristram and Isolt; said to have existed off the S. coast of Cornwall, and to be represented by the Scilly Isls., wh., according to local tradition, were connected with the mainland within historical times.

**Lyon King of Arms**, chief officer of heraldry in Scotland; styled *Lord Lyon*; K. of A. and secretary to Order of the Thistle. See HERALD.

**Lyons, Joseph Aloysius** (1879- ), Austral. politician; Treasurer, Min. of Education, and Min. for Rlys., 1914-16; Pr. Min., Tasmania, 1923-28.

**Lyons, Lyon**, cap. dépt. of Rhone, France, at junctn. rivs. Rhone and Saône (24 bridges); pop., 580,000; 3d city of France; fortress; abpric. (12th-14th cent. cathed.); univ.; schools of music, fine arts, commerce, weaving, etc.; medical and vet. schools; Palais des Arts (museums, picture gallery); Rom. remains; silk industry; engineering, motorcars, printing, banking (*Crédit Lyonnais*).

**Lyra**, "The Lyre", constell. containing star Vega (*q.v.*); see PL., ASTRONOMY, N.C.H., G.

**Lyre**, a Gr. stringed instrument. **L. bird**, Australian bird, somewhat smaller than the pheasant; cock remarkable for tail feathers,



Lynx

wh. resemble an ancient lyre when displayed in mating season.

**Lyric**, *lyric poetry*, term orig. applied to verse suitable to be sung to musical accompt. (lyre); usu. in brief stanzas or strophes expressive of personal emotions.

**Lysander** (d. 395 B.C.), Spartan gen.; deftd. Athenians in Peloponnesian War; killed nr. Haliartus, Boeotia, Greece.

**Lysias** (458-378 B.C.), Attic orat.

**Lysimachus** (361-281 B.C.), Macedonian; gen. of Alexander the Great; Kg. of Thrace after death of A.; joined league agnst. Antigonus, 315; obtained Macedonia, 286; dftd. and killed by Seleucus Nicator.

**Lysippus** (fl. 336-270 B.C.), Gr. sculptor.

**Lysis**, (med.) gradual fall of temperature; ant.: *Crisis*.

**Lysol**, antiseptic made by combining cresols, carbolic acid, and soap solution.

**Lytton, Edward Geo. E. Bulwer-Lytton**, 1st bn. (1803-73), Eng. novelist and politician; M.P., 1831; Sec. for Colonies, 1858; novels incl. *Last Days of Pompeii*, 1834; *Rienzi*, 1835; *Harold*, 1848. His s., **Edward Robert Bulwer-Lytton**, 1st E. (1831-91), Eng. diplomat and poet; Viceroy of India, 1876-80; Ambass. at Paris, 1887-91; under pen name, *Owen Meredith*, wrote *Clytemnestra and other Poems*, 1875; *Fables in Song*, 1874, etc. **L., Victor Alex. Geo. Robt. L.**, 2nd E. (1876- ), statesm. and adminis.; 1st Ld. of Admiralty, 1916; Under-Sec. for India, 1920-22; Gov. of Bengal, 1922-27; Viceroy and acting Gov.-Gen., Apr.-Aug., 1925; headed L. of N. Comm. of Enquiry into Chino-Jap. dispute re Manchuria (*q.v.*), and drew up the **L. Report** thereon, 1932.



Lyre Bird

# M

**M.**, abbr. *Monsieur* (Fr.), Mr.

**M.A.**, abbr. *Magister Artium* (Lat.), Master of Arts.

**Ma**, (chem.) symbol of masurium.

**Maar** (Ger.), volcanic crater due to eruption of steam without lava.

**Maartens**, Maarten (1858-1915), pen-name of Joost Marius W. van der P. Schwartz, Dut. novelist writing in English; *The Sin of Joost Arelingh*, 1890; *Brothers All*, 1909, etc.

**Maas**: see MEUSE.

**Maastricht** (formerly *Maestricht*), cap. Limburg, Holland, on Riv. Meuse; pop., 60,000; 6th cent. ch.; oldest in Holland.

**Maat**, Egyptian goddess of Truth and Right.

**Mabillon**, Jean (1632-1707), Benedictine monk of Maurist congregation (q.v.); pioneer of Lat. palaeography; *De re diplomatica*, 1681.

**Mabinogion**, or *The Red Book of Hergest*, 14th-15th cent. MS. of Welsh and Irish Arthurian legend and mythol. includg. *Geraint*, *Pereidur* (Arthurian), *Killkarch and Olwen*, and *Dream of Rhonabwy* (Arthurian Ir. mythol.): *Pwyll*, *Branwen*, etc. (purely Ir.). Trans. and ed. by Lady Charlotte Guest, 1838-49.

**Mabuse**, Jan (c. 1470-1541), pseudon. of J. Gossaert of Maubeuge, Flem. painter; *Adoration of the Kings* (in Nat. Gall., London).

**McAdam**, J. L. (1756-1836), Brit. road-builder; Surveyor-Gen. of Roads, 1827; inv. of **macadam**, road surface made of sharp-edged pieces of hard stone broken to fairly uniform graded sizes and embedded in sand and earth. **Tar-m.**, road made of pitch or tar and correct proportions of graded broken stone and sand, coated with tar before being laid and rolled.

**Macao**, Port. prov., S. China, comprising isls. of *Macao*, *Taipa*, and *Coldane*, at mouth Canton Riv.; area, 4 sq.m.; pop., 157,800 (Chinese and Portug. half-breeds); exports: rice, silk, tobacco, opium; cap., *Macao*.

**Macaques**, group of mainly Oriental monkeys with well developed cheek-pouches and callosities on the buttocks; tail may be long or short; many of comparatively large size and savage disposition. Common *Bengal Monkey*, docile and often exhibited; *Barbary Ape*, or *Magot*, is found in N. Africa and rock of Gibraltar; only wild species in Europe.

**Macaroni**, dough of fine flour formed in small hollow tubes; nat. dish of It. *Spaghetti* and *vermicelli*, smaller and finer form of macaroni.

**Macassar**, port and cap., Celebes, Dutch E. Indies, on S. penins.; pop., 57,475; exports rubber, copra, tobacco. **Strait of M.**, sea betw. Celebes and Borneo.

**Macaulay, Rose**, Eng. novelist and journalist; *Potterism*, 1920; *Orphan Island*, 1924; *They Were Defeated*, 1932. **M., Thomas Babington**, Bn. M. (1800-59), Eng. statesm. and histor.; lib. M.P. (at intervals), 1830-56; Mem. of Supreme Council of India, 1834-38; Sec. of State for War, 1839-41. *Essays*, 1843; *History of England*, 1848-55.

**Macaw**: see PARROT.

**Macbeth**, Kg. of Scotland, 1040-57; deftd. and slain by Malcolm Canmore at Lumphanan; chief figure in tragedy by Shakespeare.

**Maccabees** (*The Hammers*), name given to the Hasmonean clan in Palestine who, being successful in a revolt against Antiochus Epiphanes, 167 B.C., fndd. the Hasmonean dynasty (recognised by Rome, 139), which lasted until 37 B.C. when Herod defeated Antigonos, the last of the dynasty. *Books of the M.*, 4 bks. of Apocrypha; first 2 incldd. in Vulgate (q.v.); 1st Bk. historical, covering Jewish hist., 175-135 B.C. (see JUDAS MACCABAEUS); 4th Bk. semi-philosoph., ascribed to Josephus; written at opening of Christian Era.

**M'Carthy**, Justin (1830-1912), Irish polit., journalist, historian, and novelist; M.P., 1879-1900; chmn. of Irish Parliamentary party after fall of Parnell; resigned, 1896; *History of Our Own Times* (7 vols.), 1879-1905.

**Macclesfield**, munic. bor., Cheshire; centre Eng. silk manufacture; pop., 34,900.

**McClintock**, Sir Francis (1819-1907), Brit. Arctic explorer and naval officer; took part in Ross's search for Sir Jn. Franklin's ships, 1848, and in 2nd and 3rd expedtns., 1850, '54; commanded successful expedtn., 1857; sounded N. Atlantic for electric cable.

**McClure**, Sir Robert (1807-73), Brit. Arctic explorer and naval officer; discovered N.W. passage from Pacific to the Atlantic, 1850-54.

**McCormack**, John (1884- ), Irish tenor singer; nat. Amer. citizen, 1919; 1st

appeared in *Cavalleria Rusticana*, Covent Gdn., 1907; in New York, 1909; created Count of the Holy Rom. Empire, 1928.

**Macdonald, Flora** (1722-90), Scot. heroine; imprisd. in Tower of London (1746-7) for assisting Chas. Edw. Stuart to escape after Culloden. **M., George** (1824-1905), Scot. pastor, novelist, and poet; *Phantastes*, 1858; *David Elginbrod*, 1862; and many books for children. **M., James Ramsay** (1866-

), Brit. statesm.; co-finder. of Lab. Party (*q.v.*), 1900; leader of party in Hse. of Com., 1911-14 and 1922-24; Pr. Min., 1924, and again from 1929; formed Nat. Govt., 1931. Auth. of *Socialism and Government*, *The Socialist Movement*, etc.

**Macdowell, Edward Alexander** (1861-1908), Amer. composer; concertos, sonatas, and pieces, mostly piano.

**Macduff**, semi-mythical Scot. hero of 11th cent., Earl or Thane of Fife; tradit. chf. cause of Macbeth's overthrow; restored Malcolm Canmore as Kg. of Scotl., who rewarded him by assigning the Cross Macduff as a sanctuary to which he and his descendants might flee if they committed unpredicated homicide.

**Mace**, 1) heavy-headed club, form. used as weapon, now symbol of authority, e.g., of mayors, and esp. of Speaker of Brit. House of Commons, where it is removed from its position when Speaker leaves chair on House going into Committee. 2) Spice made from nutmeg-tree (*q.v.*).

**Macédoine**, mixture of var. fruits or veg. cut into diff. shapes, and used as salad.

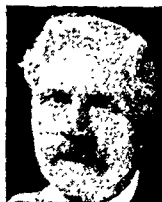
**Macedonia**, Balkan terr., partly Yugoslav, partly Greek; area, 13,190 sq.m.; pop., 1,412,475; mountainous country with fertile valls.; wheat, tobacco, fruit, wine; chief rivs., Vardar and Struma. Philip II (383-338 B.C.) estab. power of Macedonia which Alexander the Great (356-323) brought to its height; Rom. prov., 146 B.C.

**Maceration**, (phys.) extraction of soluble constits. of a solid by disinteg. it in water, acids, alcohol, etc.

**McEvoy**, Ambrose (1878-1927), Eng. portrait painter; A.R.A., 1924; noted for society portraits in line and wash, and also in oils.

**McEwen**, Sir John Blackwood (1868-), Brit. composer; princ. Royal Acad. of Music since 1924; *Solway* symph.; tone-poem *Grey Galloway*; many chamber works.

**McFall**, Frances Elizabeth: see GRAND, SARAH.



J. Ramsay  
Macdonald



Mace

**Macfarren**, Sir George Alexander (1813-87), Eng. composer; princ. Royal Acad. of Music from 1876.

**Macgillcuddy's Reeks**, range, Co. Kerry, I.F.S.; *Carrantuohill*, 3,414 ft.; highest summit in Ireland.

**McGill University**, Canadian univ. in Montreal, fndd. by bequest of Jas. McGill (1744-1813), obtained royal charter, 1821; rapidly developed on appointment as principal of Sir Wm. Dawson, 1855; comprises McGill Col.; Royal Victoria Col. for Women; Macdonald Col.; various affiliated colleges.

**Mach**, Ernst (1838-1916), Austr. philosopher and physicist; *History of Mechanics*.

**Machaerodus**, the sabre-toothed tiger, a large extinct carnivore of cat type with very large sabre-shaped downward-curving tusks in upper jaw; remains found in Eng., Europe, Asia, and N. and S. America.

**Machete** (Span.), a large heavy knife used in S. Amer. as cutting implement and weapon.

**Machiavelli**, Niccolò

(1469-1527), Ital. statesm.

and author; *The Prince* (*Il Principe*): comedy, *Mandragola*.

**Machiavellianism**,

**Machiavellian policy**, name for ruthless methods of government; derived from principles and doctrines contained in M.'s *Il Principe*.

**Machine**, mechan. device wh., when set in motion by any source of power, moves in a predetermined manner and performs some reqd. operation. **M. drawing**, system of drawing by which the forms and constructional details of all kinds of objects can be effectively represented. Object is imagined as suspended in a corner formed by three planes at rt. angles to one another, and perpendiculars drawn from each point of object to planes give three views of object: elevation, side-elevation, and plan. In the European system, drawings represent views produced as above and seen from the side of the object; in U.S.A. system, views are those seen from opposite sides of planes, as if latter were transparent. Full lines represent what is seen, dotted lines what is covered. Sectional views are indicated by cross shading. Drawings are to scale, so that any dimension can be found by measuring drawing. Dotted lines show centres and axes and lead to dimension lines, which are full lines carrying arrows at each end. Besides projection at right angles on to three planes, other methods (isometric, dimetric, oblique, etc.) are used. **M. gun**, abbr. M.G., most important quick-firing weapon of infantry; the recoil is used to throw out the empty cartridge case, feed a new cartridge into the chamber, cock the gun, and fire next round. *Heavy M.G.s.* are water-cooled, *light M.G.* air cooled. Up to 800 rounds per min. See also LEWIS GUN;



Machete

**MAXIM. M. tools**, apparatuses for mechan. produc. of goods, e.g., lathes, drilling, milling, planing, punching machines; also autom. tools, such as lathes.

**Machpelah** (Bibl.), field and cave near Hebron, bought by Abraham, from Ephron the Hittite, as burying-place for Sarah.

**McKenna**, Reginald (1863- ); Brit. statesm.; Chanc. of Excheq., 1915; introd. war loans and **McKenna duties** (1915), temporary duties on motorcars, films, clocks, musical instruments, and similar imports, 33 $\frac{1}{2}$ % *ad valorem*.

**McKennal**, Sir Bertram (1863-1931), Brit. sculptor, b. in Australia; R.A., 1922; memorial tomb of Kg. Edw. VII; *The Earth and the Elements*; *Diana*; designed coinage for Kg. George V.

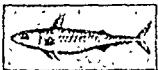
**Mackensen**, August von (1849- ), Ger. F.M.; com. E. Front and in Balkans, 1914-18.

**Mackenzie**, Sir Alexander (c. 1755-1820), Canad. explorer; journeyed from Fort Chippewyan along Grt. Salt Lake to Arctic Ocean, 1789; from Fort Chippewyan across Rocky Mtns. to Pacific coast, 1792. **M., Sir Alexander Campbell** (1847- ), Brit. composer; princ. Royal Acad. of Music, 1888-1924. Oratorio, *Rose of Sharon*, etc. **M., Compton** (1883- ), Brit. novelist and author; *Carnival*, 1912; *Sinister Street*, 1913-14; *Gallipoli Memories*, 1929; etc. **M., Sir Morell** (1837-92), Brit. physician; one of fndrs. of Hospital for Diseases of the Throat, London, 1863; invited to attend Crown Pr. of Ger., 1887; in spite of M.'s favourable diagnosis, the disease eventually proved to be cancer and ended fatally, 1888; *Manual of Diseases of the Throat and Nose*, 1880-84; *Use of the Laryngoscope*, 1865. **M., Sir Thomas** (1854-1930), New Zealand statesm.; held many N.Z. ministerial posts; Pr. Min., 1912; High Commr. for New Zealand, 1912-20; knt., 1916.

**Mackenzie**, 1) riv., N. Amer., discovered by Alex. Mackenzie (q.v.); rises Rocky Mtns. as *Athabaska*; flows 600 m. to Lake Athabaska; thence 240 m. as *Slave Riv.* to Great Slave Lake; thence 1,000 m. as Mackenzie Riv. (fed by Great Bear Riv.) into the Arctic. 2) Prov. dist., N.W. Terr., Canada, watered by Mackenzie River.

**Mackerel**, medium-size marine fish of the tunny family, with slender body, sides and belly brilliantly silvery. Range S. of Norway to Canary Isls. and throughout Mediterranean. In British Isls. most abundant in Eng. Channel.

**Mackinac Island**, tn., Michigan, U.S.A., on isl. at N.W. end of L. Huron; pop., 500; old fishing and trading vill.; chf. post of American Fur Co., 1820-40.



Mackerel

**McKinley**, William (1843-1901), Amer. statesm.; 25th Pres. U.S.A., 1897-1901; assassinated by anarchist.

**McKinley, Mount**, peak, Alaska, highest mtn. N. Amer.; 20,300 feet.

**Mackintosh**, Sir James (1765-1832), Scot. philosopher; recorder of Bombay, 1803; judge in crt. of vice-admiralty, Bombay, 1806; M.P. 1813; prof. of law, Haileybury, 1818-24; *Dissertations on the Progress of Ethical Philosophy*, 1830; *History of the Revolution in England in 1688*, 1834.

**Maclaren, Archibald Campbell** (1871- ), Eng. cricketer; capt. of Lancs, 1894; played for Eng. v. Australia in eight seasons betw. 1894 and 1909, being three times captain. His score of 424 (1895), record in individual score in 1st-class cricket until Ponsford's 429 (1923). **M., Ian**, pseud. of John Watson (1850-1907), Scot. divine and author, one of the "Kailyard School"; *Beside the Bonnie Brier Bush*, 1894; *The Mind of the Master*, 1896; *Kate Carnegie*, 1896.

**Macleod, Fiona**: see SHARP, WM. **M., John James Richard** (1876- ), Brit.-Canadian physiolog.; with Banting (q.v.), disc. insulin; F.R.S., 1923; Nobel Prize (Med.), shared with Banting, 1923.

**Maclise**, Daniel (1806-70), Brit. painter; R.A., 1828; *Meeting of Wellington and Blücher*; *Death of Nelson*; *The Play Scene in "Hamlet"*; *Malvolio and the Countess*.

**Macmahon**, Maurice de (1808-93), Fr. gen. and marshal; com. in Crimean and Fr.-Pruss. Wars; captured at Sedan; Pres., 1873-79.

**McMillan**, Margaret (1860-1931), Eng. educationalist and pioneer of nursery schools; founded various school clinics, especially Deptford Health Centre (largest in Eng.); pub. *Early Childhood*; *The Nursery School*; etc.

**McNeill**, James (1869- ), Irish civil servant and politician; Indian civil service, 1890-1921; chmn. Dublin County Council, 1922; member of committee drafting new constitution of I. F. S., 1922; High Commis. I.F.S., 1923-28, and Gov.-Gen., 1928-32.

**Mâcon**, cap. dépt. of Saône-et-Loire, France, on Riv. Saône; pop., 18,500; wines.

**Macpherson**, James (1736-96), Scot. writer; *Works of Ossian*, 1765, ostensibly translats. of 3rd cent. Gaelic poems.

**Macramé**, ornamental trimming of knotted twine or threads; early form of lace (q.v.), made orig. in N. Italy.

**Macready**, William (1793-1873), Eng. tragic actor; 1st appeared at Birmingham in his father's theatre, 1810; appeared Covent Gdn., London, 1816; undertook management of Covent Gdn. Theatre, 1837-39; Drury Lane Theatre, 1841-43; noted for repres. of Macbeth, Cassius, Lear, Iago, etc.

**Macrinus**, Marcus Opelius (164-217-218), Rom. emp.; apptd. prefect of praetorians by Caracalla; instigated murder of Caracalla; succ. him; deftd. by Parthians at Nisibis; slain by supporters of his successor, Elagabalus.

**Macrocosm**, the great world; the universe. Cf. MICROCOSM.

**Macron**, straight line over vowel indicating length; ant., *breve*, mark of short vowel, e.g., Lat.: *nūmēn*.

**Macula**: see YELLOW SPOT.

**Macwhirter**, John (1839-1911), Brit. landscape painter; R.A., 1893; *June in the Austrian Tyrol* (Tate Gallery).

**Madagascar**, isl. in Indian Ocean, off E. coast of S. Africa; 242,150 sq.m. (incl. Comoro Isl.), pop., 370,000; table-land with volcanic mtns., inhab. known as Malagasies. Rice and coffee plantations on coast; cattle breeding in highlands; exports vanilla, coffee, graphite. Fr. colony since 1897. Cap., *Antananarivo*.

**Madame Butterfly**, opera by Puccini (q.v.), 1904.

**Madapolam**, fine cotton cloth heavily dressed with kaolin; exported to East.

**Madden**, Sir Chas. Edw., Bt., O.M. (1863- ), Brit. adm.; 4th Sea Ld., 1910-11; rear-adm. commdg. Home Fleet, 1911-12; chf. of staff to Adml. Jellicoe, 1914-16; served in b. of Jutland; 2nd in commd. of Grand Fleet, 1917; Adml. of the Fleet, 1924; 1st Sea Ld. of the Admty., 1927-30. **M.**, **Sir Frederic** (1801-73), palaeographer and lit. editor; chf. of Brit. Mus. dept. of MSS., 1837-66; ed. Layamon's *Brut* (1867), etc.

**Madder**, 1) rich red dye prepared from the roots of *M. plant*, *Rubia tinctoria*; now prepared synthetically (alizarin); 2) wild madder, *R. peregrina*; greenish yellow flowers; black berries.

**Madeira Islands, Madeiras** (314 sq.m.), group forming prov. of Port., 360 m. off coast of Morocco.

Largest isl., *Madeira*; 285 sq.m.; pop., 190,000; mountainous (Pico Ruivo, 6,050 ft.); mild climate; exports wine (Madeira) and fruit; cap., *Funchal*. *Porto Santo*, small isl. 25 m. N.E.; *Desertas*, three uninhab. islets, 10 m. S.E.; *Selvagens*, group of uninhab. rocks, 150 m. south.

**Madeley**, 1) mkt. tn., Salop, 5 m. S.S.E. Wellington; parish includes Ironbridge, Coalport, and part of Coalbrookdale (q.v.); pop., 7,400; coal, ironstone, potter's clay. 2) Vil., N.W. Staffs, 7 m. S.E. Crewe.



Madeira

**Madison**, James (1751-1836), 4th Pres. U.S.A. (1809-17); lawyer; mem. of the Virginia Convention, 1776; and of Congress (leader Repub. party), 1789.

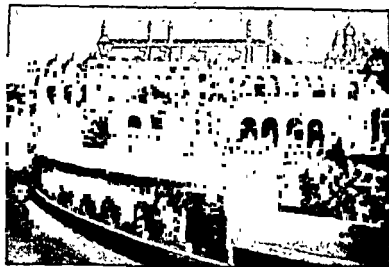
**Madison**, cap., Wisconsin, U.S.A.; pop., 57,900; seat of Wis. Univ. (1848); machinery, electrical appliances.

**Madonna** (Ital.), "My Lady," the Virgin Mary; esp. in art, a representation of the Virgin, usually with the Child Jesus.



Madonna, after della Robbia

**Madras**, 1) prov., India, occupying S. part Deccan penins.; 142,300 sq.m.; pop., 46,748,700 (mostly Hindus). Coast-line 1,200 m. on W., 500 m. on E.; no natural



Madras, Governor-General's Palace

harbours. Principal mtns., *E. and W. Ghats*; centr. table-land (up to 3,000 ft.), made fertile by irrigation (see KRISHNARAJASAGARA DAM); rivs. Kistna, Godavari, Cauvery. Products: rice, millet, oilseeds, cotton, spices, tobacco, tea; teak forests; manganese ore. Climate varied; abundant rainfall (monsoon Oct.-Dec.). 2) Cap. of prov., on Coromandel coast; pop., 647,200; seapt.; Madras Univ.; Anglican cathed.; Eng. settlement, 1639. 3) **M. States**, five native States in S.E. Madras; 10,700 sq.m.; pop., 6,754,400; hqrs. of Agency, *Trivandrum*.

**Madras muslin**, light, wide-meshed muslin with figuring of soft spun weft, used for curtains, etc.

**Madrepore**, genus of reef-building corals.

**Madrid**, cap. of Sp. and of prov. of M. (3,090 sq.m.; pop., c. 1,340,000), sit. on a plateau 2,150 ft. abv. sea-lvl., on Riv. Manzanares; pop., 826,000. Univ. (library); abpric.; ex-royal palace; famous picture gall.; rly. centre of Spain; leather goods, tobacco, chemicals, furniture, pottery, jewellery, paper; sawmills, soap works, foundries. Cap. since c. 1500; outbreak of revolution, May, 1931. **Treaty of M.**, betw. emp. Charles V and Francis I of France, 1526.

**Madrigal**, (mus.) orig. Ital. verse form (pastoral song); an old choral composition of secular character for several voices.

**Madura**, 1) isl. Dutch East Indies, N.E. of Java; 1,748 sq.m.; pop., 1,810,300; spices sugar, tobacco. 2) Tn., Madras, India; cap. of prov. same name; pop., 182,000; temple; textile industry, cotton trade.

**Maander, Menderes Chal**, riv. (c. 200 m.), W. Asia Minor, flows into Aegean Sea; winding course proverbial; hence the word *meandering*.

**Maccenas**, Gaius (c. 73-8 B.C.), Rom. statesm. and patron of artists and writers.

**Maelstrom**, name orig. given to violent whirlpool off N.W. coast of Norway, betw. two of Lofoten Isls.; now applied to other whirlpools and also used metaphorically.

**Maenad** (Gr., mad woman), devotee of Dionysus; a Bacchante (*q.v.*).

**Maes**, Nicolas (1632-93), Dut. painter, pupil of Rembrandt; *The Card Players*.

**Maestoso**, (mus.) majestically, with dignity.

**Maestricht**: see MAASTRICHT.

**Maestro** (Ital.), master, esp. with reference to a musician.

**Maeterlinck**, Maurice (1862- ), Belg. poet; *Pelléas et Mélisande*; *Monna Vanna*; Nobel Prize (Lit.), 1911.

**Mafeking**, cap., Brit. Bechuanaland, S. Africa; pop., 5,000 (1,800 whites); Brit. garrison, under Baden-Powell (*q.v.*), besieged for 7 months in second Boer War; relieved 17 May, 1900.

**Mafia**, island (195 sq.m.) off Tanganyika Terr., opp. mouth Riv. Rufigi; formerly a centre of the slave trade.

**Mafia**, Sicilian secret society dating from about 1800; much the same as the *Camorra* (*q.v.*) of Naples.

**Magallanes**, mountainous terr., extreme S. of Chile, S. Amer.; includes Cape Horn; 52,000 sq.m.; pop., 38,000; some nomadic Indians; sheep breeding. Cap., Magallanes (formerly Punta Arenas), pop., 24,300.

**Magazine-rifle**, weapon with a *magazine*, or chamber, containing several cartridges wh. are automatically fed into the breach.

**Magdala**, 1) **Dalmanutha** (anc. geogr.), city on L. Gennesaret (Sea of Galilee), b. place of Mary Magdalene. 2) Stronghold, Abyssinia, stormed, 1868, by the Brit., under Sir Robt. Napier.

**Magdalen College**, Oxford; fndd. 1458 by William of Waynflete, Bp. of Winchester. Its alumni included William Camden, John Hampden, and the historian Gibbon.

**Magdalena**, chf. riv. (975 m.), Colombia; rises in N. Andes and flows into Caribbean Sea. **M. Bay**, whaling station on S.W. coast of Lower California, Mexico.

**Magdalene**: see MARY.

**Magdalene College**, Cambridge; fndd. 1542 by Thomas, Bn. Audley of Walden. Valuable collectn. of books bequeathed by Samuel Pepys, one of its alumni, who included Charles Kingsley and Charles Stewart Parnell. Pronounced *Maudlin*.

**Magdalenian culture**, (archaeol.) latest divn. of Upper (Later) Palaeolithic Period (*q.v.*), named after *La Madeleine*, rock shelter, nr. Les Eyzies, Dordogne, France. Working of flint inferior to that of preceding (Solutrian) period: bone implements (needles, spears, harpoons, etc.); engravings on bone of horses, ibex, deer, glutton, reindeer, etc.; sculptures of glacial period. Cave-paintings and wall-engravings (e.g., at Altamira [*q.v.*]).

**Magdeburg**, cap. Saxony, and of dist. of M. (4,450 sq.m.; pop., 1,300,000), on Riv. Elbe; pop., 299,400; iron and steel, shipb., machinery, locomotives; State school of engineering; transit trade; sugar exchange. Abpric. since 962; Hanseatic tn.; sacked by Tilly, 1631.

**Magellan**, Ferdinand (1480-1521), Portug. navigator; killed while attempting 1st circumnav. of globe, which was completed by survivors under Juan del Cano; discovd. Philippines, Strait of Magellan, Patagonia, and Tierra del Fuego; named Pacific Ocean. **Strait of M.**, strait betw. S. Amer. mainland and Tierra del Fuego; c. 360 m. long, and 3-20 m. broad.

**Magenta**, tn., W. Lombardy, Italy, on Riv. Ticino; pop., 11,000; olive-oil; silk. **Battle of M.**, 1859; defeat of Austrians by Fr. and Sardinians (Napoleon III, MacMahon).

**Magerö**: see NORTH CAPE.

**Magersfontein, Battle of** (2nd Boer War), Dec. 11, 1899; Lt. Methuen's division with the Highland Brigade under Gen. Wauchope, repulsed by Cronje in command of 9,000 Boers; Brit. losses 1,079, including Gen. Wauchope; Boer losses stated to be 320.

**Maggiore, Lago**, lake, N. Italy and Switzerland (canton of Ticino), betw. Lugano and Ticino Alps; length, 40 m., area, 81 sq.m., max. depth, 1,214 ft.; fed and drained by Riv. Ticino; contains Borromean Islands.

**Magi**, 1) priestly caste (esp. of Medes and Persians) of astrologers, from whom word "magic" derived. 2) The three Wise Men who came to adore the infant Christ (Matth. ii); later known as Caspar, Melchior, and Balthazar.



Maenad



Maeterlinck



Magellan



**Magic**, alleged art of ruling powers of nature (spirits and demons) thr. secret means or symbol. actions. Widespread in all primitive relig. In Mid. Ages distinction made betw. *white magic* and *black magic* (alliance with evil powers, league with the Devil). **M. Flute**, *Zauberflöte*, opera by Mozart (q.v.) (1791). **M. lantern**, instrument for projecting magnified images on a screen.

**Magistrate**, judge of minor rank. In Lond. and some large tns. paid barristers (**Stipendiary Ms.**), but elsewhere unpaid and mainly not lawyers.

**Maglemoosean culture**, (archaeol.) phase of Mesolithic Period (q.v.), named after *Maglemose*, Zealand, Denmark.

**Magma**, molten siliceous rock of the earth's interior, highly charged with gases; forces its way out of volcanic craters as a sluggish stream of lava or as fine ashes.

**Magna Carta**, the "Great Charter of Eng. Liberty," extorted from Kg. John by the Bns., and sealed at Runnymede 15 June, 1215. It guaranteed certain feudal rights and obligations, secured liberties of London and other towns, laid down the constitution of Great Council, and decreed that no one shd. be kept in prison without trial, that justice should not be sold, refused, or delayed, and that none should suffer fine, imprisonment, or exile but by the judgment of his peers. Many times confirmed.

**Magna est veritas et praevallebit** (Lat.), truth is great and will prevail.

**Magnalium**, aluminium with 3%-25% magnesium; light metal of great strength and durability for bldg. aircraft, light motors, scient. instruments.

**Magnesia**, 1) penins., E. Thessaly, Greece, betw. Gulf of Volo and Aegean; contains Mt. Pelion. 2) Anc. city, Asia Minor, now *Manisa*, Turk. tn., 20 m. N.E. of Smyrna, cap. vilayet same name (5,536 sq.m., pop., 372,560); cotton mills; pop., 28,650. 3) Ancient city, Asia Minor, on Riv. Maeander, where Themistocles died.

**Magnesia**, or **burnt magnesia**, magnesium oxide, MgO; light, white powder used in med. as antacid and mixed with magnesium chloride for making crucibles.

**Magnesian** (or **dolomitic**) **limestone**, Limestone containing magnesium carbonate.

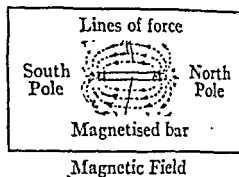
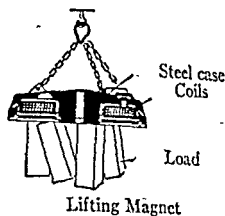
**Magnesite**, (min.) vitreous, white to brown rock, consisting of magnesium carbonate, found in parts of Europe and Amer.; used in manuf. of magnesia, Epsom salts, paint and fire-bricks.

**Magnesium**, chem. element, sym. Mg; at. wt. 24.32; silver-white metal, m.p. 650°; sp. gr. 1.5; found only in combination as carbonate (magnesite), sulphate (kieserite), etc. Burns with brilliant light; used in fire-works and photog.; alloy contg. 75% M. used in small aeroplane parts. **M. sulphate**,

M<sub>2</sub>SO<sub>4</sub> (white crystals), a useful purge (Epsom salts); **M. carbonate**, M<sub>2</sub>CO<sub>3</sub>, a light white powder, used as dentifrice and for indigestion. Finely powdered soapstone (q.v.) is talcum (M. silicate) used in many arts and as a toilet requisite.

**Magnet**, a body exerting and reacting to magnetic force (see MAGNETISM). **Lifting m.** (see Ill.), an electro-magnet wh. lifts its load when supplied with elec. current, and releases load when current is cut off.

**Magnetic field**, any space where magnetic force is present; its direc. can be determnd. by means of iron filings and thr. deflection of M. needle. It is mapped by means of *lines of force* (q.v.). **M. poles**: see MAGNETISM.



**Magnetism**, force prod. in space by electr. in motion. Familiar is M. of iron and steel, every particle of wh. is made into a small magnet by electrons (q.v.) circling perpetually around it. A *magnet* (q.v.) is a bar of steel (best tungsten or cobalt steel) in wh. all the particles have been set so as to reinforce one another's effect; ends of bar are called the poles; when the M. is freely suspended it sets itself along the lines of force (q.v.) of earth's magnetic field. Magnetism appears to be concentrated in the poles, wh. are called North and South; *unlike* poles attract, *like* poles repel, one another. Iron and other bodies are magnetised when placed in a magnetic field. An **electro-magnet** consists of a magnetising coil of copper wire carrying an electric current, and a core of iron which is thereby "magnetised" its particles being turned round so as to add their own magnetism to that produced by the current. **Animal m.**, an old name for hypnotism (q.v.), based on a false idea of its nature.

**Magnetite**, **loadstone**, mineral containing up to 72% magnetic oxide of iron.

**Magneto**, device for generating electric current, similar to dynamo (q.v.) but having permanent field magnets. Used on motorcar and other internal-combustion engines to generate current for ignition (q.v.).

**Magnetogorsk**, tn., S. of Verkhni Uralsk, Urals, Russia, built 1929; pop., 180,000. Planned for productn. of 62% pure magnetic iron ore.

**Magnetometer**, apparatus for measuring strength of magnetic field, consisting of one

or more bar magnets delicately suspended and with mirror or pointer for reading deflection.

**Magnificat** (N.T.), the Virgin's song of praise, "My soul doth magnify the Lord" (Luke i); a canticle (q.v.) in Eng. Bk. of Common Prayer and in Vesper service of R.C. Church.

**Magnitude of stars:** see STARS.

**Magnolia**, family of Asiatic and Amer. trees, with tulip-like white or pink fragrant flowers, wh. appear before the leaves.

**Magnum** (Lat.), two-quart bottle of wine. **Magnum opus**, great work, chief work of an author or other artist.

**Magnus**, Heinrich Gustav, phys. chemist (1802-70), discovd. forces known as **M. effect**, resulting from a revolving cylinder agst. wh. wind blows; tech. applied in the Flettner rotor (1924) (q.v.).

**Magpie**, bird of the crow family, black and white, long tail; frequents woods and commons and cultivated ground; distributed over greater part of Europe but becoming scarce in Gt. Brit.: omnivorous feeder on insects, eggs, young birds, rats, mice, carrion. **M. moth**, British moth, mottled black and white; larva feeds on blackberry and currant bushes; another variety known as **clouded moth**.

**Magyars**, Finnish-Ugrian race of horsemen; penetrated, in 9th cent., Danube and Theiss plains; now occupy Hungary.

**Mahabharata**, Ind. epic of gods and heroes (4th-7th cents. B.C.).

**Mahaleb cherry**, *Prunus mahaleb*, European var. of cherry; bitter, inedible fruit, from wh. a cordial is sometimes made; the wood used in turnery and cabinet-making.

**Maharajah:** see RAJAH.

**Mahatma**, Ind. title meaning "Great Soul"; name given to Gandhi (q.v.).

**Mahdi**, a descendant of Mohammed who, in Moslem theol., is expected to come and fill the earth with righteousness; most famous claimant to be Mahdi was Abdullah who ruled E. Sudan up till 1898, batt. of Omdurman (q.v.).

**Mahé**, Fr. colony, S. India, on Malabar Coast; pop., 12,500.

**Mah jongg**, Chin. game for 4 players with 34 diff. pieces (tiles), 4 of each kind; object is to form a "hand" (Mah jongg) of 14 pieces, 4 sets of 3, and one pair of identical pieces.

**Mahler**, Gustav (1860-1910), conductor, composer; 10 symphonies, songs; *Lied von der Erde*.

**Mahmud**, name of several Turkish sultans; **M. II** (1785-1839) attempted reform of

Turkey; broke Janissary power and Greece.

**Mahogany**, hard wood used making; varies in colour from light rich brown; properly obtained from *Suaresia mahoganii* (trop. Amer.) but also from other trees.

**Mahomet:** see MOHAMMED.

**Mahonia**, evergreen Amer. shrub with yellow flowers; akin to the barberry.

**Mahseer:** see BARBEL.

**Maia**, (Gr. myth.) one of the Pleiades (q.v.); mother by Zeus of Hermes (q.v.).

**Maida Vale**, district in N.W. London, in bors. of Paddington and Marylebone; named from Brit. victory over French at Maida, Italy, 1806.

**Maiden**, name given to a Scottish beheading machine similar to, but cruder than, the guillotine (q.v.); last used for decapitation of the 9th earl of Argyll, 1685.

**Maiden Castle**, 1) prehist. earthwork (115 ac.), Dorset, 2 m. S. of Dorchester. 2) Anc. earthwork 1 m. S.E. of Durham, 100 ft. above Riv. Wear.

**Maidenhair**, a fern with a delicate leaf, generally *Adiantum capillus-veneris* or *A. pedatum*.

**Maidenhead**, munic. bor., Berks, river-side resort on River Thames; pop., 17,500.

**Maiden speech**, first public speech, e.g., of M.P. in the House.

**Maid of Honour**, an unmarried lady, usu. of noble birth, attached to a qn.'s personal suite; she holds for life the title "honourable," and takes precedence after barons' daughters, if not of higher rank.

**Maidstone**, co. tn., Kent, Eng., on Riv. Medway; gaol; breweries, paper-mills; road centre of Kent; pop., 42,300.

**Maigre dishes**, food prepared without either meat or meat-stock; suitable for periods of fasting or abstinence.

**Maikop**, tn., Adygelsk auton. area, S. Russia, on Riv. Bielala; pop., 53,050; naphtha industry.

**Maillol**, Aristide (1861- ), Fr. sculptor; *Goddess of Fame*, for monument to Cézanne, 1925.

**Mail order business**, retail selling carried on by post. Catalogues with order forms are issued to prospective customers who send orders by post and receive the goods by post or other delivery. Pymt. is freqtly. made C.O.D. (cash on delivery).

**Maimonides**, Moses (1135-1204), Span.-Jew. philosopher, physician, mathematician; *Commentary on the Mishnah*.

**Main**, riv., Germany (310 m.), most important right trib. of Riv. Rhine; formed by junct. of *Red and White Main* (below Kulmbach); flows round Franconian Jura; navig. from confluence with Riv. Regnitz; flows past Frankfurt am Main; joins Rhine at Mainz.



Magnolia



Magpie

CA

110  
120  
130  
140  
150

**Magic**, alleged nature (spirits or symbol. active relig. betw. M.

haffenburg to

SS), Brit. jurist Custom, 1883.

State"), N.E. State, pop., 780,000; hilly, mainly forest; cap., *And* and port, *Portland*.

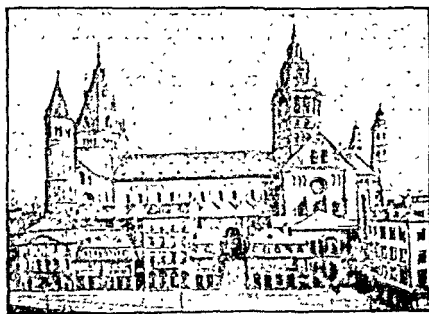
re, dépt. N.W. France, on lower Loire; 2,800 sq.m.; pop., , fruit, wine. Cap., *Angers*. and, 1) see POMONA. 2) Largest of Islands (q.v.).

**Mains**, main channels (pipes, insulated copper wires) by which water, gas, electricity, compressed air, etc., are suppl. to consumers.

**Maintenance**, 1) of an action: where any person having no int. in the cause gives to another a sum of money or other thing to maintain his plea; gives right of action to person aggrieved. 2) Of a person: costs of keeping, incl. lodging, board and clothing, used partic. of wife and children.

**Maintenon**, Françoise d'Aubigné, Marquise de (1635-1719), mistress and 2nd wife (1685) of Louis XIV of France.

**Mainz, Mayence**, cap. prov. of Rhine-Hesse, Ger., on Riv. Rhine, opp. mouth Riv. Main; pop., 134,000; cathed., electoral pal-



Mainz, Cathedral

ace; Rom. remains; centre Rhine wine trade. Abpric. (8th cent.); a powerful medieval State, and important until its secularisation in 1803; city, Fr., 1792-1814; Ger. since 1814; occupied by Allied troops after World War.

**Mais où sont les neiges d'antan?** (Fr.:

"Where are the snows of yester year?"), refrain of Villon's *Ballade des Dames du Temps Jadis* (of the fair women of former times).

**Maitre d'hôtel** (Fr.), house-steward; in a hotel, the employee in charge of the staff of waiters.

**Maize**, Indian corn, Cob Flower N. Amer. cereal, *Zea Maize* *mays*, widely cultivated in Amer. and S.



Africa, but little in Eur. (exc. Italy, Hungary, and Rumania).

**Majano**, Benedetto da (1442-97), Ital. sculpt. and archit.; *Palazzo Strozzi*, Florence.

**Majesty**, hon. title and style of address of emperor or king.

**Majolica**, species of pottery, prob. named after Majorca, where said to have been orig. made. See CERAMICS.

**Major**, 1) (milit.) officer, rank immed. above captain. See OFFICERS. 2) (Mus.) Scale, mode or tonality in which the 3rd is 2 tones from tonic or keynote, e.g., in C Maj. 3rd is E natural.

**Majorca, Mallorca**, largest of the Balearic Isls. (q.v.); 1,312 sq.m.; mountainous; highly cultivated; cap., *Palma*.

**Majority**, 1) greater part of a whole, esp. 1) Major; 2) Major (govt.), of number of votes

at a meeting or election: Eng. law usually content with bare majority, irrespec. of number of votes recorded or possible, but sometimes (e.g., where a loc. auth. resolves to promote a bill in Parl.) reqs. a certain proportion either of possible votes or members present and voting. See QUORUM. 2) (Law) Attained upon completion of 21st yr.; involves unconditional ability to carry on any legal transaction.

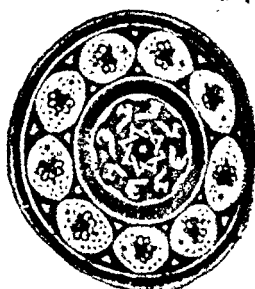
**Majuba Hill** (1st Boer War), Brit. column of 650 under Sir Geo. Colley driven from top of the hill by strong party of Boers, with loss of 253 including Gen. Colley, 27 Feb., 1881.

**Majuscule**, anc. Lat. writg.; cap. letter, orig. written separately, then cursive; then replaced by new cursive minuscule.

**Make-up**, cosmetic material used by actors to alter their appearance; consists of grease paint (q.v.), powder, mascaro or hot-black for eyelashes, lining-pencil, crêpe hair put on with spirit gum, nose-paste for altering nose, etc., wet-white for shoulders and limbs, wig paste for concealing edge of wig foundation.

**Making a price**, (Stk. Exch.), naming by a jobber (q.v.) of his selling and buying prices.

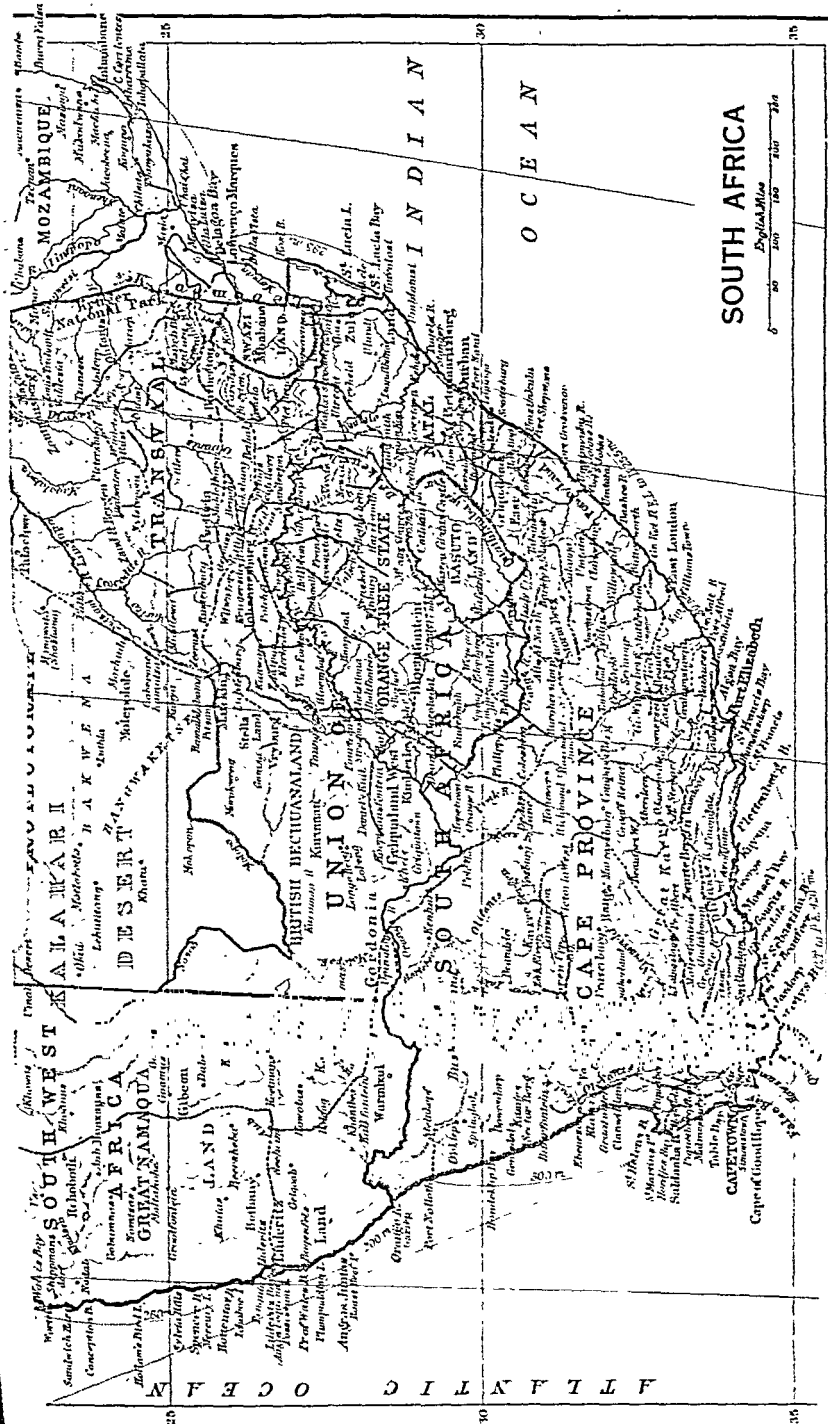
**Malabar**, dist., S.W. coast, Madras, India; 5,585 sq.m.; pop., 3 millions (two-thirds Mohammedans, one-third Hindus); extends from W. Ghats to Indian Ocean; pepper, rice,



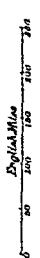
Majolica Plate

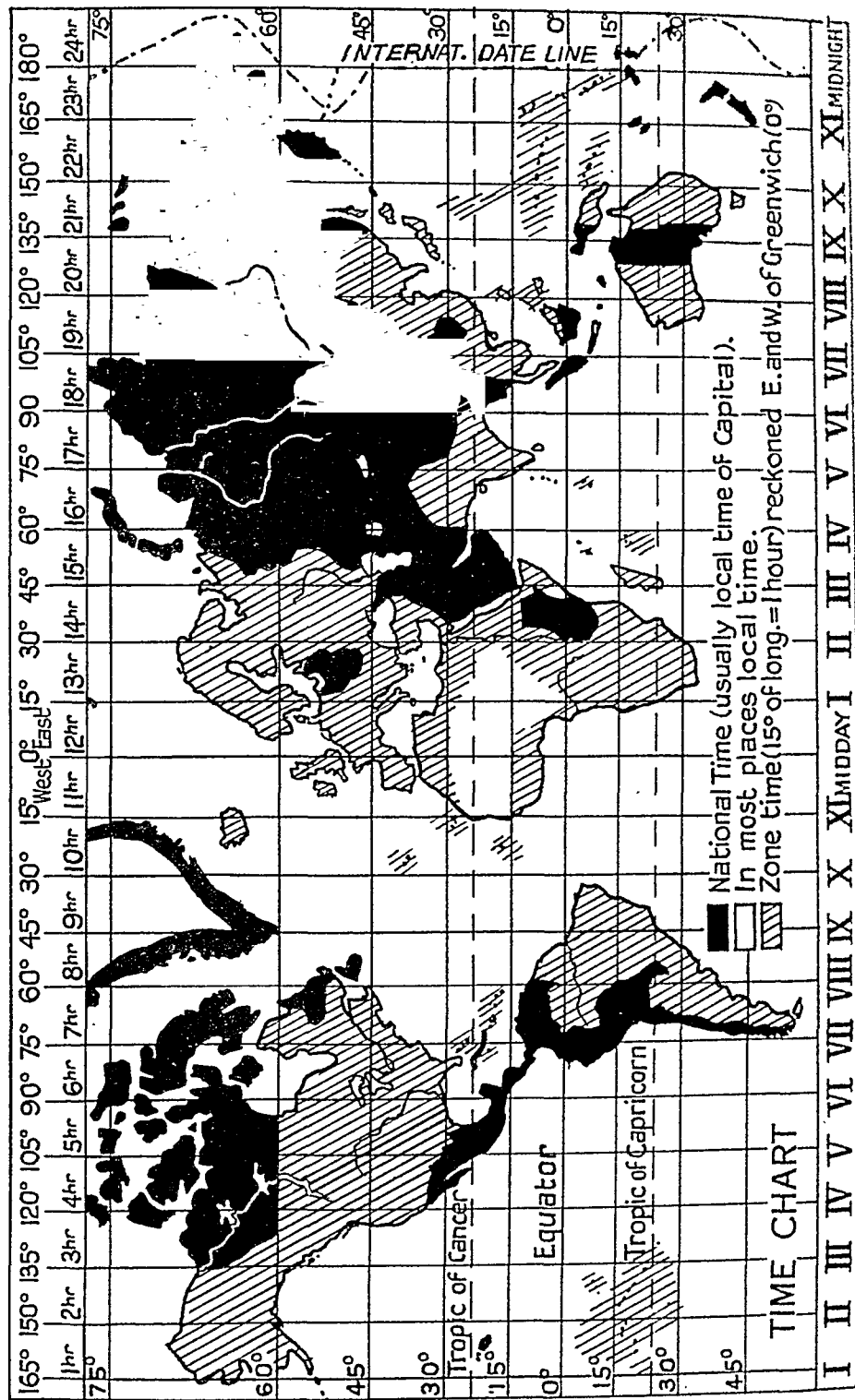


Major Ranks in British Army General.



SOUTH AFRICA





coffee; cap., *Calicut*. **M. Coast**, designation for S.W. coast of India.

**Malacca**, largest of Straits Settlements (q.v.); W. coast Malay Penins.; c. 700 sq.m.; pop., 186,700.

**Malachi**, (O.T.) "my messenger," title or name of prophet; author of last book in O.T., written in Persian period (c. 440 B.C.).

**Malachite**, green mineral, chflly. carbonate of copper; takes high polish, and is used for ornaments, vases, table-tops, etc. **M. green**, colour produced by a dye of the triphenylmethane series; taken directly by silk and wool, but by cotton only after treatment with mordants (q.v.).

**Maladetta**, mtn., Spain, highest part of Span. Pyrenees; Pic de Nêthou, 11,155 feet.

**Mala fide** (Lat.), in bad faith.

**Malaga**, 1) Maritime prov., Andalusia, S. Sp.; 2,812 sq.m.; pop., 610,100; mountainous in S.; oil, wine, fisheries. 2) Cap. and fortified port of prov., at mouth Riv. Guadalmedina; pop., 188,100; cotton, sugar, leather; exports wine sim. to sherry (q.v.); winter resort.

**Malakand**, dist., N.W. India, forming a polit. agency of N.W. Frontier Prov. **M. Pass** leads from Brit. dist. of Peshawar to Swat; in March-April, 1895, force sent to relieve Chitral (q.v.) routed the opposing Pathans.

**Malaprop**, Mrs., character in Sheridan's *The Rivals*, from whence **Malapropism**, misapplication of words in an attempt to use fine language.

**Mal à propos** (Fr.), ill-timed, inapposite.

**Mälär**, lake, Sweden; drains into Saltsjö (arm of the Baltic); Stockholm sit. at junctn.; 583 sq.m.; 1,260 isls.; max. depth 210 feet.

**Malaria**, marsh-fever, disease carried by mosquitoes (see ANOPHELES); characterised by attacks of fever and shivering, occurring daily or every 2nd or 3rd day. *Treatment* by use of cinchona bark, or quinine derived from it. Use of cinchona introduced by Jesuits from S. Amer. in 17th century. **Malarial plasmodia**, active malaria agents (parasites) wh. circulate in blood and destroy red corpuscles.

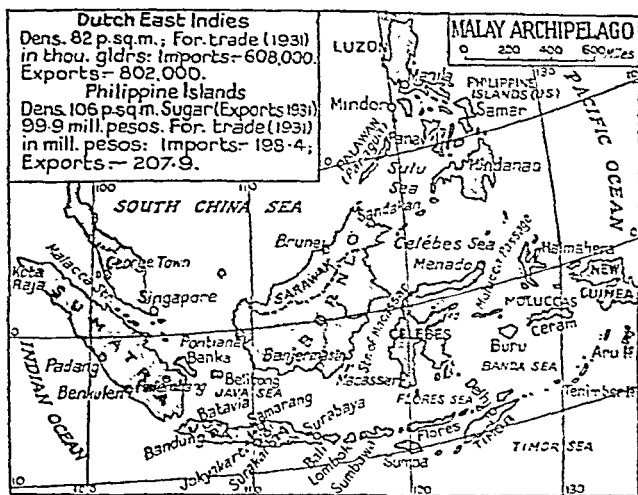
**Malaspina Glacier**, glacier 60 m. long, W. coast Alaska.

**Malatesta**, noble Ital. fam. in Rimini;

*Malatesta da Terrucchio*, Guelph leader c. 1300.

**Malay**, Indonesian lang., *lingua franca* of E. Indian Archipelago. See LANGUAGE SURVEY, *Austro-Asiatic*.

**Malay Archipelago**, chain of isls. stretching betw. S. Indo-China and N. Australia; belong to Holland (see DUTCH EAST INDIES), Britain, U.S.A., and Portugal. Total area over 1 million sq. miles. **M. Peninsula**, "British Malaya," 59,800 sq.m.; pop., 4,385,000 (Chin., 1,700,000; Malays, 1,640,000; Indians, 600,000); S. extremity



of Indo-China, betw. Bay of Bengal and S. China Sea; separated from Sumatra by Malacca Strait; contains Unfederated and Federated Malay States, and Straits Settlements; coasts flat, mountains and dense forests in interior; climate uniformly hot and moist; exports: tin, rubber, mineral oils, copra, coconuts, pepper, rice, fruit. **M. States**, Unfederated sovereign sultanates in Malay Penins., under Brit. protection; comprise Johore, on S. coast; Kelantan and Trengganu, on E.; Kedah and Perlis, on W.; Brunei in Borneo. Area, 23,600 sq.m.; pop., 1,525,000 (Malayans, Chinese, Indians). Exports: tin, copra, rubber. High Commissioner appointed by the Colonial Office resides in Singapore. See FEDERATED MALAY STATES AND STRAITS SETTLEMENTS.

**Malays**, light brown race, mixture of Mongols and Papuans; in Malay Archip. (mainly Mohammedan with agric., indus., arts and crafts), Madagascar and S. Sea Islands.

**Maldiv Islands**, group (115 sq.m.), Indian Ocean, dependency (400 m. S.W.) of Ceylon; pop., 71,250 (Mohamm. Indians); coconut-fibre, cowrie shells; cap., *Malé* (pop., 5,200).

**Maldon**, munic. bor. and port, Essex, at head of Blackwater estuary; pop., 6,600; oyster-fisheries, boat-bldg.; Laurence Washington (died c. 1645), ancestor of George Washington, buried in churchyard. **Battle of M.**, 993, defeat of E. Anglians, under Brihtnoth, by the Danes.

**Malebranche**, Nicolas (1638-1715), Fr. Cartesian philosopher, *Traité de la nature et de la grâce*, 1680; Eng. tran., 1695.

**Male fern**, *aspidium*, indigenous to Gt. Brit.; extract from dried root-stock used to expel tapeworm in man and in treatment of liver fluke in sheep.

**Malesherbes**, Chrétien de (1721-94), Fr. lawyer and statesm.; defended Louis XVI at his trial, 1792; executed.

**Malet**, Lucas (1852-1931), pen-name of Mrs. Mary St. Leger Harrison, Eng. novelist, dau. of Charles Kingsley; *The Wages of Sin*, 1891; *History of Sir Richard Calmady*, 1901; *The Days of Want*, 1926; etc.

**Malherbe**, François (1555-1628), Fr. poet and translator; trans. Livy and Seneca; *Consolation à Dupeirier*, c. 1599.

**Malice**, evil or wrongful intention; a necessary element of cert. offences, e.g., malicious prosecution and murder.

**Malines**, Mechlin, tn., prov. Antwerp, Belgium, on Riv. Dyle; pop., 61,000; R.C. abp. (Primate of Belgium); lace industry. Partly destroyed early in World War.

**Malinowski**, Bronislaw (1884- ), anthropologist; prof. of Anthropology, London University, since 1927; *The Sexual Life of Savages in N. W. Melanesia*.

**Malipiero**, Gian Francesco (1882- ), Ital. composer. Dramatic symph. *L'Orfeide*; *Pantea*, etc.

**Mall**, **The**, London, broad, tree-lined avenue running from Admiralty Arch, Trafalgar Square (1910), and Victoria Memorial (1911) opposite Buckingham Palace (q.v.); the houses of Carlton House Terrace, wh. look out upon one side of the Mall, adjoin Waterloo Place, in wh. stands the Duke of York's Column, 124 ft. high, erected, 1833, to 2nd son of George III.

**Mallard** (ornith.): see DUCK.

**Mallarmé**, Stéphane (1842-98), Fr. poet; *Poésies Complètes*, 1887; transld. E. A. Poe, 1888.

**Malleable-iron casting**, conversion of objects cast in (brittle) cast iron to malleable (soft) iron by heating with iron ore.

**Mallee scrub**, species of eucalyptus, abt. 11 ft. high, common over large areas of S. Australia and Victoria, and giving, to such territories, a sterile and barren appearance.



Male Fern

**Mallenders** and **sallenders**, skin diseases of horses, affecting the flexures of the knee or carpus (*mallenders*), and of the hock or tarsus (*sallenders*).

**Malleus** (anat.): see INCUS.

**Malles Maleficarum**, *The Hammer of Witches*, Ger. textbk. of witchcraft, by Jacob Sprenger and Henry Krämer, Inquisitors (pubd. 1489).

**Mallock**, Wm. Hurrell (1849-1923), Brit. author; *The New Republic*, 1877; *The Veil of the Temple*, 1904.

**Mallophaga**, small, wingless insects known as bird-lice, which live on birds and mammals, feeding on the feathers or fur.

**Mallorca**: see MAJORCA.

**Mallow**, very large family of herbaceous plants, including hibiscus and hollyhock (q.v.). The common wild mallow, *Malva sylvestris*, grows up to 36 in. high, with handsome purple flowers. From the root of



Mallow

**Marsh m.** (*Althea officinalis*) is obtained a demulcent mucilage used in medicine, and forming the basis of the confection known as "marshmallow" or "guimauve."

**Malmaison**, country seat of Empr. Josephine near Paris; now museum of applied arts.

**Malmédy**, tn., Belgium, on Riv. Warche, nr. Aix-la-Chapelle, pop., 5,300; chalybeate spring; ceded, with Eupen, by Ger. to Belgium, 1920 (see EUPEN AND MALMÉDY).

**Malmesbury**, munic. bor., Wilts, Eng.; abbey church (1139); **William of M.** (d. 1143), the chronicler (*Gesta Regum Anglorum*, 1125, etc.), was precentor. B.-place Thos. Hobbes.

**Malmsey**, strong sweet wine orig. made in Greece, but now also in Spain, Madeira, and the Azores; known also as *malvoisie*.

**Malmö**, seapt., S. Sweden, on the Sound; pop., 119,780; cap. prov. of *Malmöhus* (1,865 sq.m., pop., 509,060); cotton, machinery, tobacco.

**Maloja**, Alpine pass (5,960 ft.), Switzerland, in canton of Grisons, betw. the Engadine and Val Bregaglia.

**Malory**, Sir Thomas (d. 1471), author of first Eng. prose epic, *Morte d'Arthur*.

**Malpighi**, Marcello (1628-94), Ital. physician and anatomist; pioneer of microscopic study of animal and veg. structure.

**Malplaquet**, vill., dépt. Nord, France; victory of British (Marlborough) and Austrians (Prince Eugène) over French (1709).

**Malt**, grain (usually barley) which has sprouted, with production of *diastase*, an

enzyme (*q.v.*) which turns starch into *maltose* or malt sugar; this is converted by water into *dextrose*, which is fermentable by yeast. **M. coffee** is made by baking malt. See BEER-BREWING.

**Malta**, Brit. island, Mediterranean, 60 m. S. of Sicily; 94 sq.m.; pop., 241,600; crown colony; includes *Gozo* (*q.v.*), *Comino*, and several islets (total area, 122 sq.m.). Coasts indented, moderate hills (850 ft.), fertile soil, hot climate; naval base and steamer port of call; manuf. lace, cigarettes, filigree, pottery; cap., *Valletta*. Headqrs. Knights of St. John, 1530; Brit. since 1800.

**Malta fever**, a relapsing fever, due to *micrococcus melitensis* once endemic in Malta; characterised by high temperature, constipation, and rheumatic complications and relapses.

**Malta, Knights of:** see HOSPITALIERS.

**Maltase**, ferment or enzyme present in malt and the pancreatic juice, wh. converts malt-sugar into grape-sugar.

**Maltese**, inhab. of Malta, highly mixed origin (Ital., Span., Arab, Norman), speakg. own lang. of reputed Phœnician origin. **M. Cross**, 1) see CROSS. 2) In some types of cinema projector, a cam in form of an 8-pointed cross wh. gives film rapid jerk forward, followed by stand-still period. **M. spaniel**, poodle-like lap-dog with long white silky hair; black eyes and nose.

**Malthus**, Thomas Robert (1760-1834), Eng. polit. econ.; **Malthusianism**, econ. theory, expressed in his *Essay on Population* (1798) that as pop. increases faster than food supply birth-rate must be limited.

**Maltose**, or malt-sugar,  $C_{12}H_{22}O_{11}$ ; a disaccharide formed together with dextrine when starch is split up by ferments or min. acids.

**Malus**, Étienne Louis (1775-1812), Fr. physicist; discd. polarisation (*q.v.*) of light by reflection.

**Malvern**, watering-place, Worcs, Eng., on Malvern Hills; pop., of dist. (incl. *Great M.*, *M. Link*, *M. Wells*, *W. Malvern*, etc.), 16,000.

**M. College**, Eng. public school for boys; fndd. 1862. **M. Hills**, volcanic range, borders Worcs and Herefordsh.; *Worcestershire Beacon*, 1,395 feet.

**Malvoisic:** see MALMSEY.

**Mamelukes**, bodyguard of Turk. slaves formed by Sultan Es-Salih Eyyub, after whose death (1251) they ruled Egy. until overthrown by Selim I, 1517. Acquiring power again in the 18th cent., they were def. by Napoleon, 1798, and exterminated by Mehemet Ali, 1811.

**Mamertus**, St. (d. c. 480), Bp. of Vienne; instituted Rogation processions.

**Mammæ**, milk-secreting organs of female mammal. **Mammmary glands** in human female on breasts; rudimentary in male. During pregnancy, they enlarge, and after birth of child secrete milk; outlets of milk-ducts are at the nipple.

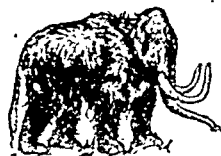
**Mammals**, class of vertebrates; give birth to living young (with exception of monotremes, *q.v.*), and nourish them with secretion supplied by milk glands.

**Mammilla**, nipple of the breast.

**Mammillaria**, nipple or wart cactus; small with red or yellow flowers.

**Mammon**, Syrian god of Wealth; hence, personification of ignoble pursuit of riches.

**Mammoth**, huge, extinct species of elephant, with hairy coat and tusks bent upwards; still extant in Ice Age; fully preserved bodies found in frozen ground of Siberia, N. Europe and N. America.



Mammoth

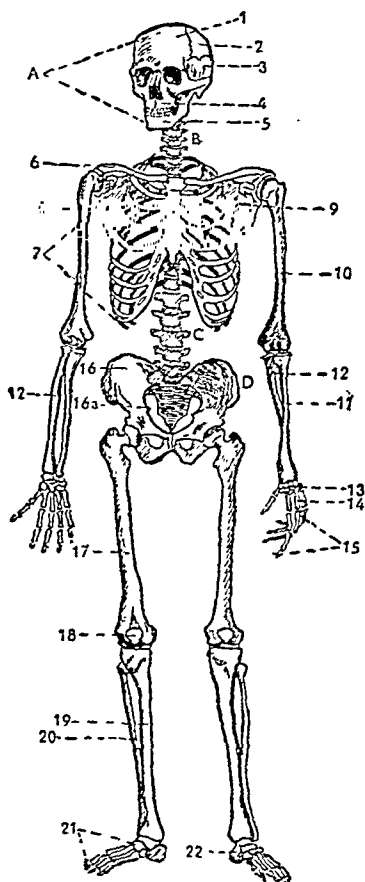
**M. Cave**, limestone cave, Kentucky, U.S.A., S. of Louisville; largest known; five levels, with agreg. length c. 150 miles. **M. tree**, see SEQUOIA.

**Man** (*homo sapiens*), distinguished from all other mammals by upright gait, special development of brain, and articulated speech. Man and woman differ in size and shape, texture of skin, and distribution of hair; average woman being smaller than a man and lighter in weight, with more slender bones, weaker muscles and more fatty deposits. Body divided into head, trunk, and limbs. The *skeleton*, i.e. the bony framework (see Pl. I), ensures support and mobility, protects internal and sensory organs, and centr. nervous system. There are over 200 bones (33 in skull alone). Free movement is provided by the *joints*, surfaces of wh. are covered with cartilage. *Muscles* (see Pl. II) cover entire skeleton; joined to bones by ligaments. Outer protection is provided by the skin. Of the internal organs (Pl. I), the œsophagus, stomach, intestines, liver, pancreas, and gall-bladder serve the purposes of nutrition and metabolism; the lungs, connected with the nose and larynx by the trachea and bronchial tubes, that of respiration; the kidneys, ureters, bladder, and urethra that of urination; while the heart (Pl. III) controls the system of blood-circulation. See also GLANDS; SECRETION. The *nervous system* (*q.v.*) (Pl. III), regulates all muscular and organic action and is the seat of consciousness. The sensory organs (eyes, nose, tongue, etc.) provide contact with the outer world. All organs are composed of infinitely small particles (cells). Body con-



Maltese Spaniel

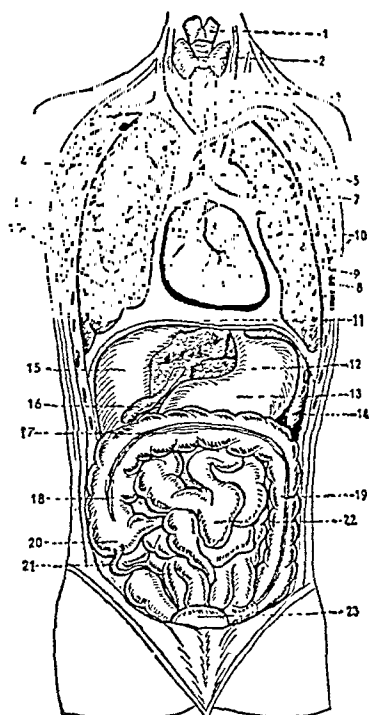




## SKELETON

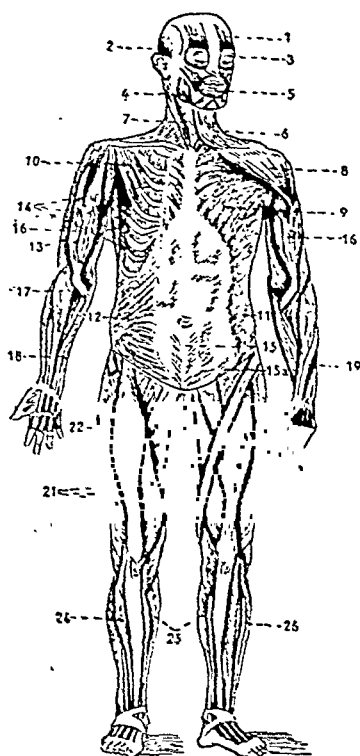
A Skull B Cervical vertebrae C Lumbar vertebrae D Pelvis

- 1 Frontal bone
- 2 Parietal bone
- 3 Temporal bone
- 4 Upper jaw
- 5 Lower jaw
- 6 Collar-bone
- 7 Ribs
- 8 Breast-bone
- 9 Shoulder-blade
- 10 Humerus
- 11 Radius
- 12 Ulna
- 13 Wrist (Carpus)
- 14 Metacarpus
- 15 Fingers
- 16 Hip-bone
- 16a Sacrum
- 17 Femur
- 18 Knee-cap
- 19 Tibia
- 20 Fibula
- 21 Foot-bones
- 22 Heel (Calcis)



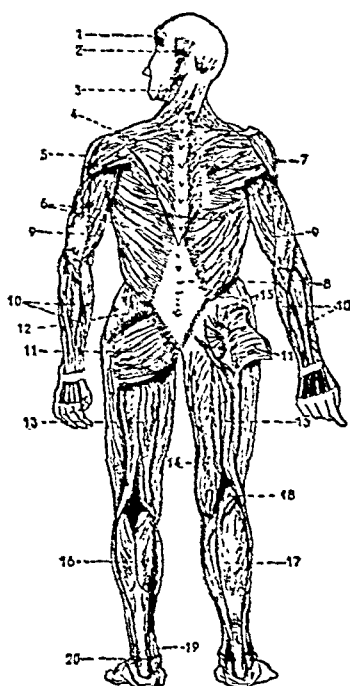
## ORGANS OF THE CHEST AND ABDOMEN

- 1 Larynx
- 2 Thyroid gland
- 3 Trachea (Windpipe)
- 4 Superior vena cava
- 5 Arch of aorta
- 6 Pulmonary artery
- 7 Pericardium
- 8 Heart
- 9 Right auricle
- 10 Lung
- 11 Diaphragm
- 12 Pancreas
- 13 Stomach
- 14 Spleen
- 15 Liver
- 16 Gall-bladder
- 17 Transverse colon
- 18 Ascending do.
- 19 Descending do.
- 20 Caecum (blind gut)
- 21 Vermiform appendix
- 22 Small intestine
- 23 Bladder



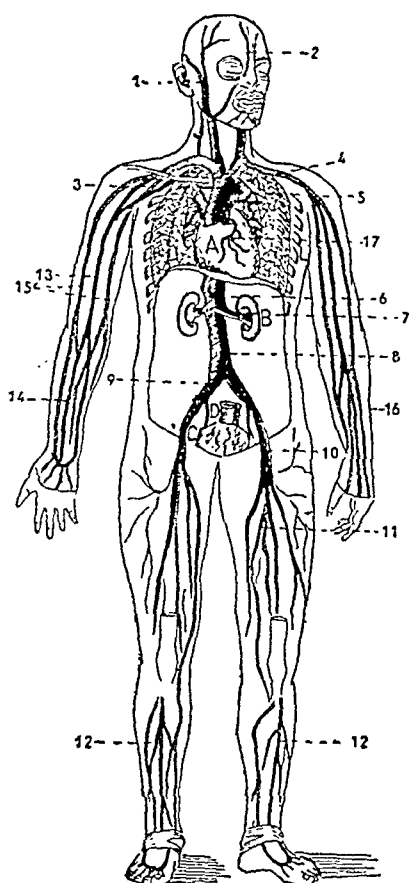
MUSCLES, FRONT VIEW

- 1 Frontalis muscle
- 2 Temporal muscle
- 3 Orbicularis muscle of eye
- 4 Masseter
- 5 Circular muscle of mouth
- 6 M. cutaneus colli
- 7 Sterno-cleido-mastoid
- 8 Deltoid
- 9 Pectoralis major
- 10 Pectoralis minor
- 11 Intercostal muscle
- 12 Serratus major
- 13 Intercostal muscle
- 14 Rectus abdominalis
- 15a Inguinal ring
- 16 Biceps
- 17 Supinator longus
- 18 Flexor of the hand
- 19 Palmaris longus
- 20 Sartorius
- 21 Vastus
- 22 Adductor longus
- 23 Gracilis
- 24 Tibialis anterior
- 25 Gastrocnemius
- 26 Peroneus longus



MUSCLES, BACK VIEW

- 1 Frontalis
- 2 Temporalis
- 3 Sterno-cleido-mastoid
- 4 Trapezius
- 5 Deltoid
- 6 Latissimus dorsi
- 7 Infraspinatus
- 8 Lumbar triangle
- 9 Triceps
- 10 Extensor carpi ulnaris
- 11 Glutaeus maximus
- 12 Glutaeus medius
- 13 Biceps femoris
- 14 Semi-tendinosus
- 15 Glutaeus minimus
- 16 Gastrocnemius
- 17 Soleus
- 18 Plantaris
- 19 Extensor digitorum longus
- 20 Tendo Achillis

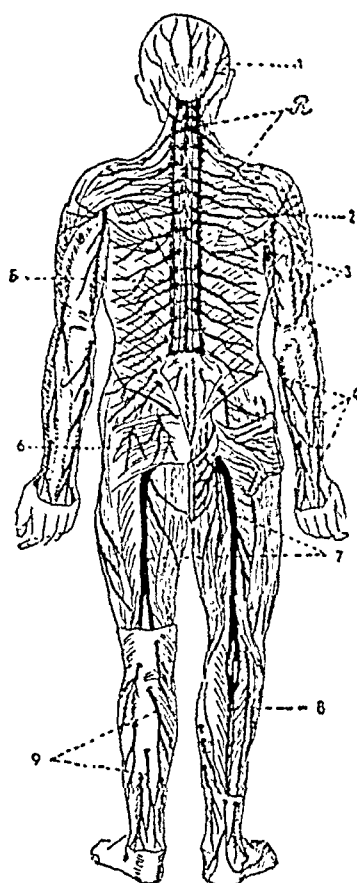


# BLOOD-VESSELS

A Heart B Kidneys C Bladder D Intestine  
L Lungs

- 1 Temporal artery
- 2 Facial vein
- 3 Superior vena cava
- 4 Arch of aorta
- 5 Pulmonary artery
- 6 Inferior vena cava
- 7 Renal artery
- 8 Abdominal aorta
- 9 Common iliac vein
- 10 Femoral artery
- 11 Saphena vein
- 12 Anterior tibial artery
- 13 Brachial artery
- 14 Radial artery
- 15 Veins of upper arm
- 16 Veins of forearm
- 17 Coronary artery

Arteries black, veins shaded



# NERVES

- R Spinal cord (exposed)
- 1 Nerves of back of head
  - 2 Nerves of shoulder
  - 3 Superficial nerves, upper arm
  - 4 Superficial nerves, forearm
  - 5 Nerves of back
  - 6 Nerves of posterior
  - 7 Sciatic nerve
  - 8 Deep-seated nerves of calf
  - 9 Superficial nerves of calf

tains approx.: 68% water, 20% protein, 2.5% fat, 9-10% mineral salts (phosphorus, iron, magnesium, calcium, potassium, etc.). Abt. 6 pints of blood, or 5.5% of wt. of body. Blood contains 80% water and 20% solids.

**Man.**, abbr. Manitoba.

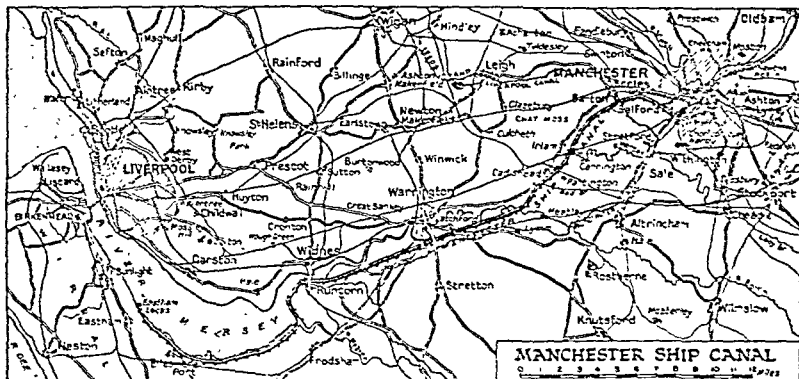
**Man**, Isle of, Brit. isl. in Irish Sea; 16 m. from Scot., 30 m. from Eng. and Ire.; 33 m. long and 12 m. broad (228 sq.m.); pop., 49,300. Mountainous interior (*Snaefell*, 2,034 ft.; elec. rly.); S.W. coast rugged (fine cliff scenery). Home rule (see KEYS, HOUSE OF). Sheep-breeding, agric., fishing, mining (lead, zinc, copper); popular summer resort.

estuaries; most species from Centr. and S. America, one from W. Africa.

**Mancha, La**, arid plateau, centr. Spain; includes parts of mod. depts. of Ciudad Real, Toledo, and Cuenca (New Castile); **de La M.**, title given by Cervantes to Don Quixote.

**Manche**, dépt., N. France, penins. in Eng. Channel; 2,475 sq.m.; pop., 433,473; agric., cider, dairies; foundries, shipb.; cap., *St. Lô*.

**Manchester**, Edward Montagu, 2nd E. (1602-71), Brit. statesm.; M.P., 1623; one of 12 peers petitioning kg. to summon the Long Parliament, 1640; impeached kg. for high treason, 1642; succeeded to earldom,



Manx lang. (akin to Gaelic) almost extinct (see MANX); runic crosses. Chief tns., *Douglas* (cap.), Castletown (former cap.), Ramsey, and Peel.

**Mana**, Polynesian word. Mystical power for good or evil attrib. by many primitive peoples to chiefs, medicine men, outstanding personalities, and also to inanimate objects and animals. Hence **Manism**, body of practices associated with Mana.

**Managua**, cap. Nicaragua, S. shore L. Managua (alt., 156 ft., area, c. 500 sq.m.); pop., 40,000; coffee-planting.

**Manãos**, cap. Amazonas, Brazil, on Rio Negro; pop., 78,500; exps. nuts, rubber, hides; chf. Amazon port; 1,000 m. from the Atlantic, but accessible to ocean-going steamers.

**Manasarovar**, lake dist., N. Himalayas, S.W. Tibet, alt., 15,300 ft.; source of the Sutlej, and place of Hindu pilgrimage.

**Manasseh**, (O.T.) 1) son of Joseph and forefather of Israelite tribe of Manasseh. 2) Kg. of Judah, son and successor of Hezekiah.

**Manasses, Prayer of**, Gr. poetic composition, incld. in Apoc. and attribtd. to Manasseh, Kg. of Judah, while a captive in Babylon; of uncertain date; prob. of Jewish authorship.

**Manatee**, or **manati**, (zool.) an aquatic, black or greyish, herbivorous mammal, genus *Manatus*, order *Sirenia*, to which the dugong (*q.v.*) belongs; lives in rivers and

1642; major-gen. in Eastern counties, 1643; charged by Cromwell with neglect and incompetency, 1644; opposed ordinance for kg.'s trial; assisted in Restoration; Lord Chamberlain, 1660; K.G., 1661.

**Manchester**, city in Lancs, on Riv. Irwell, fourth largest in Eng. (pop., 766,300), centre of Eng. cotton industry ("Cottonopolis"); great manuf. centre; woollen, silk, machinery, chem. industries. Victoria Univ. (1904). Stronghold of Free Trade in 19th cent.; important musical centre (Hallé concerts). City Art Gallery, opened 1829, designed by Sir Chas. Barry; 19th-cent. paintings; coll. presented by Chas. Rutherford, 1925, on condit. specimens were sent on loan to schools and galleries in Lancs, and Yorks.

**Manchester School**, (polit.) the name given to group of radical politicians, headed by Cobden and Bright, wh. stood for complete Free Trade and no State interference with industry; its members were opposed to imperial expansion and regarded colonial self-govt. as first step twds. separation; chf. period of influence 1845-75. See also LAISSEZ-FAIRE.



By Courtesy of Town Clerk, Manchester

Manchester Town Hall

**M. Ship Canal**, from Eastham, Cheshire, (map, on previous page) to Manchester; built 1887-49 length 35½ m., depth 28-30 ft., width at bottom 120-170 ft.; cost £15,500,000. Runs along foreshore of the Mersey to (13 m.) Runcorn; thence inland. Tidal for 22 m.; four locks (rising 60½ ft.), with terminal locks at Eastham; docks at Manchester, Salford, Partington, and Warrington. Tonnage (toll-paying) in 1930: 6,290,625 tons; tolls and dues, £1,395,600. **M. United**, Eng. Assocn. Football club, formed 1870; formerly known as *Newton Heath*; league champions 1908, '11; winners of Eng. Cup, 1909.

**Manchineel**, *Hippomane mancinella*, trop. Amer. tree with poisonous milky juice and apple-like fruit.

**Manchouli**: see MANCHURIA 2).

**Manchukuo**: see MANCHURIA 1).

**Manchuria**, 1) terr. (424,300 sq.m.), N.E. China; comprises provs. of Heilung Kiang, Kirin, Feng Tien; pop., 24,040,800 (Chinese; 250,000 Japanese; a few Manchus); bounded by mtn. ranges in W., N., and E.; interior flat; chf. rvs., Amur (boundary of Siberia), Yalu (boundary of Korea), Liao-ho, Sungari; forests in N.; wheat, millet, rice, soya beans, opium; cattle-breeding; gold, lead, copper, coal. Chinese Eastern and S. Manchurian rlys., with Russ. and Jap. spheres of influence. Liaotung Pnins. (*g.v.*), leased to Japan. Cap., Mukden. In 1932 Japan erected in M. the dependent State of Manchukuo. 2) **M.**, or **Manchouli**, frontier sta., W. Heilung Kiang, starting point Chinese Eastern Railway.

**Manchus**, nation of horsemen (Tunguses) in E. Asia; invaded China in 17th cent., occup. Chin. imper. throne, 1644. Manchu or Tsing dyn. down to 1912; last Manchu emp., known as Henry Pu-yi, re-established as head of dependent state of Manchukuo by Japan, 1932.

**Mandalay**, capital of Upper Burma, on Riv. Irrawaddy; pop., 144,900; Arakhan Pagoda; royal palaces; silk-weaving; gold, silver, and ivory work.

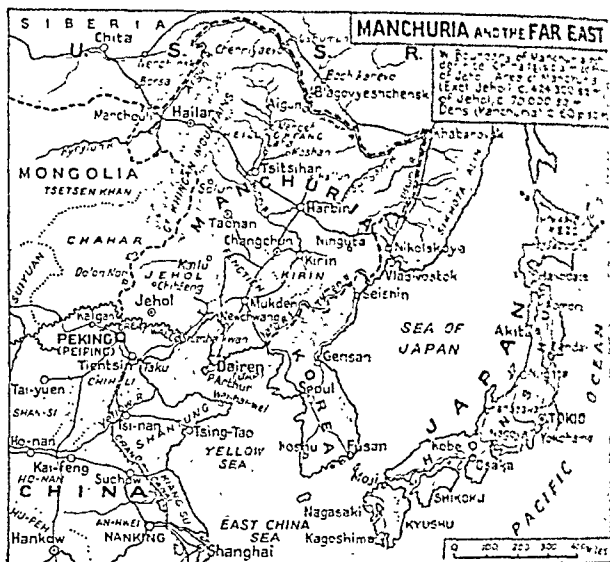
**Mandamus** (legal), a writ issued by a superior court to some inferior tribunal, corporation, or person exercising public authority, commanding the performance of some specified duty.

**Mandarin**, Chin. officer of State, under

old régime; hence "M. Language." official Chinese lang. based on Peking vernacular. **M. Duck**, a brightly plumaged duck, *Anas platyrhynchos*, of China and the Far East; drake has a ruff of deep chestnut colour, and green, white, and brown crest. **M. orange**, small orange with loose skin, orig. imp. from China.

**Mandarine**, liqueur strongly flavoured with mandarin oranges (*q.v.*).

**Mandate**, a commission implying trust, esp. (since World War) adminis. of backward



territories by one of Great Powers, responsible to League of Nations.

**Mandeville**, Sir John de, pseudon. of author of Fr. book of travel (14th cent.), prob. of Jehan à la Barbe (or de Bourgogne), Liège physician; travels fndd. on accounts of Odoric of Pordenone and William of Boldensela; transl. into Engl. c. 1400.

**Mandoline**, small stringed instr.; strings played with a plectrum.

**Mandrake**, 1) May apple, the root of *Podophyllum peltatum*, plant indigenous to Canada and U.S.A.; contains a resin used in medicine as a drastic purgative. 2) *Mandragora officinarum*, European solanaceous plant with large forked root, possessing some resemblance to the human form. It was credited with magical powers (belief in which is not entirely dead), was supposed to shriek loudly when dug up and, worn as an amulet, was believed to promote fecundity. Used in ancient times as an anaesthetic in surgical operations.

**Mandrel**, (eng.) rod of circular section,



Mandarin



Mandrill

often tapered or capable of being expanded; used to carry work for turning or other machinery.

**Mandrill**, strikingly coloured species of African baboon.

**Manes**, (Rom. myth.) spirits of the dead.

**Manet**, Edouard (1832-83), Fr. impressionist painter; *Olympia* (1865).

**Manetho**, Egypt. priest and histor., fl. c. 300 B.C.; compiled history of Egypt, 3000-343 B.C.; transld. from anc. records into Greek.

**Manfred** (1232-66), Kg. of Sicily, 1258; deftd. and slain at Benevento, by Charles of Anjou.

**Mangabey**, or white-eyedid, monkey, monkey of slender build, found only in Africa.

**Mangalore**, seapt., Malabar coast, Madras, India; exports coffee; pop., 49,400.

**Mangan**, James Clarence (1803-49), Ir. poet; *The Nameless One*.

**Manganese**, metallic element, sym. Mn, at. wt. 54.93; sp. gr. 7.4; m.p. 1250° (approx.); forms import. constituent of M. steels and of cert. kinds of bronze and brass. **M. dioxide**, *Pyrolusite* (chem.) MnO<sub>2</sub>; compound of oxygen and manganese; black powder used as depolariser in dry cells and in prep. of chlorine; yields oxygen on heating.

**Mange**, (vet.) eruptive skin disease caused by several species of parasitic mites (*Sarcoptidae*) wh. infect the skin and hairy coats of animals, esp. dogs.

**Mangin**, Ch. Emmanuel (1866-1925); Fr. gen.; c-in-c. Fr. Army of Occupation on the Rhine after successful career on W. Front.

**Mangle**: see WRINGER.

**Mango**, fruit of *Mangifera indica*, cultiv. E. and W. Indies; juicy acid pulp, enclosed in a thick rind containing a hard stone.

**Mangold-wurzel**, or **man-gel-wurzel**, large kind of field beet used for feeding cattle.

**Mangosteen**, (bot.) a tree of the E. Indies, *Garcinia mangostana*; its fruit, abt. the size of a small orange, has thick rind and pulpy, juicy interior, flavoured like the peach and pineapple.

**Mangrove**, genus of trees and shrubs wh. grow in swamps along river banks in Tropics, spreading by means of aerial roots and forming impenetrable forests.

**Manhattan**, isl. at mth. of Hudson Riv.,



Manet



Mango

U.S.A.; oldest and main part of New York containing the princ. commercial, financial, and residential dists.; connected by bridges, tunnels, and ferries with Long Isl., and opp. shore of Hudson Riv. **M. Cocktail**, cocktail sim. to Martini (q.r.), but made with whisky instead of gin.

**Manhole**, any opening by which a piece of machinery or plant (e.g., boiler, sewer) can be entered for inspection.

**Mani**, or *Manes* (c. 215-76), Persian relig. reformer; fndd. Manicheism (q.r.).

**Mania**, a mental disease, characterised by undue elation accompanied by restlessness and excitement. A phase of manic-depressive insanity (q.r.).

**Manic-depressive insanity**, alternating periods of maniacal excitement and melancholia.

**Manicheism**, doctrine named after Mani of Babylon (crucified c. 276 A.D.); a form of Dualism, regarding Being as a conflict between two eternal principles of light and darkness, good and evil, man being created by the spirits of darkness. Widely spread in early Christian Era, having affinity with Christian ideas.

**Manifest**, a list or invoice of a ship's cargo, to be exhibited at the custom house.

**Manila**, cap., Philippine Isls., on W. coast of Isl. of Luzon; pop., 320,500; governor's resid.; R.C. abpric.; univ. of the Philippines (1908); seismolog. institute; hemp, cigars, sugar; naval base. Surrendered to U.S.A., 1898, by Spain.

**Manila hemp**, the fibre of *Musa textilis*, a species of banana growing in the Philippines. Used for best rope.

**Maniple** (Lat.), 1) (anc. hist.) one-third of a Roman cohort; 2) (eccles.) short scarf worn on left arm by celebrant at Mass.

**Manipur**, **Imphal**, 1) Indian State, S.E. Assam, N. India; mountainous; dense forests; 8,460 sq.m.; pop., 384,000; rice, tea. (2) Cap. of State; pop., 80,100.

**Manisa**: see MAGNESIA.

**Manitoba**, prov., S. centr. Canada; 251,800 sq.m.; pop., 639,100. Many lakes (incl. Winnipeg, Manitoba, Winnipegosis), and rivs. (incl. Red, Churchill, Nelson, Saskatchewan). Climate severe in winter; surface generally flat; soil fertile; great wheat-growing dist.; also pasture, dairying, fisheries; important manufactures; few minerals. Cap., *Winnipeg*.

**Manlius**, name of Rom. gens; *M. Capitolinus*, awakened, according to tradition, by cackling geese, saved the Capitol from Gauls 390 B.C.

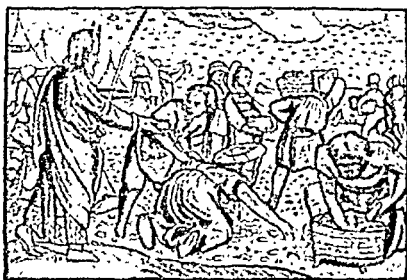
**Mann, Heinrich**, (1871- ), Ger. novelist; satirised Ger. society; *Der Untertan*, 1914. His bro. **Thomas** (1875- ), novelist and essayist; *Buddenbrooks*, 1903; Nobel Prize

(Lit.), 1929. Both bros. left Ger. after Nazi revn., 1933; their works publicly burned. **M. Tom** (1856- ), Brit. Labour leader; prominent in Dockers' Strike (1889) and Syndicalist movement (1910); Socialist propagandist in Australia (1901-09) and S. Africa (1910, 1914, 1922); imprisoned for polit. activities (1912 and 1932); gen. sec. Amal. Union of Engineers, then Chrmn. Brit. Bureau, Red Trade Union Internatl.; pub., *Memoirs*, 1923.



Thomas Mann

**Manna**, (O.T.) food miraculously supplied to Israelites in wilderness (Ex. xvi); appears to have been similar to sweet sap of



The Shower of Manna, after Holbein

*manna ash*, a small flowering tree of S. Eur. and Asia Minor. **M. croup**, coarse meal made in Russia from wheat or other grain.

**Mannerheim**, Karl Gustav, Bn. von (1867- ), Russ. gen.; com. Finnish White Guard, 1918; crushed the Finnish revn., Mar.-May, 1918, with assistance of Ger. troops.

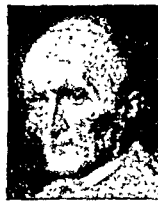
**Mannerism**, personal style in art which has become exaggerated or stereotyped.

**Manners**: see RUTLAND, EARLS AND DUKES OF.

**Mannheim**, tn., Baden, Ger., at junction of rivs. Neckar and Rhine; pop., 259,200; castle; machinery, tobacco, wood, coal.

**Manning**, Henry Edward (1808-92), Eng. divine; joined Ch. of Rome, 1851; Abp. of Westminster, 1865; cardinal, 1875.

**Manns**, Sir August Friedrich (1825-1907), b. nr. Stettin; directed Crystal Palace concerts, which played important part in promoting best orchestral music in England, from 1855; knighted, 1904.



Cardinal Manning

**Manoel**, Kgs. of Portugal: 1) **M. I** (1469-1521); 2) **M. II**, (1889-1932); succeeded on assassination of his father, Carlos I, 1908; fled his country at revolution 1910, and settled in England, where he d.; a noted book-collector.

**Manometer**, (phys.) pressure-gauge for gases, liquids, steam; commonest for gases pressures is **Bourdon m.**, a flat tube of springy material (steel, hard brass) bent into arc of a circle and closed at one end, the other being connecting switch to a scroll-spring. Transfer-lever acts on a pointer. **M. for liquids** consists of a U-shaped tube cntng. quicksilver or a coloured fluid, the diff. in level of wh. indicates pressure.



Scroll-spring manometer

**Manon Lescaut**, romance by the Abbé Prevost (q.v.) appended to *Memoirs of a Man of Quality* (pub. 1733).

**Manor**, in Eng. feudal times, an agric. unit, with its pop., under jurisdiction of an overlord or *thane*. Arable land was divided into strips (*three-field system*), alternately planted with winter and spring crops, then a year fallow; tenants held plots of the *Lord of the Manor*, paying rent in service on his demesne or in kind, and having certain rights of pasture, etc. In mod. times, M. is usu. a landed estate with principal residence of owner, who is sometimes invested with certain manorial rights.

**Mansard roof**, (archit.) high, steeply pitched roof, often with flat top and containing more than one story; named after originator, a Fr. architect, **François M.** (1598-1666); his nephew **Jules Hardouin M.** (1646-1708) supervised the building, for Louis XIV, of Palace of Versailles and ch. of Les Invalides (qq.v.).

**Mansfield**, **Katherine** (1889-1923), Brit. short-story writer and poet; *In a German Pension*, 1911; *Bliss*, 1920; *The Garden Party*, 1922; **M., William Murray**, 1st E. of M. (1705-93), Brit. judge; counsel for Edinburgh when city was threatened with disfranchisement after Porteous riots, 1736; solict.-gen., 1742-54; attorney-gen., 1754-56; acting as leader of H. of Commons; ch. justice of Kg.'s Bench, 1756, and Bn. Mansfield; apptd. member of Cabinet by special arrangement; created Earl of M., 1776; systematised Eng. commercial law.

**Mansfield**, 1) munic. bor., Notts, on verge of Dukeries (q.v.); manuf. cotton, lace, hosiery, iron; pop., 46,100. 2) Tn., Ohio, U.S.A.; manuf.: iron, flour; pop., 33,500.

**Mansion House**, city of London, office residence of Lord Mayor of London; built (1739) by G. Dance.

**Manslaughter**, unlawful killing of a human being without malice (q.v.).

**Manson**, Sir Patrick (1844-1922), Brit. physician; 1st to show that malarial parasite is carried by the mosquito.

**Mansurah**, tn., Lower Egy., cap., prov. of Daqahliya; pop., 63,700; cotton, linen.

*Battle of M.*, 1250, defeat of Louis IX of France by the Saracens.

**Mantegazza**, Paolo (1831-1910), Ital. physiologist and anthropologist; numerous works on physiol. of pleasure, pain, etc.

**Mantegna**, Andrea (1431-1506), Ital. painter; developed art of engraving on copper; *Caesar's Triumph*; *St. Sebastian*.

**Mantilla**, lace veil covering head and shoulders, worn by Span. women; a light wrap or cape.

**Mantineia**, anc. city Arcadia, Greece. *Battle of M.*, 362 B.C. betw. Thebans and Spartans; death of Epaminondas (q.v.).

**Mantis**, (zool.) a pugnacious, voracious, insectivorous, orthopterous insect of several species; esp. the *praying m.*, which holds its fore-legs as if in an attitude of prayer when waiting for its prey.

**Mantle, Incandescent gas**, fine tissue impregnated with thorium and cerium oxides, which glows brilliantly in a non-luminous gas flame.

**Man-trap**, iron trap with protruding point, fixed in open, to catch thieves; formerly used to keep off trespassers, now illegal.

**Mantua**, 1) dept., S.W. Lombardy, It.; 900 sq.m.; pop., 400,000. 2) Cap. of dept., fortified tn., on Riv. Mincio; pop., 44,500; cathed., ducal palace, museum; silk, iron; b.-place of Virgil.

**Manu**, (Hindu myth.) the first man; chief figure in legend of a flood, after which he gave miraculous birth to a daughter, by whom he became the ancestor of the human race.

**Manual**, keyboard (q.v.) on organ as distinct from pedal board.

**Manuel**, Byzant. Emper.: 1) **M. I**, Comnenus (c. 1120-80). 2) **M. II**, Palaeologus (1350-1425). See also MANOEL.

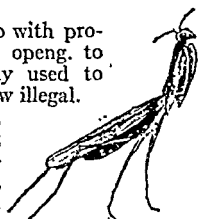
**Manure**: see FERTILIZERS.

**Manuscript**, (abbrev.: MS., pl. MSS.), handwriting, or, that which is written by hand; until invention of printing in Europe in 15th cent., all books were necessarily in MS.; in Mid. Ages preparation and esp. decoration and illumination of MSS. were a highly developed art, reaching highest levels in Missals and Books of Hours; see PALAEOGRAPHY.

**Manutius**, Aldus (1450-1515), Ital. humanist and printer; inv. italics; fndd. Aldine Press (q.v.), 1490.



Mantilla, after Goya



Praying Mantis

**Manx**, Celtic dial. of inhabitants of Isle of Man. **M. cat**, cat with no, or only a rudimentary, tail; indigenous to the island; may be descendant of an Eastern breed.

**Manych**, depression (350 m. long), S. Russia, betw. Sea of Azov and Caspian Sea; rivs. W. and E. *Manych*, tribs. of Riv. Don, flow into Caspian Sea.

**Manzanares**, 1) Tn., nr. Ciudad Real, Spain; pop., 17,000; pottery, wine, wheat; assoc. with Don Quixote. 2) Riv., trib. of Riv. Jarama, 52 m. long; passes through Madrid.

**Manzoni**, Alessandro (1785-1873), Ital. poet and novelist; *The Betrothed Lovers* (1825-27).

**Maori**, natives of N.Z., of Polynesian race; highly developed chieftainship; varied econ. pursuits; readily adopted Europ. customs; rapidly being absorbed into white pop.; numbering abt. 54,000.

**Map**, plane representation of whole or part of earth's surface, showing physical features, political boundaries, etc. Earliest maps made by anc. Egyptians and Greeks; Eratosthenes (284-204 B.C.) 1st measured length of degree; Ptolemy made 1st complete network of parallels and meridians. Some distortion inevitable, since earth's surface is curved and map is flat; efforts to minimise this include Mercator's Projection (q.v.) and contour maps. Also similar representation of heavens, showing position of stars, etc.

**Maple**, tree of the genus *Acer*; N. Amer. sugar M. (*A. saccharum*) is a valuable source of sugar; the timber of this, and other species, is used in cabinet-making.



Maple

**Maqui**, (bot.) an evergreen shrub of Chile; the bark yields a stringy fibre, and from its berries a medicinal wine is made. **Maquis**, dense, scrubby forest of dwarfed evergreen trees and shrubs in Corsica; very fragrant.

**Marabout**, 1) (relig.) Mohammedan saint or hermit; his shrine. 2) (Ornith.) *Adjutant bird*, large African stork with bare neck and sack-like throat; the soft under plumage of tail, wh. is white in breeding season, is valued commercially; name M. is now applied generally to downy feathers.



Marabout

**Maracaibo**, 1) seapt., cap. State of Zulua, Venezuela, on Gulf of M.; pop., 75,000; univ.; exports: tobacco, coffee, petroleum. 2) Lake, N.W. Venezuela, 100 m. long, 55-75 m. broad; opens into Gulf of Maracaibo.

**Marah** (bitterness), (O.T.) 1st halting place of Israelites in wilderness; bitter water



miraculously sweetened by Moses (Ex. xv.).

**Marajo**, isl., N.W. Brazil, betw. Amazon and Para estuaries; 16,200 sq.m.; forests (rubber) and savannas (cattle breeding).

**Maramuresh**, prov., N. Rumania; 6,260 sq.m.; pop., 766,700; cap., Sighet (pop., 30,500).

**Maranatha**, The Lord cometh; wrongly combined, as if an intensified curse (cf. I Cor. xvi. 22), with *anathema* (q.v.).

**Maranhão**, State of N.E. Brazil, on Atlantic; area, c. 154,560 sq.m.; pop., 875,000; sugar, tobacco, wools. Cap., São Luiz do Maranhão (pop., 54,000).

**Marano**, Span. or Portug. Jew or Moor compulsorily converted to Christianity during Span. Inquisition, but privately practising his own religion.

**Maraschino**, liqueur made from marascho cherry; chfily. used for flavouring.

**Marash**, 1) Turk. vilay. (5,607 sq.m.; pop., 184,960) and tn., S.E. Anatolia, Asia Minor (pop., 25,675); carpets, embroideries, textiles.

**Marasmus**, gradual wasting of the body caused by disease or starvation; see CACHEXIA.

**Marat**, Jean Paul (1744-93), Fr. revolut. and writer; stabbed by Charlotte Corday.

**Marathi**, *Mahrathi*, or *Mathrattas*, warlike Aryan Hindu tribe in W. India proper; Mahratta empire rose to power in 17th cent.; deftd. by Afghans, 1761, and by Brit. in 1803-5 and 1817; chief remaining M. states: Gwalior, Indore, Baroda.

**Marathon**, plain in Attica, Greece; scene of decisive victory of Athenians, under Miltiades, over Persians, under Darius, 490 B.C., which saved Western civilization from being dominated by the East. Pheidippides ran from M. to Athens (26 m. 385 yds.) to convey the news, and fell dead on arrival. Hence **M. race**, a race over this distance, held, since 1896, at the Olympic Games (q.v.); or, in U.S.A., race over 25 m. Record held by Kolehmainen (Finland) with time of 2 hrs. 29 min. 39 seconds.

**Marbach**, tn., Württemberg, on Riv. Neckar; pop., 35,000; b.-place of Schiller (Schiller Museum).

**Marble**, form of limestone composed of small crystals, occurring in the oldest rock formations; found in various colours, often beautifully streaked, with close, even grain, capable of taking high polish; used in building and sculpture. Well known varieties are *Parian* and *Carrara marbles*.

**Marble Arch**, triple gateway designed by Nash and erected at Buckingham Palace, London, 1828; removed 1851 to N.E. corner

of Hyde Park, London, where it stands isolated from the park; the centr. gate is opened only for the sovereign to drive through.

**Marbled White Butterfly** (*Melanargia galathea*), Eur. butterfly frequenting damp, open spaces in woods; a number of species showing variations in markings; yellowish-green caterpillars found on cat's-tail grass.



**Marbling**, process of making on paper or book-edges irregular patterns (like the veins of marble) in a variety of colours. Pigments ground up in beeswax, spirit, and gall are sprinkled on the surface of dilute gum-size, the resulting spots of colour being worked to the required pattern by means of a style and combs; paper or book edge is then placed face downward in contact with the pigment.

**Marburg**, 1) tn., Hesse-Nassau, on Riv. Lahn; pop., 23,400; univ. (fndd. 1527); 13th-cent. church. Conference betw. Luther and Zwingli on doctrine of Transubstantiation (Articles of Marburg), 1529. 2) See MARIBOR.

**Marcato**, (mus.) stressed, emphasised.

**Marcellinus**, St., Pope (296-304), accdg. to *Liber Pontificalis*, offered incense to idols under Diocletian persecn.; repented and was martyred.

**Marcellus**, name of 2 popes: **M. I** (308-09 or 10), banished for rigour of penances imposed on lapsed Christians. **M. II** (April 9-30, 1555), incurred anger of emp. at Council of Trent, by defence of papal prerogative.

**Marcellus**, Claudius (c. 270-208 B.C.), Rom. gen. in 2nd Punic War (216), the "Sword of Rome"; took Syracuse, after two yrs. siege, 212 B.C.

**March**, Roger Mortimer, E. of (c. 1287-1330), son of Edw., 7th Bn. Mortimer; imprisoned for implication in E. of Lancaster's conspiracy; intrigued with Qn. Isabella to depose Edw. II; invaded England, 1326; became virtual ruler of the kgdm. during minority of Edw. III, who asserted his sovereignty, 1330, and caused M. to be hanged as a traitor.

**March**, 3rd month, of 31 days; dedicated by Romans to *Mars*, god of war.

**Marches**, 1) borderland or debatable terr. betw. countries, as the "Marches of Wales." 2) Dist., centr. It., on Adriatic; 3,850 sq.m.; pop., 1 mil.; silk and paper indust.; port, Ancona.

**March Revolution**, 1) revol. movement in Pruss., 1848. 2) Or **Feb. R.** (owing to diff. of Russ. calendar), 1st. Russ. revn. of 1917.

**Marcion**, 2nd-cent. Christian; fndd. Marcionite churches in attempt to reform Christianity on Gospel lines; d. c. 160.



Marat

**Marcomanni**, Teut. race, settled in Bohemia under Kg. Marbod, c. time of Christ's birth. Revolted agst. suzerainty of Rome, A.D. 166-180 (Marcomanni War).

**Marconi**, Guglielmo, Marchese (1874- ), Ital. inven.; first to devise practical method of wireless telegr., 1895; patent in Eng., 1896; first communication between Eng. and Fr., 1898; first transatlantic wireless, betw. Eng. and St. John's, Newfld., 1901; betw. Eng. and Australia, 1918; inv. directive (beam) system, 1916. Nobel Prize (Physics), 1909.

**Marco Polo** (1254-1323), Venetian explorer; spent 25 yrs. in Asia; capt'd. at naval battle of Curzola, 1298, by Genoese and dictated account of journeys while in prison.

**Marcus Aurelius Antoninus** (121-180), Rom. Emp. and philosopher; *Meditations*.

**Mardi gras** (Fr.), Shrove Tuesday. See SHROVETIDE.

**Mardin**, Turk. vilay. (5,935 sq.m.; pop., 183,325), and tn., S.E. Anatolia, pop., 22,250 (6,500 Christians); agric.; woollens.

**Marduk**, Babylonian god, called by Greeks, *Belos*; name derived from *Amarudu*, and means "Young Bull", i.e., the Sun; was esp. god of magicians; the Merodach of the Bible.

**Mare**, female horse (q.v.).

**Mare clausum** and **mare liberum** (Lat. terms: "closed" and "free" sea), used in internat. law with reference to claims for maritime dominion, put forward at various times by different powers. Grotius, in *Mare liberum* (1608), maintained theory that the sea was free to all; Selden, in *Mare clausum* (1635), took contrary view. Within recent times the Baltic and Black seas have, either in theory or in practice, been *maria clausa*.

**Marées**, Hans von (1837-87), Ger. artist; hist. and fresco painting.

**Maremma** (It.), marshy, unhealthy, alluvial soil, esp. on coast of Tyrrhenian Sea.

**Marengo**, suburb of Alessandria, Italy; scene of Napoleon's victory over Austria, 14 June, 1800.

**Mare's tail**, *Hippuris vulgaris*, plant growing in stagnant water; has upright stem and very narrow leaves.

**Margaret**, 1) St. (c. 1045-93), Qn. of Malcolm Canmore; dau. of Edward, son of Edmund Ironside. 2) **M., Maid of Norway**



Maconi



Marcus Aurelius

(1283-90), titular Qn. of Scotland. 3) **M. Mautasch** (1318-69) ("sack-mouth"), Countess of Tyrol; m. Louis of Brandenburg, 1342; gave Tyrol to Austria. 4) **M.**, Qn. of Denmark, Norway, and Sweden (1353-1412), strengthened unity of kgdms. by Congress of Kalmar, 1397. 5) **M. of Anjou** (1430-82), m. Henry VI of England. 6) **M. of Navarre** (1492-1549), sister of Francis I of France; wrote the *Heptameron*. 7) **M. of Valois** (1553-1616), dau. of Henry II of Fr. and Catherine de' Medici; m. Henry of Navarre (later H. IV of Fr.), 1572; marriage dissolved, 1580.

**Margarine**, artificial butter, made from veg. (esp. coconut) or animal fats (hardened train-oils) and milk. In Gt. Brit. M. must be distilled from butter by label.

**Margate**, popular seaside resort in Isle of Thanet, Kent; pop., 31,300.

**Margay**, small black-spotted brown or grey tiger-cat, forest-dwelling; ind. in Centr. and S. America.

**Margin**, (finan.) 1) diff. betw. two prices, e.g. betw. buying and selling prices. 2) in banking, diff. betw. amt. of a loan and market value of securities held by bank for the loan. If value of latter falls lower than the loan, M. is said to have "run off." 3) *Speculating on a M.*, in U.S., buying of shares with small M. of cash, and mostly with a loan from a bank or broker, bank holding the stock as security. A common practice; princ. outlet, for short loans of U.S. banks wh. in London go largely to finance discount market (q.v.).

**Marginalia** (Lat.), remarks written in the margin of a work; hence, annotations generally.

**Margrave**, title in Mid. Ages of wardens of frontier districts of the empire, endowed with special rights.

**Marguerite**, see OX-EYE.

**Maria Christina**, name of two Qns. of Sp.: 1) (1806-78), wife of Ferdinand VII; regent for her dau., Isabella II, 1833-40. 2) (1858-1929), wife of Alphonso XII; regent for her s. Alphonso XIII, 1885-1902.

**Mariage de convenance** (Fr.), an arranged marriage, based on social or financial interests rather than on affection.

**Marianas Islands**, **Ladrones**, group of 15 coral and volcanic isls. in the Pacific (largest Guam, Rotan, Saipan); 456 sq.m.; pop., 28,265 (natives, Japanese; 200 Europ. on Guam); discovered, 1521; Span., 1565; Guam ceded to U.S.A. in 1898 and the remaining islands sold to Germany in 1899; since 1919 the latter have been under Jap. mandate.

**Marianske-Lazne**: see MARIENBAD.

**Maria Theresa** (1717-80) Ger. empress, 1740, Qn. of Hung. and Bohem., Archduch. of Austria (after Pragmatic Sanction); at-

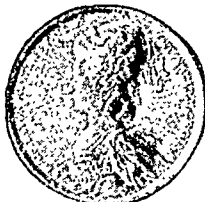
tacked by Fredr. the Great (7 Years' War); m. (1736), Francis of Lorraine, aftwds. (1745), Emp., and was mother of the Emps. Joseph II and Leopold II, and of Marie Antoinette.

**Maria-Theresiopel:** see SUBOTICA.

**Mariazell**, mkt. tn., Styria, Austria; pop., 2,000; tourist traffic; winter sports.

**Maribor, Marburg**, tn., Slovenia, Yugoslavia, on Riv. Drave; pop., 30,665; leather manuf.; vine cultivation.

**Marie Antoinette** (1755-93), dau. of Emp. Francis I and Maria Theresa; m. Louis XVI of France, 1770; exercised considerable influence in public affairs; opposed popular party; urged Louis to take decisive measures for suppression of Revolution; imprisoned, 1792; guillotined, 1793.



Marie Antoinette

**Marie Louise** (1791-1847), Empress of the Fr.; dau. of Francis I of Austria; m. Napoleon Bonaparte as his 2nd wife, 1810; left France at her husband's downfall, 1814; apptd. ruler of duchies of Parma, Piacenza, and Guastalla; m. Ct. Neipperg morganatically, 1821.

**Marie de' Medici** (1573-1642), dau. of Francis of Tuscany; m. Hy. IV of France, 1600; regent, 1610-17; exiled by Richelieu, 1631.

**Marie of Burgundy** (1457-82), dau. of Charles the Bold; wife of Maximilian; brought Burgundy and Holland into possess. of Habsburgs.

**Marienbad, Marianske-Lazne**, tn. and watering place, W. Bohemia, Czechoslovakia; pop., 6,910; mineral springs.

**Marigold**, *Calendula officinalis*, aster-like plant with brilliant orange-yellow flowers. The yellow ox-eye, *Chrysanthemum segetum*, is sometimes known as the *corn marigold*.

**Maril**, auton. area, admin. unit E. of Russian S.F.S.R. since 1920; c. 9,100 sq.m.; pop., 491,618. Language and customs retained by Mariis. Admin. centre, Krasnokokshaisk (pop., 4,780). Suffered gravely in famine, 1921.

**Marinade**, kind of pickling of vinegar or oil in wh. meat or fish is steeped.

**Marine glue**, waterproof cement used on ships and elsewhere; consists of solution of rubber in paraffin oil (1:10) added to hot asphaltum (5:1). **M. insurance**, insurance against loss or damage of ships and their cargoes, conducted by special companies; also by underwriters at Lloyd's (q.v.); regulated in Grt. Brit. by Marine Insurance Act of 1906. See GENERAL AVERAGE; PARTICULAR AVERAGE.

**Mariners' compass:** see COMPASS.

**Marines**, soldiers permanently at the dis-

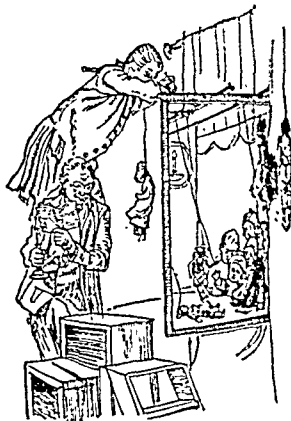
posal of naval authorts. for operations at sea or on land. M. first raised 1664, in Gt. Brit.; title Royal M., 1802, R.M. Light Infantry, 1855; R.M. Artillery raised 1804; the two arms amal., 1923. Depot, Deal. Divisions: Chatham, Portsmouth, Plymouth.

**Marinetti**, F. T. (1878- ), Ital. author; fndd. Futurist movement, 1909. *Futurismo e Fascismo*, 1922.

**Marini**, Giambattista (1569-1625), Ital. poet; *Adone*, 1623. *Marinism*, imitation or cultivation of his style.

**Marinus**, name of 2 popes: **M. I** (882-84), sometimes known as *Martin II*; anathematized Photius (q.v.); on friendly terms with Alfred the Great. **M. II** (942-46), sometimes known as *Martin III*; endeavoured to reform clergy and promote monastic development.

**Marionettes**, jointed dolls used in puppet-plays since Mid. Ages; moved by wires or strings from above.



Marionette Theatre

**Mariotte**, Edmé (1620-84), Fr. physicist; see BOYLE.

**Maris**, family of Dut. painters: 1) **Jacob** (1837-99), noted for his landscapes; *Grey Tower*, *Old Amsterdam*; *The Drawbridge*; *Landscape near Dordrecht*. His bro., 2) **Matthew** (1839-1917), *Bride of the Church*; *The Four Mills*; *Montmartre*. His bro., 3) **William** (1844-1910), noted for paintings of cattle grazing.

**Marischal, Earl**, former Scottish State officer corresp. to Eng. earl marshal (q.v.); hereditary in Keith family; discontinued on attainder of George Keith (1716).

**Maritana**, opera by Wm. Vincent Wallace (1845), a medley of Hugo's *Ruy Blas* and *Notre Dame*.

**Maritime Alps**, most S. chain of W. Alps; reaches to Mediterranean coast (Riviera); forms part of Franco-Ital. frontier; *Mont Pelat*, 10,000 feet.

**Maritza** (anc. *Hebrus*), riv. (c. 300 m.), Balkan Penins., flows E. from Rilo Dag (Bulgaria) past Philippopolis; turns S.; forms Graeco-Turk. frontier; drains into Aegean Sea at Enos; navigable to Adrianople.

**Marius**, (156-86 B.C.), Rom. gen. and statesm.; deftd. Cimbri and Teutones 102-101; democrat; rival of Sulla.

**Marjoram**, *Sweet*, *Origanum marjorana*, herb with pinkish flowers; contains an essential oil used in cookery.

**Mark, St.**, (N.T.) evangelist; early disciple of Jesus; accomp. Paul, and later



St. Mark the Evangelist

Peter, on missionary journeys; emblem a lion; St. Mark's day, Apr. 25th. **Gospel of St. M.** may have been written under direction of Peter; intended for Gentile Christians.

**Mark**, 1) obsolete mediaeval unit of weight applied to gold and silver, = c. 8 oz. 2) Mediaeval coin worth c. 13s. 4d. (£3.23). 3) Monetary unit of modern Ger. Repub., worth abt. 1s. (£0.23) at par; also coin or note representing this.

**Mark Antony**: see ANTONY, MARK.

**Market**, 1) meeting of vendors and purchasers at regular periods and place; origntd. in Mid. Ages. 2) Arising out of this, a combination of buyers and sellers of goods, services or values, e.g., cotton, stock, labour, foreign exch., money markets.

**Market Bosworth**: see BOSWORTH.

**Market Drayton**, mkt. dist. and mkt. tn., Salop; pop., 4,700; agric. centre; breweries. Battlefield of *Bloré Heath* (defeat of Lancastrians by Yorkists, 1459), 3 m. east.

**Market Harborough**, mkt. tn., Leics, fox-hunting centre; pop., 9,300.

**Markham**, Sir Albert Hastings (1841-1918), Eng. adm. and Arctic explorer; sailed on the "Alert," 1875, reaching lat. 83° 20' N.; on the "Isbjörn," 1879, explored region N. of Novaya Zemlya; author of *The Great Frozen Sea*, 1877; *A Polar Reconnaissance*, 1880, etc.

**Markhor**, wild goat with spirally twisted horns and long, shaggy coat; inhab. W. Himalayas.

**Marking nut**, fruit of E. Indian evergreen tree, *Semecarpus anacardium*, yielding a liquid wh. is mixed with quicklime to produce indelible marking ink for textiles.

**Markino**, Yoshio (1874- ), Jap. artist

and author; settled in U.S.A., 1893; came to London, 1897; *A Japanese Artist in London*, 1910; *The Story of Yone Noguchi*.

**Markka**, Finnish coin, = 100 pennia or 10/10d. (£0.19) at par.

**Mark Twain**: see CLEMENS, S. L.

**Marl**, soil consisting of clay and carbonate of lime; used as a fertiliser, and in the manuf. of cement.

**Marlborough, Dukes of**, title in peerage of Gt. Brit.: **John Churchill** (1650-1722), s. of Winston C., of Glanville Wotton, Dorset, was cr. Earl of M., 1689, and Duke, 1702; reed. comm. in Guards, 1667; m. Sarah Jennings (favourite of Qn. Anne), 1678; fought in Flanders, 1689; in Ireland, 1690; c.-in-c. of united armies in War of Span. Success. (q.v.); after victory of Blenheim, given manor of Woodstock, and Blenheim Pal., built at public cost of £240,000, by Sir. John Vanbrugh; cr. Prince of Holy Rom. Emp. and of Mindelheim; in later years lost favour at court, and took little part in State affairs; his s. d. 1703, and, by act of parl., his title and estates passed to his dau., Henrietta, wife of 2nd E. of Godolphin, who was succ. by her nephew, **Charles Spencer**,



Marlborough

5th E. of Sunderland (1706-58); his g.s., **George Spencer**, 5th duke (1766-1840), adopted surname of **Spencer-Churchill**, on his success., 1817; **John Winston**, s.-c. 7th duke (1822-83), father of Lord Randolph Churchill, was Lord-Lieut. of Ireland, 1876-80; his g.s., **Charles R. J. s.-c.**, 9th Duke (1871- ), was paymr.-gen., 1899-1902; parl. sec. Board of Trade, 1917-18.

**Marlborough**, Sarah, Churchill (Jennings), Duchess of (1660-1744), favourite of Qn. Anne; m. Jn. Churchill, afterwards Duke of Marlborough (q.v.), 1678; for a while completely dominated the qn. until her arrogance and rapacity became unbearable; superseded by Mrs. Masham.

**Marlborough**, 1) Munic. bor., Wilts, Eng., on Riv. Kennet; pop., 3,500; public school. 2) City, Mass., U.S.A.; manuf. boots, shoes; pop., 15,600. 3) Prov. dist., S. Island, N. Zealand, 4,200 sq.m.; pop. (white), 18,300.

**Marlborough House**, mansion in Pall Mall, London, E. of St. James's Palace; built by Wren (1710) for Duke of Marlborough; settled on Pr. of Wales (aftwds. Edw. VII), 1850, but used as a picture gallery until 1863; became London home of the Queen Mother, Alexandra, after death of Edw. VII, and passed to the Prince of Wales in 1926.

**Marlow**, urban dist., Bucks, Eng., riverside resort on Riv. Thames; pop., 6,500.

**Marlowe**, Christopher (1564-93), Eng.

dramat., *Dr. Faustus*, 1588; *Tamburlaine*, 1390; pioneer of Eng. blank verse.

**Marmalade**, preserve, gen. made of juice of bitter Seville oranges, also of lemons or grapefruit; juice is boiled with portions of the rind and sugar.

**Marmont**, Auguste Frédéric de (1774-1852), marshal of Fr.; gen. in Napoleon's army; Duke of Ragusa, 1808; *Mémoires*, 1856.

**Marmora**, Sea of, inland sea betw. Europ. and Asia Minor, connected with Black Sea by Bosphorus, and with Aegean by Dardanelles; 170 m. long, 46 m. broad.

**Marmoset**, small arboreal monkey, of tropical Amer.; forest-dweller, feeding chfly. on insects and fruit; gentle and soon tamed.

**Marmot**, medium-sized rodent, common to N. half of Old and New World, Pyrenees, Alps, Himalayas. Social in habit, lives in large and deep burrows communicating underground. All regions inhabited have severe winter during which M. hibernates.

**Marne**, 1) Riv. (325 m.) N. France, trib. of Seine; rises Plateau de Langres (*q.v.*); flows through Champagne; joins Seine at Charenton, nr. Paris; connected by canals with Saône, Aisne, and Rhine. *Battle of the Marne*, 3-10 Sept., 1914, end of Ger. advance in first stage of World War. 2) Dépt., France; 3,170 sq.m.; pop., 412,200; cap., Châlons-sur-Marne.

**Marocain**, see CRÊPE.

**Marochetti**, Carlo, Bn. (1805-68), Anglo-Ital. sculptor; R.A., 1866; *Fallen Angel*; statues of Qn. Victoria, Ld. Clyde, Richard Cœur de Lion (at Westminster); Inkerman monument (St. Paul's), etc.

**Maronites**, sect of Eastern Christians in neighbourhood of Mt. Lebanon, Syria; fndd. by Maron in 5th cent.; followed Jacobite, Nestorian, and Monothelite doctrines; communion with R.C.Ch. in 18th cent.; attacked by Druses (*q.v.*), 1860, and extensively massacred, but have since increased steadily in population and prosperity.

**Maroon**, 1) name given to fugitive slaves living on the mountains in the W. Indies and Guiana. 2) Term for leaving a person on a desolate isle or coast, usu. under pretext of his having committed crime. 3) A claret colour. 4) Large, detonating firework.

**Marprelate controversy**, 1589, a pamphlet attack on Anglican Ch., the writers, of whom there were several, signing themselves "Martin Marprelate."

**Marquesas Islands**, group of 11 volcanic isls. in Pacific Ocean, c. 500 sq.m.; pop., 2,255; exports copra, tortoise-shell; Fr. since 1842.

**Marquess, Marquis**, 2nd order of Engrage, ranking next below a duke. Title orig. given to the wardens of the borders or *marches* of the kingdom (*cf.* MARGRAVE). First creation by patent, 1386.

**Marquetry**, inlay consisting of juxtaposed pieces of wood of different colours or grains to form a pattern.

**Marrakesh**, inland city, Fr. Morocco, one of the four capitals of Morocco; pop., 193,600 (8,000 Europeans).

**Marram grass**, *Amnophila*, coarse grass growing on sand dunes, often planted to bind sand.

**Marriage**, legal union of man and woman for purposes of sexual intercourse and reproduction; among primitive peoples surrounded with elaborate ritual and restrictions; until recent times had almost everywhere a primarily religious character, but has now come increasingly under cognisance of civil law; its validity governed by laws of var. States and regulations of var. relig. bodies; in Eng. law it is a civil compact, though not terminable by the parties except on specified conditions (*see* DIVORCE); minimum marriage age in Eng. for both sexes is 16; consent of parents or magistrate necessary if party or parties under 21; celebrated after publicn. of banns (*q.v.*) or grant of certificate or licence by registrar of M. either in church or other relig. building, or in registry office; in Eng. law marriages celebrated abroad are gen. valid in Eng. if they are so in the place of celebration; Scottish M. law differs from Eng., and recognises in certain circumstances M. by repute, *i.e.*, by prolonged cohabitation of the parties without previous ceremony.

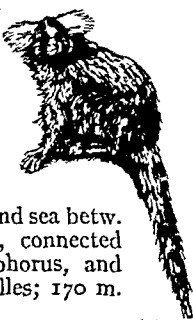
**Marriage settlement**, agreement made upon a marriage determining rights of the spouses and their offspring in their respective property.

**Marrons glacés**, sweetmeat made of chestnuts cooked in syrup.

**Marrow**, (physiol.) fatty substance contained in hollow spaces of the bones; M. in middle of long bones is yellow; at ends of long bones and in flat bones it is red. M. produces red blood-corpuscles.

**Marryat**, Fred. (1792-1848), Brit. naval capt. and novelist; *Mr. Midshipman Easy*, 1836, etc.

**Mars**, 1) Rom. god of war; Gr., Ares. 2) (astron.): 4th of the inner planets; sign♂ (for statistics, *see* Table, PLANETS); reaches nearest point to Earth, nearly 35 mill. m., every 15-17 yrs., as in Aug., 1924; has 2 very small moons, Phobos and Deimos; atmosphere and temp. approx. those of Earth, hence possibility of habitation by living be-



Marmoset



Marmot

ings; light areas, possibly ice, visible round poles, increasing during Martian winter; so-called *Canals* are dark stripes; belief that they are artificial creations of intelligent beings unsubstantiated.

**Marsala**, seapt., W. Sicily, on Cape Boco, in prov. Trapani; pop., 32,000; exports heavy, sweet wine (marsala).

**Marshall v. Bieberstein**, Bn. Adolf v. (1842-1912); Ger. diplomat; For. Sec., 1890-97.

**Marseillaise**, Fr. revolutionary hymn, words and music composed by Rouget de L'Isle, Apr. 24, 1792; adopted as marching song by revolnary. troops; now Fr. national anthem.

**Marseilles, Marseille**, second city and largest commercial port of France, cap. dépt. Bouches-du-Rhône, on Gulf of Lion, nr. mouth of Rhone; pop., 652,200; modern Byz. cathed.; Univ. of Aix-Marseilles; museums; mus. academy; colonial inst.; docks; shipb.; machinery. Known to the Phoenicians; fndd. c. 600 B.C. as Gr. colony.

**Marsh cypress**, N. Amer. coniferous tree, roots of which send up hollow "knee-roots" above surface of soil to provide roots with oxygen. **M. gas**: see METHANE.

**M. marigold, kingcup**, perennial wild flower of N. Hemisphere resembling large buttercup; buds when pickled are used as food. **M. pennywort, sheep rot, or sheep's bane**, *Hydrocotyle vulgaris*, creeping marsh plant with tiny reddish-white flowers.



Marsh  
Marigold

**Marshal**, orig. one who tends horses, later, 1) milit. officer of highest rank (Eng., *field marshal*); 2) official charged with regulation of ceremonies (cf. EARL MARSHAL). Also certain legal officers in Eng. and U.S.A.

**Marshall-Hall**, Sir Edward (1838-1927), Brit. barrister; defended in fam. crim. trials.

**Marshall Islands**, two parallel groups of 33 coral isls. in Pacific Ocean; *Ralik* (18 isls.) and *Radak* (15 isls.); 156 sq.m.; pop., 9,445 (238 Jap.); largest *Jaluit, Ailingbo, Likiep*; exports coconuts, copra. Ger. colony (incl. Nauru; q.v.), 1885; under Jap. mandate since 1919.

**Marshalsea**, Eng. prison in S.E. London, existing from c. 1375-1849; first used for political offenders, then for debtors, etc.; so called because it was under jurisdtn. of king's marshal; figures largely in Dickens's *Little Dorrit*. Bldg. demolished, 1887.

**Marshmallow**: see MALLOW.

**Marsh's test**, for detection of arsenic; based on fact that arsenic readily combines with hydrogen to form arseniuretted hydrogen. If a white tile is held in a burning jet of this gas, arsenic is deposited in form of a mirror. The test is very delicate and is of grt. importance in toxicology and forensic medicine.

**Mars-la-Tour, Battle of**, battle betw. French and Germans, 16 Aug., 1870, nr. villages of M. and Vionville, Lorraine, France.

**Marston Moor, Battle of**, July 2, 1644; destruction of Northn. Royalist army in W. Riding, Yorks, by Cromwell and Fairfax; name from near-by vill. Long Marston.

**Marsupials**, primitive subclass of mammals; found in Australia, Tasmania (kangaroos) and America (opossums only). Females have fold of skin on belly (the marsupium), in wh. they keep their young; these are born in embryonic state and develop in the pouch, attached to the teats. M. may be rodent-like fruit-eaters or carnivora.

**Marsyas**, (Gr. myth.) satyr, beaten by Apollo in a flute-playing competition, and by him flayed alive.

**Martagon**, (bot.) Turk's-cap lily, with small purple flowers.

**Martello tower**, type of round tower; corruption of *Mortella* (Corsica), where a round tower commanded the Golfe de Florent; many built on S. and E. coasts of England early in 19th cent. for coast defence.



Common or Beach  
Marten

**Marten**, small weasel-like carnivore of the genus *Mustela*, which includes the smaller polecats and weasels; all have characteristic long, slender body, short limbs, and more or less bushy tail. Best known: **Pine-m.**, Britain, N. Europe, Asia; **beech-m.**, centr. and S. Europe, Himalayas and Turkestan; **sable m.**, Siberia and Kamchatka; **N. Amer. m.**, and **yellow-throated m.**, India and China.

**Martensite**: see STEEL.

**Martha**, (N.T.) sister of Lazarus and Mary of Bethany; recd. Jesus in her house; typical of the housewifely qualities.

**Martha**, opera by Flotow (q.v.) (1847).

**Martha's Vineyard**, isl. off S.E. of Massachusetts, U.S.A.; 100 sq.m.; fisheries; summer resort; largest tn., Tisbury (pop., 1,431); Gay Head (pop., 170) is an Indian village.

**Martial**, Rom. satirical poet, and epigrammatist 1st cent. A.D.; *Epigrams*.

**Martial law**, subjection of civil to milit. author., procl. in a state of emergency; martial law in strict legality is no different from civil law; phrase also used for shortened form of a penal procedure before special courts.

**Martin of Tours**, St. (c. 316-400), Bp. of Tours; as a soldier divided his cloak with a beggar; patron st. of tavern-keepers. Commem., 11 November.

**Martin**, popes of this name are numbered from I to V, of whom the most important, historically, are: **M. I** (649-655), summoned 1st Lateran synod, 649, to condemn Monothelite heresy. **M. II** and **III**; see MARINUS I and II.

**Martin**, small migratory passerine bird of the family *Hirundinidae*. Ranges from Scandinavia to the Mediterranean and eastward into Asia; winters in Africa, S. of Abyssinia. Arrives in British Isles a little later than the swallow (*q.v.*) from which it may be distinguished by its conspicuous white rump, throat, and breast. From its habit of haunting the eaves of houses in towns and villages, it is popularly called the house-martin.

**Martin Dam**, Tallapoosa Riv., Cherokee Bluffs, Alabama, U.S.A.; 160 ft. high; storage capacity: 448,370 mill. gallons (1926).

**Martineau**, James (1805-1900), Brit. Unitarian divine; princ. of Manchester New Coll., 1868-85; contributor of many papers on philosophy and polit. economy to the reviews, etc.; author of *Ideal Substitutes for God*, 1879; *Study of Spinoza*, 1882; *The Seat of Authority in Religion*, 1890, etc., and hymns.

**Martini**, cocktail, dry or sweet, made with gin and vermouth.

**Martini-Henry**, 1) breech-loading rifle of the Brit. Army, 1871-88; cal. .455 with under-lever action.

**Martini**, Simone (1283-1344), Sienese painter; follower of Duccio; frescoes in chapel of San Martino, Assisi; joined papal court, Avignon, 1339.

**Martinique**, Fr. isl. (380 sq.m.), W. Indies, one of the Lesser Antilles; volcanic (*Mt. Pelée*, 4,500 ft.); exports rum, cocoa, sugar; pop., 228,000 (Negro and mulatto); cap., *Fort-de-France*. Eruption of *Mt. Pelée* in May, 1902, destroyed former cap., St. Pierre.

**Martinmas**, feast of St. Martin (Nov. 11th); formerly marked by bonfires and other survivals from an old pagan festival held at this time; 4th Scottish quarter-day.

**Martin's Bank**, fndd. 1831 as Bank of Liverpool; has absorbed number of other banks and since 1928 has been M.'s B., Ltd. Deposit and current accounts, 1932, £85,832,338; Liabilities, £98,121,469.

**Martyr** (Gr.: Witness), one who voluntarily suffers pain or death rather than deny his relig. faith or ideals; esp. a Christian

Martyr, honoured as a saint. **Martyrology**, study or history of martyrs; esp. a list of saints with brief notices of their lives and deaths, read in monastic churches during the office of Prime.

**Marvel of Peru**, *Mirabilis*, S. Amer. plant with funnel-shaped, brilliant flowers; cultivated in hot-houses.

**Marvell**, Andrew (1621-78), Eng. poet and political writer. *Poems and Some Satires of Andrew Marvell*, ed. Wright, 1904.

**Marwar**: see JODHPUR.

**Marx, Karl Heinrich**, (1818-83), Ger. philosopher and polit. econ.; joined Fr. socialist movement, 1843; developed doctrine of class war; with Engels (*q.v.*), fndd. Communist League; issued *Comm. Manifesto*, 1847; expelled from Pruss. and Fr., 1849; settled in Eng. and became leader of International, 1864; chf. work: *Capital*. **M., Wilhelm** (1863- ) Ger. statesm.; Reichs Chanc., 1923-24, 1926-28.

**Marxian theory**, philosophy of Karl Marx expounded in his *Communist Manifesto* (1847), *Capital* (vol. I, 1867), etc., and works of Engels, according to which all human history is record of class struggles; present struggle is between proletariat and bourgeoisie, which by nature of econ. structure of capitalism is drawn 1) to concentrate econ. power regularly in larger and fewer units, 2) to withhold from Labour all the product (surplus value) over and above subsistence wages. This process, being continuous and progressive, leads to convulsive conflicts as result of wh. proletariat will be eventually victorious and put an end to private property in industry. **M. theory** basis of Bolsh. policy in 1917.

**Marxstadt, Ekaterinestadt**, tn., auton. German Volga Repub., Russia; pop., 12,460; grain; milling, tobacco, and metal indus.; intellectual centre of Ger. colonists.

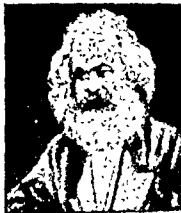
**Mary**, (N.T.) 1) **Blessed Virgin M.**, mother of Jesus, wife of Joseph; feasts: Purification (Candlemas), Feb. 2nd; Annunciation (Lady Day), March 25th; Visitation, July 2nd; Assumption, Aug. 15th; Nativity, Sept. 8th; with Holy Name of B.V.M. on Sept. 12th; Maternity, Nov. 11th; Presentation, Nov. 21st; Conception, Dec. 8th; 2)



St. Martin of Tours



Andrew Marvell



Karl Marx

**M., the mother of James**, wife of Cleophas; present at Crucifixion; one of women who came to Sepulchre of Christ on Easter morning. 3) **M. Magdalene**, woman, mentioned in Gospels, out of whom Jesus cast 7 devils; present at Crucifixion; 1st to see resurrected Christ; sometimes identified with woman who washed Jesus' feet and dried them with her hair (Lu. vii). 4) **M. of Bethany**, sister of Martha and Lazarus (*q.v.*).

**Mary, 1) M. Tudor** (1516-53-58), Qn. of England and Ireland; dau. of Hy. VIII and Catherine of Aragon; succ. her half-bro. Edw. VI; m. Philip of Spain, 1554; insurrection in favour of Lady Jane Grey; papal power restored; penal laws agst. heresy revived, 1555; 1st Prot. martyrs burned at Smithfield, 2 Feb., 1555 (last at Canterbury, 10 Nov., 1558). 2) **M. II** (1662-89-94), Qn. of England, Scotland, and Ireland; dau. of Jas. II; m. her cousin, Wm. of Orange (Wm. III), 1677; assented to Declaration of Right (*q.v.*), and crowned joint-sovereign with her husband, 1689.

**Mary, Qn. of Scots** (1542-87), dau. of Jas. V. of Scotl. and Mary of Guise, great-grand-dau. of Hy. VII of Engl.; m. Fr. Dauphin (d. 1560), 1558; claimed Engl. throne in succ. to Mary Tudor; returned to Scotl.; m. Ld. Darnley (d. 1567), 1565; m. Bothwell, 1567; imprisoned and forced to abdicate in favour of her son, Jas. VI (Jas. I); charged with conspiracy agst. life of Qn. Elizabeth; beheaded at Fotheringay.

**Mary, Qns.-consort of England:** 1) **M. of Modena** (1658-1718), dau. of Alfonso IV of Modena; m. Jas. II, 1673; Pr. of Wales born, 1688; joined her husband at St. Germain on invasion by Wm. of Orange. 2) **M.**, (1867- ), dau. of Duke of Teck; gt.-grand-dau. of Geo. III; m. Geo. V (then Duke of York), 1893; crowned with him at Westminster, 1911; prominent in public life, esp. interested in welfare of women and children; inaugurated *Queen's Work for Women Fund*, etc.

**Mary** (1496-1533), Qn.-consort of France; 3rd dau. of Hy. VII of England; m. Louis XII of France, 1514, who died 1 Jan., 1515; afterwards m. Chas. Brandon, Duke of Suffolk.

**Mary** (Victoria Alexandra Alice), Prin-



Mary Tudor



Mary Qn. of Scots



Princess Mary

cess, Princess Royal (1897- ), eldest dau. of Kg. George V and Qn. Mary; m. (1922) Visct. Lascelles (E. of Harewood); Col.-in-ch., Royal Scots; Comdt.-in-ch. Brit. Red Cross Detachments.

**Maryborough, 1)** co. tn., Co. Leix, Leinster, I.F.S.; pop., 3,300. 2) Seapt., Queensland, Australia; pop., 12,000.

**Maryland**, ("Cockade," "Old Line") State, U.S.A., 12,327 sq.m.; pop., 1,615,900; on Atlantic coast along Chesapeake Bay; iron and coal; watered by Susquehanna, Patapsco, and Potomac rivs.; timber; textiles; fruit and vegetables; canning. Cap., *Annapolis*, largest tn., Baltimore.

**Marylebone, St.**, see ST. MARYLEBONE.

**Mary of Guise** (or *Lorraine*) (1515-60), dau. of Claude, Duke of Guise; m. 1) Louis of Orleans (d. 1537), 1534; 2) Jas. V. of Scotland, 1538; their dau., Mary Qn. of Scots, b. 1542; regent of Scotl., 1554; suspended 1559 through conflict with Knox and the Reformers.

**Marzipan**, *almond paste*, filling of ground almonds, sugar, rose water and spice, kneaded together; for cakes and tarts. Sometimes also as sweetmeat, modelled into fruits and flowers.

**Masaccio**, properly Tomaso Guidi (1401-28), Ital. painter; frescoes in church of the Carmine, Florence.

**Masai**, mixed Hamitic race of E. Africa. Pastoral nomads; formerly renowned warriors.

**Masaryk**, Thomas (1850- ), Czech philos. and statesm.; champion of Czech independence; pres. Czech. Nat. Council, 1915, recogn. by Allies as provis. Govt., 1918; 1st Pres. Czech. Repub., 1918; co-finder. *Little Entente*; chf. works: *The New Europe*; *The Making of a State*.

**Mascagni**, Pietro (1863- ), Ital. composer: *Cavalleria Rusticana*, 1890.

**Mascara**, market tn., Oran, Algeria; pop., 31,000 (14,000 Europeans).

**Mascarene Islands**, group of three isls. in Ind. Ocean, E. of Madagascar, viz., Réunion, Mauritius, and Rodriguez discovered (16th cent.) by Mascarenhas.

**Mascot**, luck-bringing object, e.g., amulet; charm; luck-bringing person.

**Mas d'Azil:** see AZILIAN CULTURE.

**Masefield**, John (1875- ), Brit. poet and novelist; esp. narrative poetry and drama; Poet Laureate, 1930; *The Everlasting Mercy*, 1911; *Reynard the Fox*, 1919.

**Mash**, any thick mixture of vegetable matter and water; as in brewing and distilling; mixture of malt, potato, or other matter to undergo fermentation with yeast and water in *mash-tun*.



Masefield

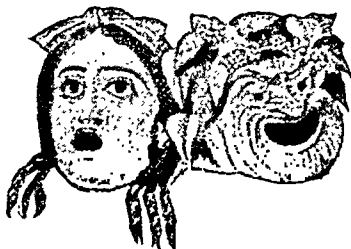


**Mashie**, iron golf-club with short, laid-back head for lofting.

**Mashonaland**, region, S. Rhodesia, Africa, betw. Matabeleland and Riv. Zambezi; alt., 4,000 ft.; well watered; gold mines; inhab. Zulus. Chf. tn., Salisbury.

**Mask**,

1) cover for face with apertures for eyes and mouth, worn a) for cult purposes with object of inspiring awe and error; b) by actors as disguise or, esp. in Gr. drama, to identify actor with character and increase power of voice by metal mouth-piece; c) for protective purposes, e.g., gas-mask. 2) Fox's head.



Greek Masks

**Maskelyne, Nevil** (1732-1811), Brit. astronomer; ordained, 1755; deputed by Roy. Soc. to observe transit of Venus in St. Helena, 1761; succ. Nathaniel Bliss as astronomer royal, 1765; fndd. *Nautical Almanac*, 1767; suggested and carried out Schehallion experiment for the determination of the density of the earth. **M., Jn. Nevil** (1839-1917), Brit. illusionist; with his partner Cooke exposed Davenport spiritualist frauds, 1865; gave conjuring entertainments at Egyptian Hall, Piccadilly, London, 1873-1905, and, later, at St. George's Hall.

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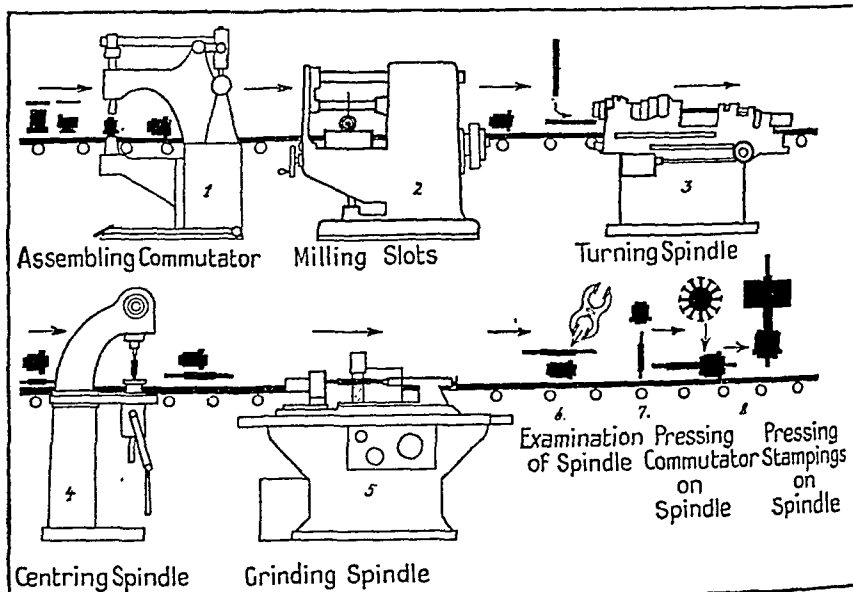
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**Mass.**, abbr. Massachusetts.

**Mass**, 1) celebration of Holy Eucharist in the R.C. Church. Present form established by Pius V, with slight revisions since. **Canon of the M.**, that part of the M. including the Consecration, wh. begins after the Sanctus with the words *Te igitur* and lasts till the end of the service. **High M.**, with incense, music, assistance of deacon and sub-deacon, etc. **Low M.**, said without music by the priest. 2) (Mus.) Composition for a choir, with or without solo voices, based on text of the Cath. Mass, sometimes with instr.



Mass-Production: Mechanical Assembly of Parts of Vacuum-cleaner Motor

accompaniment. 3) (Phys.) Quantity of material of which a body consists; resistance made by a body to changes in movement. Accdg. to Theory of Relativity (*q.v.*) energy also possesses mass. Phys. unit of the M. is the gramme. **M. action, Law of**, law accdg. to wh. chemical substances react in solution or as gases, the rate of reaction being proportional to the masses acting. **M. production**, manuf. of large numbers of identical objects on the princ. of inter-changeability of parts; each worker performs one, or very few, operations; parts are collected in sets for assembly. Reduces cost of manuf.; increases rate of production. Practised esp. in U.S.A. **M. psychology**, study of common sensations and thoughts of the masses, wh., when emotionally stimulated and intellectually unhampered, form a collective entity beyond control of the individual.

**Massachusetts** ("Bay State"), State, U.S.A.; 8,266 sq.m.; pop., 4,300,000; betw. Alleghany Mts. and the Atlantic; watered by Merrimac Riv.; indus. cotton, shoes. Cap., Boston.

**Massage**, stroking, rubbing, kneading and tapping of the body; produces improved circulation and nourishment of the tissues, promotes elimination of diseased matter, strengthens the muscles, and stimulates the skin. **Vibratory M.** is employed in treatment of deep-seated muscles and nerves for elimination of certain nerve and muscle pains.

**Massawa**, port of Eritrea (*q.v.*), on the Red Sea; pop., 15,000; pearl fisheries; trade with Abyssinia.

**Masséna**, André (1758-1817), Duke of Rivoli, Pr. of Essling; marshal under Napoleon; campaigns in Italy, Poland, and Spain.

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**Massey**, Wm. Ferguson (1856-1925), New Zealand statesman; entered N.Z. parlt., 1894; leader of conservatives, 1903; Pr. Min., 1912; N.Z. representative at Paris Peace Conference, 1919.

**Massicot**, (chem.) monoxide of lead, PbO, produced by heating lead in contact with air to a temperature below the fusing point of the oxide thus formed; used in the manufacture of red lead (*q.v.*). Cf. LITHARGE.

**Massinger**, Philip (1583-1640), Eng. dramatist: *A New Way to Pay Old Debts*, 1632; etc.

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**Massinissa** (c. 238-149 B.C.), Kg. of Numidia; Rom. ally in Punic Wars.

**Massorah**, critical notes on the Hebr. text of the Bible (5th-8th cents. A.D.), establishing correct headings, fixing the vowel sounds, and recording variants.

**Massys**, Quentin (1466-1530), Flem. painter; repred. in Nat. Gall., London, and at Windsor; finest work, *The Deposition*, 1508, at Antwerp; influenced Rubens.

**Mast**, (naut.) pole set upright in a vessel to sustain the sails, yards, rigging, etc.; three commonest, reckoning from the bows to the stern, are the *foremast*, *mainmast*, and *mizzenmast*; a "bonaventure mizen" was sometimes formerly erected abaft of the mizen; in larger vessels the mainmast often divided into *standing mast*, *topmast*, *topgallant mast*, and *topgallant royal*; *jury mast*, a temporary m. erected to replace one cut away or carried off by a storm. Name also given to openwork steel erectn. carrying elec. or wireless cables, etc. See also MOORING MAST.

**Mastaba**, anc. Egypt. tomb of stone, rectangular with sloping sides; contained three chambers, in the third of which the mummy was placed.

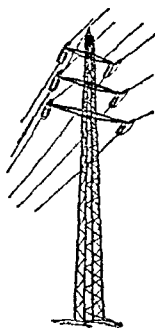
**Master** (acad.) see DEGREE. **M.-clock**, main clock which regulates a number of *slave* clocks. Usu. makes an electric contact at certain intervals, thus transmitting current which drives slave-clock forward suddenly, usually by electro-magnet-operating ratchet (*q.v.*). **M.-key**, key which will open a number of locks, each of which has its own separate and different key. **M. of the Rolls**, pres. since 1875 of Court of Appeal for Eng. and Wales. Orig. subordinate official in charge of State records, and still nom. head of Public Record Office. See RECORD OFFICE.

**Mastic**, resin of the *Mastic-tree* grown on Mediter. coast; used for varnish, lacquer, chewing-gum, adhesive plaster, agglutinant for dressings.

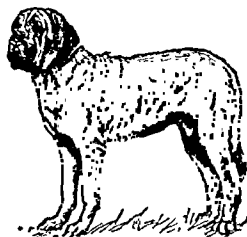
**Mastiff**, large powerful dog, with short muzzle and smooth coat, usu. fawn or brindle.

**Mastigophora**, green or colourless enucleated protozoa wh. move by means of one or several flagella (*q.v.*); certain of them cause disease (sleeping sickness, etc.).

**Mastitis**, (med.) inflamm. of the breast.



Steel Mast



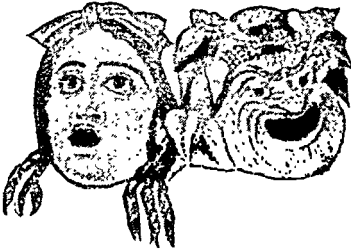
Mastiff

**Mashie**, iron golf-club with short, laid-back head for lofting.

**Mashonaland**, region, S. Rhodesia, Africa, betw. Matabeleland and Riv. Zambesi; alt., 4,000 ft.; well watered; gold mines; inhab. Zulus. Chf. tn., Salisbury.

**Mask**,

1) cover for face with apertures for eyes and mouth, worn a) for cult purposes with object of inspiring awe and error; b) by actors as disguise or, esp. in Gr. drama, to identify actor with character and increase power of voice by metal mouth-piece; c) for protective purposes, e.g., gas-mask. 2) Fox's head.



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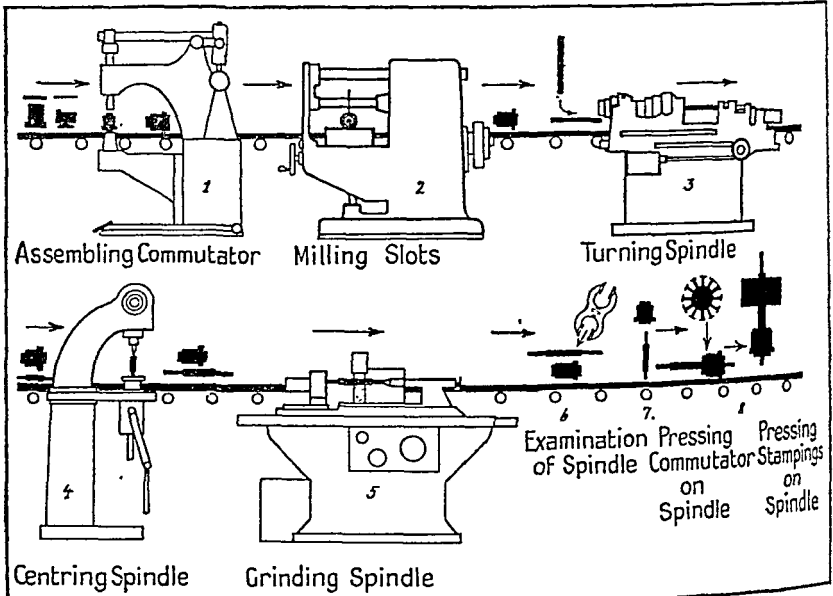
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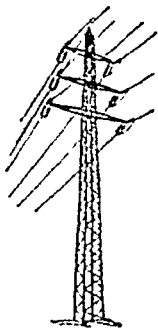
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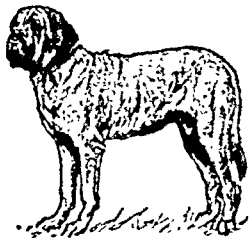
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Steel Mast



Mastiff

**Mastodon**, genus of large, extinct mammals allied to the elephant, having nipple-shaped prominences on the molar teeth; some species had tusks in both lower and upper jaws.

**Mastoid bone**, small bone situated behind the ear.

**Mastoiditis**, suppuration in the mastoid bone arising from disease of the middle ear.

**Masturbation**, *Onanism*, sexual self-gratification.

**Masurian Lakes**: see MASURENLAND.

**Masurenland**, hilly dist. E. Prussia; forest, heaths, lakes, inhab. by Polish Masurians; cap., *Lyck*. Battles of Tannenberg (13 Aug., 1914) and of the *Masurian Lakes* ("Summer Battle," 15 Sept., 1914 and "Winter Battle," 22 Feb., 1915), freed E. Prussia from the Russians.

**Masurium**, rare metallic element, sym. Ma, assocd. with platinum, but very little is known of its properties. At. wt. approx. 98.

**Matabeleland**, dist., S. Rhodesia, S. Africa. The Matabele are Zulu warriors now converted to farmers and herds-men, numbering c. 250,000. Chf. tn., Bulawayo.

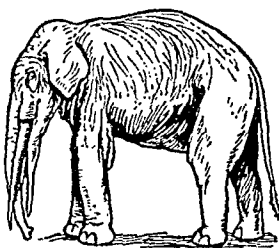
**Matadi**, riv. port, Belg. Congo, nr. mouth of Congo; starting-point of Congo Railway.

**Matador** (Span.), 1) man who kills the bull in bullfights; 2) one of three chief cards in ombre and quadrille; 3) a variety of the game of dominoes.

**Matanzas**, 1) prov. Cuba; 3,260 sq.m.; pop., 359,600. 2) City and seaport, N. coast of Cuba, 60 m. E. of Havana; pop., 63,400; exps. sugar; first shots of Span.-Amer. war were fired here, 27 Apr., 1898.

**Match**, small stick of soft wood impregnated with paraffin wax, head made of mixture of potassium chlorate and chromate, and sulphur, with binding material. Safety-M. strike only on surface prepared with mixture of red phosphorus, sulphur, and antimony; usu. dipped in ammonium phosphate solution to prevent glowing of burnt stick. Production completely automatic. State monopoly in many countries. In Eng. and Italy, matches are still made with yellow phosphorus heads and wax sticks. **Match-lock**, arquebus (*q.v.*) or musket discharged by applying a lighted slow-match (*q.v.*) to the priming powder in the pan.

**Matchboard**, thin board with a groove



Mastodon



Matador

cut along one edge and a tongue along opposite edge, to fit into boards similarly cut. See TONGUE AND GROOVE.

**Mate**, 1) (chess): see CHECKMATE. 2) (Naut.) officer, in mercantile marine, next in rank to captain; chief executive officer on a sailing ship. **Second m.**, second officer in deck staff of merchant ship; required by regulation to hold a Master's certificate for navigation, etc. On a large ship often also holds an extra Master's certificate and is fully qualified to take charge. Term "mate" is not so generally used as "officer."

**Maté tea**, *yerba maté*, tea-like infusion of leaves from Brazilian holly; alleged to have mild medicinal qualities; much drunk in S. America.

**Matelassé**, double fabric, usu. havg. silk surface, w. patterns in relief as though padded and quilted.

**Mater Dolorosa** (Lat.), "Our Lady of Sorrows," pop. subject for painters, representing this aspect of the Virgin Mary.

**Materia medica**, study of the origins and preparations of drugs and other agents used in medicine.

**Materialism**, philos. doctrine interpreting nature and experience in terms of matter in motion, and maintaining that matter is the sole and eternal foundation of everything spiritual and intellectual. M. was repr. in anc. world by Epicurus (341-270 B.C.) and Lucretius (c. 97-53 B.C.); in mod. history mainly by Fr. of 18th century.

**Materials, Testing of**, (tech.) examination of material such as iron, steel, bldg. materials, fabrics, lubricants, etc. Special machines used of most var. description. In Eng., National Physical Laboratory, Teddington, undertakes tests.

**Mathematical induction**, method of reasoning first introduced by Pierre de Fermat, which states that if a proposition be true of value  $n$  when  $n$  is given a few values (1, 2, 3, etc.) and is also true of  $(n+1)$ , it is therefore true of all values of  $n$ . Thus the proposition of Binomial Theorem that

$$(a+b)^n = a^n + na^{n-1}b + \frac{n(n-1)}{2}a^{n-2}b^2 +$$

...  $nab^{n-1} + b^n$  is proved by showing first that it is true for values 1, 2 and 3 of  $n$  and secondly by showing that  $(a+b)^{n+1} = a^{n+1}$

$$+ (n+1) \times a^n b + \frac{(n+1)n}{2} a^{n-1} b^2 + \dots + (n+1) ab^{n+1}.$$

**Mathematical signs**: + plus (addition sign; also sign of positive nos.); - minus



Mater Dolorosa

(sign denoting subtraction, negative nos., and reciprocals, e.g.,  $x^{-3}$   $\frac{1}{x^3}$ );  $\pm$  plus or minus;  $\times$ ,

( ) ( ), times (multiplication sign — e.g.,  $ab$  or  $a \times b$  or  $(a)(b)$  equal  $a$  multiplied by  $b$ );  $\div$ ;  $/$ ,  $\perp$  and — divided by (division sign — e.g.,  $a \div b$ ,  $a / b$ ,  $a \perp b$  or more shortly

$\frac{a}{b}$  all equal  $a$  divided by  $b$  (in geom.  $\perp$  means perpendicular to);  $=$ , equal;  $\equiv$ , identically the same;  $:$ , divided by, and  $:$  equals (used only between ratios — as  $a:b :: c:d$  —  $a$  divided by  $b$  equals  $c$  divid. by  $d$ );  $\neq$  not equal to;  $>$  greater than . . . ;  $\nless$  does not exceed . . . ;  $<$  less than . . . ;  $\nless$  not less than . . . ;  $\sim$  difference between (used in cases where uncertain which quantity the greater) and sometimes for similarity;  $\infty$  infinite;  $\propto$  proportional to; ( $\cong$  congruent);  $\parallel$  parallel;  $\angle$  angle; lg. or log. . . logarithm;  $\sqrt{\phantom{x}}$  . . . or  $\sqrt[n]{\phantom{x}}$ ,  $\sqrt[2]{\phantom{x}}$  and, 3rd and 4th roots — called radical sign; index (  $-1$  ) applied to trig. operator denoting inverse operation, e.g.,  $\tan^{-1} x$  denotes angle whose tan. is  $x$ ;  $f(\phantom{x})$  . . . function of . . . — when several different fns. are in use other symbols (e.g.,  $\phi$ ,  $\Psi$ , or  $\chi$ ) may be utilised;  $\Sigma$  (sigma) sum of;  $\int$  integral sign;  $d$  differential of — as  $dx$ ;  $\delta$  variation of or change of as  $\delta x$ ;  $D_x$  or  $\frac{d}{dx}$  differentiation with respect to  $x$ ; ( $\Delta$  finite difference of, in geom. refers to triangle);  $\Pi$  product of ; . . . ! or  $\angle$  . . . factorial (thus  $3!$  or  $\angle^3$  equals  $1.2.3$ ).

**Mathematics** (Gr.), science concerned, in narrower sense, with properties of, and relations between, quantities, but in wider sense with deductions from general premises of all reasoning. Embraces both *Pure* and *Applied M.* Former includes arithmetic (q.v.), algebra (q.v.), theories of numbers and of probabilities; analysis of real quantities (involving infinitesimal calculus), theory of functions, as well as pure, co-ordinate, and differential geometry. Mathematics is a necessary foundation of exact science (astronomy, mechanics, geodesy, physics), whose laws are relations betw. measured magnitudes (time, length, volume, etc.). For use in such connections the term *Applied M.* is common. Beginnings of a mathematical system necessary for daily life were made by the Chinese, Hindus, Babylonians and Egyptians, and developed to a science by the Greeks, esp. Euclid (from whom was named the usual Euclidean geometry), Apollonius, Archimedes, Diophantus. Gr. and Ind. mathematics taken over by the Arabs, through whose translations they became known to the W. countries even before the Renaissance. Great mathematicians of the ensuing peri-

ods: Newton, Leibnitz, Euler, Lagrange, Gauss, Cauchy, Jacobi, Descartes, Napier, Riemann, and Weierstrass.

**Mather**, Cotton (1663-1728), Amer. Congreg. clergyman, auth. and schol.; believer in witchcraft, and persecutor of witches.

**Matico**, dried leaves of a S. Amer. variety of pepper, used in medicine as a styptic.

**Matilda**, 1) (1102-67), Empress; dau. of Hy. I and mother (by 2nd husb., Geoffrey Plantagenet) of Hy. II of Eng.; m. 1114, Emp. Hy. V (d. 1125); attempted to succeed her father, 1135, as Qn. of Eng., but was not recognised as such; after civil war with Stephen fled to Normandy, 1148. 2) Margravine of Tuscany (1046-1115), fought for Papal rights in question of Investitures for 30 yrs., and presented her estates to Holy See, forming a large part of papal dominions.

**Matinée**, dramatic or musical entertainment in early afternoon.

**Matins**: see HOURS, CANONICAL.

**Matisse**, Henri (1869- ), Fr. painter, member of *les fauves* group; strongly individual style, but with gt. influence on mod. Fr. painting.

**Matlock**, urban dist. and watering-place, Derbysh., Eng.; pop., 10,500. Includes *Matlock Bath* and *Matlock Bridge*.

**Matopopo Hills**, range, S. Rhodesia, 30 m. S. of Bulawayo, surrounding Matabele tableland; watershed betw. rivs. Zambezi and Limpopo; Cecil Rhodes buried at World's View.

**Matrarchy**, primitive dominance of the mother in affairs of household, and of women in life of the tribe. Postulated by certain sociologists; found to-day only in modified form. Ant.: *patriarchy* (q.v.). Cf. also MATRILINY.

**Matriculation**, 1) act on ceremony of admittance to membership of a university; 2) exam. qualifying candidate for such admittance; esp. London M., for wh. exemption may be obtnd. by reaching necessary standard in certain other examinations (e.g., School Certificate).

**Matriliney**, custom of counting descent, succession and kinship thr. the mother. Ant.: *Patriliney*, descent thr. the father.

**Matrix**, place in wh. a thing is formed or developed. 1) (Typog.) Mould from wh. type is cast; in stereotyping, mould made from type, consisting of paper, plaster of Paris, etc. 2) (Machinery) Stamp for punching or printing. 3) Stamp used to impress gramophone records. 4) Earthy substance, rock, etc., in wh. minerals or gems are embedded.

**Matsys**, Quentin: see MASSYS, QUENTIN.

**Matte**, (min.) first impure product of smelting ores, particularly copper.

**Matteotti**, Giacomo (1885-1924), secy. Ital. Soc. Party; murdered. Death generally ascribed to Fascist gang. **M. Fund**, internatl. fund for aid of victims of Fascism, administ. by Soc. Internat'l.

**Matter**, (phys.) any chemical element (q.v.) or compound or mixture of such; see ATOM.

**Matterhorn**, **Monte Cervino**, peak of Valais Alps on Ital.-Swiss border, 14,770 ft.; first climbed by Whymper (1865).

**Matthew**, (N.T.) known as Levi, son of Alphaeus, apostle and evangelist, a publican until called by Jesus (Matt. ix. 9); emblem, angel; feast day Sept. 21. **Gospel of St. M.**,



Summit of the Matterhorn

1st bk. of N.T. c. A.D. 67, intended for Jewish readers, emphasising fulfilment of O.T. prophecies.

**Matthews**, (James) Brander (1852-1929), Amer. dramatic critic and essayist; long associated as critic with *New York Times*; auth. *Shakespeare as a Playwright*, 1913.

**Matthias**, (N.T.) apostle appointed in place of Judas Iscariot (q.v.), (Acts i); feast day Feb. 24th.

**Matthias I.**, **Corvinus** or **Hunyadi** (1443-90), Kg. of Hung., 1458, Kg. of Bohemia, 1469; deftd. Fredk. III, and annexed Austria, 1485.

**Mattock**, (agric.) implement with sharp iron head for cutting where vegetation prevents use of spade.

**Matto Grosso**, State, S.W. Brazil; c. 540,500 sq.m.; pop., 340,000; steppe plateau watered by Riv. Paraguay; cattle-breeding, mining; cap., *Cuiabá*.

**Maturity**, (finan.) time for pymt. of a bill of exch., e.g., 3 months after date.

**Matzoth**: see MAZOTH.

**Maubeuge**, fortress tn., dépt. Nord, France, on Riv. Sambre; pop., 23,400; iron-foundries. Fortress (orig. by Vauban) captured by Ger., 1914; retaken by Brit., 1918.

**Maude**, Sir Frederick Stanley (1864-1917), Brit. gen. com. 13th Div., Dardanelles and Mesopotamia (1915-16); army com. in

Mesopot., 1916; occupied Bagdad, and d. there of cholera, 1917.

**Maudsley**, Henry (1885-1918), Eng. physiologist; endowed the M. hospital, built by the L.C.C. at Denmark Hill, London, for treatment of curable insanity.

**Maugham**, William Somerset (1874- ), Brit. playwright and novelist; plays: *The Land of Promise*; *East of Suez*; *The Sacred Flame*; novels: *The Casuarina Tree*; *The Moon and Sixpence*; *Of Human Bondage*.

**Mauna Kea**, extinct volcano (13,823 ft.), Hawaii. **Mauna Loa**, active volcano, Hawaii (13,765 ft.); crater of Kilauea (q.v.) on E. slope.

**Maud**, 1) Ind. (Bengal) dry meas., i.24 bushel (45.2 litres). 2) Ind., Pers., and Turk. wt., 82.14 lb. (37.26 kilograms).

**Maundy Thursday**, Thursday before Easter. **Maundy money**, alms distribtd. to the poor as part of ceremony of washing the feet of 12 poor persons on M. T.; practised from early Christn. times, and by the kgs. of Eng., the last to do so being James II. Now restricted to giving of *M. pennies* at Westminster Abbey; coins (first struck temp. Charles II) are silver and consist of groat (4d.), twopenny-piece, and penny.

**Maunoury**, Michel Joseph (1847-1923), Fr. gen.; served in Franco-Pruss. War; prof. at St. Cyr, 1883-1912; conducted brilliant attack on left flank of Ger. V Army, Aug., 1914; placed in command of new VI Army on the Somme; severely wounded 15 Mar., 1915; posthumously created Marshal of France.



St. Matthew the Evangelist

**Maupassant**, Guy de (1850-93), Fr. novel. and short-story writer: novel, *Bel-Ami*, 1885.

**Maupertuis**, Pierre Louis Moreau de (1698-1759), Fr. mathematician and astronomer; *Essai de Cosmologie*, 1750.

**Maura**, Antonio (1853-1925), Span. statesm.; Pr. Min., 1903, 1918, 1919, 1921; constitutionalist and reformer.

**Mauriac**, François (1885- ), Fr. novelist; *Le Baiser au Léprieux*.

**Maurice**, Sir Frederick Barton (1871- ), Brit. gen.; served in Tirah campaign, 1897-98; S. Africa, 1899-1900; dir. of milit.

operations at War Office, 1915-18; protested agnst. attempt to shift responsibility of spring disasters, 1918, on to army; princ. of Working Men's College, St. Pancras, since 1922; succeeded Lord Jellicoe as pres. of Brit. Legion (q.v.), 1932.

**Maurice**, 1) Elector of Saxony (1521-53), leader of Lutheran party; seized office of elector from John Fredk. in alliance with Emp. Ch. V, 1547. 2) of Nassau, Pr. of Orange (1567-1625), Stadtholder of Holland and Zeeland, 1584; allied with Oldebarneveldt to overthrow Span. dominion. 3) Marshal of Saxony (1696-1750), Marshal of Fr.; deftd. Eng. at Fontenoy, 1745; 4) Landgrave of Hesse (1592-1627), patron of letters.

**Maurists**, offshoot of Benedictines (q.v.) founded by St. Maur (d. 565) in lifetime of St. Benedict; in northern Eur. ranked as equal with Benedictine order proper; most French Benedictine monasteries, except the Cluniacs, allied themselves to famous French Maurist congregation founded c. 1621.

**Mauritania**, 1) Anc. Rom. province, N. African coast. 2) Fr. colony in S.W. Sahara, c. 340,000 sq.m. (mostly desert); pop. c. 323,000 (Moorish Mohams.), with 350 Europeans.

**Mauritius**, formerly *Île-de-France*, volcanic island, Indian Ocean, 550 m. E. of Madagascar, Brit. crown colony since 1810; 720 sq.m.; pop., 393,400. Climate trop.; periodic cyclones; exports: Mauritius hemp (aloe fibre), coconut oil, copra, guano, sugar; cap., *Port Louis*. Dependencies are *Rodrigues*, 350 m. E. (40 sq.m., pop., 6,600), *Chagos Archipelago*, in centr. Indian Ocean, (150 sq.m.; pop., 1,300).

**Maurolis**, André (1885- ), Fr. author and biographer: *Silence of Colonel Bramble*; *Ariel*; *Disraeli*.

**Maurras**, Charles (1868- ), Fr. author, and Royalist politic.; writings in *L'Action Française*; *Quand les Français ne s'aimaient pas*, 1916.

**Mausser**, small-arms of Ger. manuf. used in various types in many armies; Ger., Span., Turk., Boer, etc.

**Mausoleum**, magnifict. tomb or stately sepulchral monument; orig. tomb built for Kg. Mausolus by Artemisia at Halicarnassus (4th cent. B.C.).

**Mauvaise honte** (Fr.), false modesty, shyness.

**Mauvais sujet** (Fr.), rogue, ne'er-do-well.

**Mawson**, Sir Douglas (1882- ), Brit. explorer; on scientific staff of Shackleton's Antarctic expeditn., 1907; led Australasian Antarctic expeditn., 1911-14; prof. of geology and mineralogy, Adelaide Univ., since 1920.

**Max**, Adolphe (1869- ), Belg. politician; burgomaster of Brussels, 1909; resisted demands of Ger. mil. gov. and imprisoned, 1914-18.

**Maxentius**, Rom. emp. 306-312; deftd. by Constantine at Saxa Rubra on the Tiber, 312; drowned.

**Maxim**, **Sir Hiram** (1840-1916), Amer. inv.; Maxim automatic gun. 2) His bro. **Hudson M.** (1853-1927), inv. various gun-powders much used in World War. 3) **M., Hiram Percy** (1869- ), s. of Sir Hiram; inv. the Maxim silencer for firearms. See MACHINE GUN.

**Maximianus**, Marcus Aurelius (286-305), Emperor jointly with Diocletian.

**Maximilian**, emperors of Holy Rom. Emp.: 1) **M. I** (1459-1550), emp., 1493; reformed administration, diet, and army. 2) **M. II** (1527-76), emp., 1564; granted liberty to Lutheran nobles and knights.

**Maximilian**, Ferdinand Emp. of Mexico (1832-67), s. of Archd. Francis Chas. of Austria, and bro. of Emp. Francis Joseph; emp. (by invitn.), 1864; shot by revolutionaries.



Emp. Maximilian I after Dürer

**Maximilian I**, Joseph (1756-1825), Kg. of Bavaria, member of Rhine Union; granted liberal constitution, 1818.

**Maximilian I**, (1573-1651) the Great Elector and Duke of Bavaria; leader of Catholic League in Thirty Years' War.

**Maximilian**, Pr. of Baden (1867-1929), "Pr. Max"; Ger. statesman; last Chanc. of Empire; announced abdic. of William II, 1918, and surrend. chancellorship to Ebert, 1st Pres. of Repub.; *Memoirs and Documents*.

**Maximinus**, Gaius Julius Verus, Rom. emp., 235-38; Thracian shepherd, remarkable for his size and strength; proclaimed emp. by soldiers on the Rhine after murder of Alexander Severus; organised frontiers and built roads; his severity caused revolt and led to his murder, 238.

**Maxton**, James (1885- ), Brit. Soc. politician; ex-schoolmaster; imprisoned for pacifist speeches, 1916; M.P. since 1922; organiser in Scotl. for Glasgow federation of Indep. Lab. Party, 1919-22; chmn. of I.L.P., since 1926.

**Maxwell**, James Clerk (1831-79), Eng. physicist, combined all known properties of elect. into *M.'s equations*, from wh. he deduced existence of *electro-magnetic radiation*, travelling with velocity of light. Suggested that light is elec.-magn. radiation, since proved; long-wave elec.-magn. radiation demonstr. by Hertz, and now used in wireless telegraphy. **M., Wm. Babington** (1876- ), Brit. author; chmn. of National Book Council; *The Guarded Flame*, 1906; *We Forget because We Must*, 1928; etc.

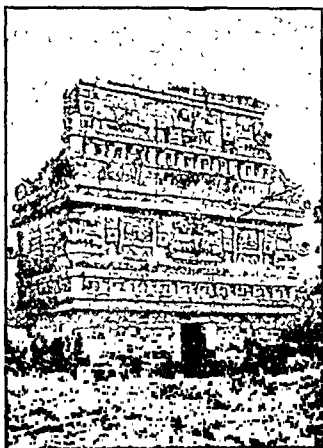
**May**, Phil (1864-1903), Brit. humorous artist and caricaturist; contributed to *Punch*.



**May**, 5th month, of 31 days, named after Rom. deity Maia, "she who brings increase." **M.-Day**, first of May, observed as spring festival by anc. Romans; formerly celebrated in Eng. with rustic games, dancing round Maypole, etc.; selected as Labour Day (*q.v.*) by Internat. Socialist Congr., 1889. **M.-flies**, delicate winged insects; remarkable for very short life after emergence from aquatic larvae.

**Maya**, 1) anc. race of Centr. Amer. Inds.; formerly dominant thr. whole of Centr.

Amer.; own language. First highly developed culture in Centr. Amer.; had hieroglyphic script and calendar; elab. archit.; relig. animistic. 2) In Hind. myth., personification of illusion. **M.'s Veil**, external life (illusory), veiling the true (ideal) life.



Example of Maya Architecture  
Chichen Itza: Building ornamented with Masks of the Rain God, about 10th cent. A.D.

**Mayakovsky**, Vladimir (1894-1931), Russ. lyric poet and dramatist.

**Mayer**, Robert (1814-78), Ger. physicist; propounded laws of *conservation of energy* (*q.v.*) and *mechanical equivalent of heat*.

**Mayfair**, London aristoc. quarter betw. Bond Street and Hyde Park; from fair instit. by Edward III in neighbourhood of Curzon Street.

**Mayflower**, the ship that brought 1st Eng. colonists (Pilgrim Fathers) to Massachusetts in 1620.

**Maynooth**, tn., co. Kildare, I.F.S., 15 m. W. of Dublin; pop., 900; Royal Catholic college (1795).

**Mayo**, **Wm. James** (1861- ), Amer. surgeon; **M., Ch. Horace** (1865- ), surgeon; bro. of Wm. James; with their father fndd. **M. Clinic**, Rochester, U.S.A., 1889.

**Mayo**, marit. co., Munster, I.F.S.; area, 2,084 sq.m.; pop., 172,700; coast deeply indented, with *Achill Is.* (largest off Ir. coast); mountainous in W., level in E.; *Lough Conn* (8 m. by 4); stock-raising, fisheries; co. tn., *Castlebar*.

**Mayonnaise**, salad dressing made with olive oil, yolks of eggs, vinegar, salt, and pepper.

**Mayor**, chief personage in a borough,

where he presides over town council and borough magistrates, and enjoys precedence over all pers. exc. royal family or official representative. **M. of the palace**, chief court official of Frankish kgs.; under later Merovingians became virt. ruler and ultimately ousted king.

**Maypole**, pole hung with ribbons and flowers round wh. dances took place on May Day.

**Rayweed**, European and Asiatic wild plant, with large, daisy-like flowers.

**Mazagan, El Jadida**, fortified seap. tn. on W. Coast of Morocco; pop., 20,000 (1,700 Europeans).

**Mazanderan**, prov., Persia, on coast of Caspian Sea; c. 11,000 sq.m.; cattle and silkworm breeding; pop., c. 199,000

**Mazarin**, Jules (1602-61), Fr. card. and statesman; succ. Richelieu as Min., 1642; establ. Crown as supreme power in France.

**Mazda**: see ORMUZD.

**Mazdaism**: see ZORASTRIANISM.

**Maze**: see LABYRINTH.

**Mazeppa-Koledinsky**, Ivan Stepanovich (c. 1644-1709), Cossack hetman, Pr. of Ukraine, in service of Peter the Great; later allied with Charles XII of Swed., in attempt to make Ukraine independent.

**Mazoth, motzas**, unleavened bread, used by Jews in substitution for leavened bread during week of Passover (Exod. xii, 14).

**Mazurka**, Polish nat. dance in 3 time; early M. tunes characterised by monotonous bass and accent on 3rd beat.

**Mazzini**, Giuseppe (1805-72), Ital. patriot and revolutionary; apostle of Ital. unity and independence.

**M.B.**, abbr. *Medicinae Baccalaureatus* (Lat.), Bachelor of Medicine.

**M.D.**, abbr. *Medicinae Doctor* (Lat.), Doctor of Medicine.

**Md.**, abbr. Maryland.

**Mddx.**, abbr. Middlesex.

**Me.**, abbr. Maine.

**Mea culpa** (Lat.), through my fault; part of the formula used by penitents at Confession in the Cath. Church.

**Mead**, beverage made from honey and spices dissolved in boiling water, fermented with malt and yeast.

**Meadow-brown butterfly**, species common in pasture lands in temperate regions brown with black eye-like spots.

**Meadow grass**, general name for any of the many varieties of *Poa*. **M. rue**, perennial, wild plant of buttercup family with small yellow clustered flowers. **M. saffron**: see COLCHICUM. **M. sweet, queen-of-the meadow, bridewort, Spiraea ulmaria**, herbaceous plant 2-4 ft. high, pinnate leaves yellowish white flowers; very sweet smelling. Used to flavour herb beers and also in herb med. for infantile diarrhoea.



Meadow-brown Butterfly

**Meal-worm**, larva of a small beetle breeding in flour-mill refuse.

**Mean**, (arithmet.) average of the numerical values of items such as  $a, b, c \dots$  etc., is their sum divided by the number of items:

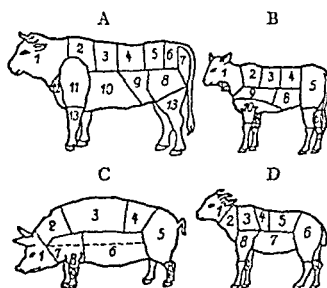
$\frac{a+b+c+\dots}{\text{no. of items}}$ . **Geometric M.** of two numbers  $a$  and  $b$  is the square root of their product:  $\sqrt{a \times b}$ . **Harmonic M. (H)** is quantity whose reciprocal is arith. M. of reciprocals of other quantities, e.g.,  $\frac{1}{H} = \frac{1}{2} \left( \frac{1}{a} + \frac{1}{b} \right)$ .

**Means Test**, enquiry by local public assistance committees as to financial circumstances of families and relatives of unemployed persons in Gt. Brit. (since 1931); upon the amount of income so disclosed committee decides whether relief shall be paid.

**Mearns, The**: see KINCARDINESHIRE.

**Measles**, contagious disease wh. chiefly attacks children. Incubation period, 7-21 days. Begins with running of eyes and nose, high temperature. Rash appears on 4th day. **Preventive measures**: Injection of serum from convalescent patients; this must be given within 5 days of exposure to infection.

**Meat**, soft part of animal; muscular tissue. Food value consists of albumen and min. salts content. M. is composed on average of  $\frac{3}{4}$  water,  $\frac{1}{4}$  solid matter, of wh. 80% albumen and 3%-7 $\frac{1}{2}$ % min. salts (sodium chloride, potassium, calcium, and magnesium phosphate). Food value also depends on mode of prep. If meat is placed in



A Beef.  
C Pork.

B Veal.  
D Mutton.

cold oven or water, salt content and some of albumen is extracted; placing in boiling water or hot oven causes outer layer of albumens to be sealed and prevents loss of nourishing substances. Princ. joints (see diagrs. above) are: A) Beef: 1. Head and neck. 2. Shoulder. 3. Chuck rib (rib). 4. Middle-ribs. 5. Sirloin. 6 and 7. Rump and aitch-bone. 8 and 9. Buttock and flank. 10. Brisket. 11. Leg. 12. Dewlap clod. 13. Shin. At back of 3 and 6, fillet. B) Veal:

1. Head with brain, tongue, and neck. 1a. Sweetbread. 2. Neck. 3. Neck. 4. Loin; kidneys. 5. Loin (chump). 6. Knuckle. 7. Foot and hock. 8 and 9. Breast and lights, heart, lung, liver, etc. 9. Shoulder. 10. Breast. C) Pork: 1. Head, ears, and snout. 2. Spare rib. 3. Loin. 4. Loin with kidneys. 5. Leg. 6. Spring or belly (lean); above dotted line fat. 7. Hand. 8. Leg. 9. Trotters. D) Mutton: 1. Head and neck (scrag). 2. Neck (middle). 3. Neck (best end). 4. Loin. 5. Loin (chump). 6. Leg. 7. Breast. 8. Shoulder. 9. Trotters.

**Meath**, Reginald Brabazon, 12th E. of (1841-1920), Brit. diplomat and philanthropist; fndr. and chmn. of many social organisations, incl. Young Men's Friendly Soc. and Duty and Discipline Movement; originator of Empire Day celebrations; writings incl. *Thoughts on Imperial and Social Subjects*, 1906; *Memories of the Nineteenth Century*, 1923; *Brabazon Pot-pourri*, 1928.

**Meath**, marit. co., Leinster, I.F.S.; area, 906 sq.m.; pop., 63,000; flat or undulating; rivs. Boyne, Black-water; grazing, linen; co. tn., Trim.

**Mecca**, trading tn., cap. of Hejaz, Arabia, sit. in a mtn. valley 45 m. E. of Red Sea; pop., 72,800; b.-place of M o h a m m e d ; 100,000 pilgrims yearly; famous mosque, wh. encloses the Kaaba (q.v.).



The Kaaba, Mecca

**Mechanical mixture**, (chem.) mingling together of substances without alteration to their individ. properties in such a way that mixture can be disintegrated by mechanical means. See CHEMICAL COMPOUNDS.

**Mechanics**, branch of physics. Science of interaction of force and matter. Branches: *Statics* deals with equilibrium; *dynamics* with motion. **M. of liquids**: hydrostatics and hydrodynamics. **M. of gases**: aerostatics and aerodynamics.

**Mechanistic hypothesis**, philos. view that all happenings are due solely to forces and causes operating without conscious or unconscious direction. Cf. TELEOLOGY.

**Mechitarists**, R.C. Armenian relig. order, fndd. 1701, by Mechitar (1676-1749), an Armenian convert, and devoted mainly to cultural improvement of Armenians.

**Mechlin**: see MALINES.

**Mechnikoff**, Elias (1845-1916), Russ. biolog.; Nobel Prize (Med.), 1908; *Immunity in Infectious Diseases*, 1901; *The Nature of Man*, 1903.

**Mecklenburg**, region on Baltic coast, N. Germany, comprising two States: 1)

**Mecklenburg-Schwerin**, 5,700 sq.m.; pop., 675,000; cap. *Schwerin*; largest tn., Rostock (univ.); includes *Mecklenburg Lake district*, lowlands with over 400 lakes (Müritzer See, 45 sq.m.); agric. and cattle breeding. 2) **Mecklenburg-Strelitz**, 1,130 sq.m.; pop., 112,000; cap., *Neustrelitz*; largest tn., Neubrandenburg.

**Meconin**, a neutral substance found in opium.

**Meconium**, 1st faecal motions of an infant.

**Médaille militaire**, medal awarded to Fr. gen. officers commanding armies, and to N.C.O.'s and men (navy or army), for distinguished service in action. Estab. 1852; ribbon: yellow, with broad green edges.

**Medal**, piece of metal, usu. circular or cruciform, bearing device recording action, event, or pers.; given as reward of merit, esp. for milit. or nav. services. **Medallion**, large antique medal; circular or oval tablet, bearing port. or ornamt. in relief.

**Medan**, seapt., cap. of E. Sumatra; pop., 46,920; exports tobacco.

**Medea**, (Gr. myth.) dau. of the Kg. of Colchis; helped Jason to obtain the Golden Fleece (*q.v.*); when deserted by him, killed her children.

**Medée**, opera by Cherubini (*q.v.*), 1797.

**Medellín**, cap. Antioquia, Colombia, S. Amer., N.W. of Bogotá; pop., 120,000; univ.; gold mining.

**Medes**, anc. Asiatic race, inhab. of Media whose kgdm. was merged in Pers., 550 B.C.

**Media**, anc. country of the Medes (*q.v.*), S.W. of the Caspian Sea, roughly corresponding to N.W. of present Persia.

**Media**, (phon.), voiced consonants at end of word: *b, d, g*.

**Media of circulation**, total of coins, bank-notes, bills of exchange, cheques, and bank credits, by aid of wh. sale of goods and services and their pymt. are accomplished.

**Median** (math.), middle of a series of numbers arranged in order of size; for purposes of computatn. often preferable to *mean* value.

**Medical corps** (in Gt. Brit., *Ryl. Army M.C. q.v.*), undertakes care of sick and wounded of armies. Non-combatants protected by Red Cross (*q.v.*). **M. practitioner**, in Gt. Brit., doctor who, having passed his qualifying examination to practise medicine and surgery, is registered by the General Medical Council under the Medical Acts. He is entitled to sue for fees and to sign

death certificates. **M. Research Council**, Brit. Council incorporated by Royal Charter (1920); formerly *M. R. Cmtee*. Assigns funds voted by Parl. or obtd. from private sources to developmt. of med. research. Reports pubd. by Stationery Office. Subsidiary to this Council are: *National Inst. for M.R. and Indus. Health Research Board*. **M. Services**, State organisation of services in interests of public health. In Gt. Brit., the Ministry of Health (*q.v.*) supervises public health; the General Medical Council regulates procedure of medical practitioners; the Pharmaceutical Society supervises the dispensing chemists.

**Medici**, noble Ital. family of Florence: 1) **Cosimo**, the Elder, 1389-1464. 2) **Lorenzo**, the Magnificent, 1449-92; patron of art and literature; ruler of Florence. 3) **Giovanni** (1475-1521), Pope, as Leo X, 1513. 4) **Giulio** (1478-1534), Pope, as Clement VII, 1523; imprisoned after sack of Rome 1527. See also CATHERINE DE' MEDICI.

**Medicine**, science of treatment of disease; was not always practised by doctors; in the anc. tribes it was, as to-day among the primitive races, in the hands of the priests or rulers (**medicine men**). The traditions of the ancient medical schools (Hippocrates, 5th cent. B.C.) influenced the science throughout the Dark and Mid. Ages (Galen). First attempts at reform by Vesalius and Paracelsus in 16th cent. Humoral pathology was replaced by Virchow's Cellular Pathology (*q.v.*). There has been an extension of med. science and an increase in the number of special branches since 19th cent., e.g., surgery, orthopaedic surgery, pathology, gynaecology, obstetrics, psychiatry, legal medicine, bacteriology, hygiene, etc. **M.-chest**, a box or cabinet for home remedies wh. should contain: Bandages, cotton wool, oil-silk, lint, sterilised gauze, adhesive plaster; also, scissors, tincture of iodine, an aperient, carron oil for burns, clinical thermometer, vaseline, bicarbonate of soda; there should also be an enema syringe, with accessories.

**Medicine Hat**, tn., Alberta, Canada; pop., 10,000; cent. of corn dist.; coal-mines.

**Medick**, perennial plant of bean family, native to Europe, India, and N. Asia, with yellow or violet flowers; one var. is lucern (*q.v.*).



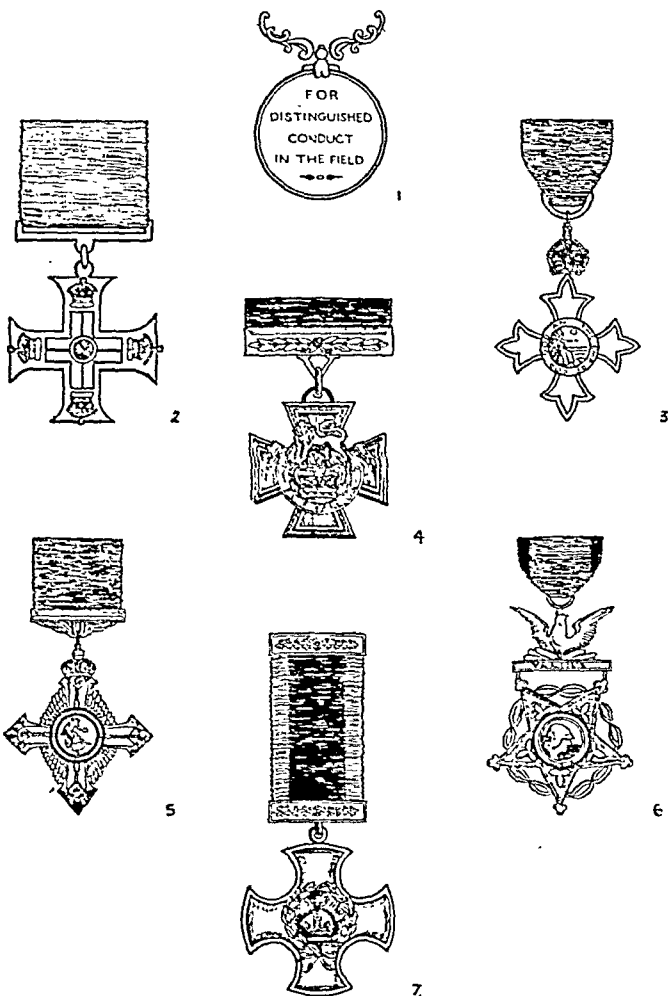
Cosimo de' Medici



Medallion



Lorenzo de' Medici



1. Distinguished Conduct Medal.
2. Military Cross.
3. Order of British Empire.
4. Victoria Cross.

5. Air Force Cross.
6. Congressional Medal of Honour (U.S.A.).
7. Distinguished Service Order.

**Medina, El Nabi**, tn., Hejaz, Arabia; pop., 10,650; on edge of desert; alt., 2,300 ft. abv. sea-lvl.; holy city, with tomb of Mohammed; mosque of the Prophet; place of pilgrimage; Arab univ.; term. of Hejaz Railway.

**Meditation**, 1) (relig.) solemn and deep contemplation of some relig. truth or mystery; a devotional exercise common to Christianity and some other religions (e.g., Buddhism); 2) treatise embodying such reflections.

**Mediterranean Sea**, inland sea almost enclosed by N. Africa, Asia Minor, and S. Europe; connected with Atlantic by Str. of Gibraltar and with Indian Ocean by Suez Canal and Red Sea; length, 2,400 m.; breadth, 1,250 m.; area, c. 1,160,000 sq.m.; max. depth, 13,400 ft. Balkan and Ital. penins. divide N. Mediterranean into Aegean, Adriatic, and Tyrrhenian seas; the Dardanelles connect Aegean with Sea of Marmora and Black Sea. Chf. isls., Sardinia, Corsica, Sicily, Crete, Cyprus; isl. groups include Balearic Isls. and Gr. Archipelago (Cyclades and Sporades). Principal rivs., Rhone, Po, and Nile. Characteristic winds are mistral (Gulf of Lion), bora (Adriatic), and sirocco (Afr. coast, S. It., and Greece). The M. was the anc. centre of the civilised world.

**Medium** (Lat. means, 1) In hypnotism: the person hypnotised. 2) Physically: material in wh. a phys. transaction takes place, i.e., air or water as medium of the sound wave. 3) In spiritualistic meetgs., person through whom phenomena occur.

**Medjidieh**, Order of the, former Turk. order with 5 classes; fndd. 1851 by the Sultan, Abdul Medjid.

**Medlar**, *Mespilus germanica*, a roseaceous tree with crab-like fruit, which is edible only when partly decayed. *Japanese M.*, see KOQUAT.

**Medmenham**, vill., S. Bucks, on Riv. Thames; *M. Abbey*, on site of 13th-cent. Cistercian monastery, was home in 18th cent. of the "Hell-Fire Club," fndd. by Sir F. Dashwood.

**Médoc**, fertile district in Fr. dépt., Gironde; vineyards. Famous for red wine; no claret may legally be named Médoc wh. does not come from this district.

**Medusa**, 1) (Gr. myth.) one of the Gorgons (q.v.), whose glance turned beholders to



Medlar



Head of Medusa

stone. Slain by Perseus (q.v.). 2) (Zool.) See JELLY-FISH.

**Medway**, riv., S.E. Eng.; rises in Sussex, flows through Kent, past Tonbridge, Maidstone, Rochester, Chatham, and Gillingham to Thames estuary at Sheerness; navig. to Maidstone; length, 70 miles.

**Meer**, Jan van der: see VERMEER, JAN VAN DELFT.

**Meerkat**, small S. African mongoose, living in holes in the ground in colonies; sharp pointed muzzle, long front claws; grizzled, grey fur with black bands.

**Meerscham**, a porous, light, whitish clay composed of silicate of magnesia; used to make a variety of tobacco-pipes.

**Meerut**, 1) Division, United Provs., India; 9,180 sq.m.; pop., 4,500,000. 2) Dist., United Provs.; 2,300 sq.m.; pop., 1,500,000. 3) Cap. of dist.; textiles; pop., 136,700; scene of outbreak Indian Mutiny.

**Megaera**, one of the Eumenides (q.v.).

**Megale Delos**: see DELOS.

**Megalith** (Gr., large stone), used esp. of the large stones of wh. many prehistoric and early peoples constructed their bldgs. Stonehenge (q.v.) is an example of a megalithic monument, and the Great Wall at Jerusalem of megalithic masonry.

**Megalomania**, form of insanity, charact. by grandiose delusions in wh. patient imagines himself to possess great power or influence, or to be immensely wealthy; often early symptom of gen. paralysis of insane. See BRAIN SOFTENING.

**Megalopolis**, anc. federal cap. of Arcadia, fndd. by Epaminondas, 371 B.C.; sacked by Spartans, 222 B.C.

**Megalosaurus**, extinct carnivorous dinosaur (q.v.), with hollow limb-bones and blunt horn on muzzle.

**Megaphone**, large, wide-mouthed speaking instrument for callg. to long distances; invntd. by Edison.

**Megapode**, fam. of shy, heavy-flying, Australian birds, wh. leave their eggs buried in ground or in mounds of earth or leaves without incubation; head generally crested and colouring dull; commonest species is brush-turkey.

**Megara**, 1) anc. city, Greece, 20 m. W. of Athens, on Gulf of Aegina; pop., c. 6,000. Inhabitants fndd. Byzantium, 657 B.C. 2) Anc. city in Sicily, *M. Hyblaea*, fndd. by colonists from above, 728 B.C., destr. by Gelon, c. 481 B.C.

**Megass**, refuse sugar-cane after sugar has been expressed.

**Megatherium**, extinct genus of huge, herbivorous, hairy sloths, order *Edentata*, of S. Amer.; fossil remains found in diluvium.

**Megavolt**, (elec.) 1 million volts.

**Megger**, (*megohmmeter*) electric installation used for measuring high resistances, esp.

of insulation; consists of hand-turned magnet (q.v.) generating 500 volts direct current, and some form of ohmmeter reading resistance by direct deflection.

### Megillah

(Heb., a scroll), originally applied to the five Books: *Song of Songs*, *Ruth*, *Lamentations*, *Ecclesiastes*, and *Esther*, read in the synagogue on special occasions from separate scrolls; now usually applied specially to *Esther*. Cf. PURIM.

Megatherium



**Mehemet Ali:** see MOHAMMED ALI.

**Méhul**, Étienne Nicolas (1763-1817), Fr. composer: *Ariodant*, *Ultral*, etc.

**Meighen**, Arthur (1874- ), Canad. Cons. polit.; M.P., 1908-21; 1922-26; solicitor-gen. for Canada, 1913; Pr. Min. and Sec. for Exterior Affairs, 1920-21; Pr. Min., July-Sept., 1926.

**Meiji Tennes:** see MUTSU HITO.

**Meilhac**, Henri de (1831-97), Fr. writer; collab. with Halévy; books of Offenbach's operettas; *Barbe Bleue*, 1866.

**Meissen**, tn., Saxony, Ger., on Riv. Elbe; pop., 46,000; Gothic cathed.; castle; manuf. Dresden China since 1708.

**Meissonier**, Jean Louis (1815-91), Fr. painter, noted for his miniature-like work; *The Game of Chess*, 1841.

**Meistersinger**, name given to Ger. artisan poets in 15th and 16th cents., esp. in Nuremberg (Hans Sachs, etc.) Poems written acc. to fixed rules (*Tabulatur*), breaches of wh. were recorded by "marker." Performance of a new *Ton* (tune) without a mistake earned title of *Master*. Subject of music drama by Wagner, *Die M. von Nürnberg*, 1868.

**Meknès**, inland tn., Fr. Morocco, W. of Fez; one of the four capitals of Morocco; pop., 56,800 (12,600 Europeans).

**Mekong**, longest riv. of Indo-China; 2,700 m.; rises Tibet; forms boundary betw. Siam and Assam; flows through Cochinchina into S. China Sea.

**Melampus**, (Gr. myth.) a physician and seer; two snakes, whose lives he had saved, licked his ears, thus endowing him with power to understand the speech of birds and beasts.

**Melancholia**, 1) Dejection, deep thought. 2) Mental disease, characterised by depression, hypochondria, self-reproach. A phase of manic depressive insanity (q.v.). Sufferers sometimes refuse their food and may commit suicide if not carefully watched.

**Melanchthon**, Philip (1497-1560), Ger. humanist and reformer; assoc. with Luther. Author of *Augsburg Confession*, 1530.

**Melanesia**, general designation for isls. in W. Pacific, off N.E. Australia (New Guinea, Bismarck Archipelago, Solomon, Santa-Cruz, New Hebrides, Fiji Isls., New Caledonia); c. 460,000 sq.m.; pop., 1,600,000 (mixed Melanesian and Malay-Papuans); climate tropical (monsoons). See OCEANIA.

**Melanesian Language:** see LANGUAGE SURVEY, *Malay-Polyn. Languages*.

**Melanism**, abnormal developmt. of dark pigment in skin, hair, etc. of cert. animals, e.g., black leopard. *Ant.*: *Albinism*.

**Melba**, Dame Nellie (1865-1931), prof. name of Nellie Porter Armstrong, Austral. soprano.

**Melbourne**, Wm. Lamb, 2nd visct. (1779-1848), Eng. Whig statesm.; Pr. Min., 1835-41; chf. adviser to Qn. Victoria at outset of reign.

**Melbourne**, cap. Victoria, Austral., on Riv. Yarra, at head of Port Phillip (land-



Melanchthon, after Dürer



Melba

By Courtesy of the Australian Government  
Melbourne University

locked harbour); docks, meat export trade; fine public buildings; Anglican and R.C. catheds.; Victoria Univ.; pop. (with suburbs), 1,032,500.

**Melchett, Alfred Moritz Mond**, 1st bn. (1868-1930), Brit. industrial and politic.; Min. of Health, 1921; **Mond Conference**, 1928, betw. group of employers and T. U. leaders.

**Melchides, Miltiades**, St., Pope (310-314), edicts of toleration of Galerius, Constantine, and Licinius; Lateran synod at Rome, 313, at wh. Donatus was condemned.

**Melchior:** see MAGI.

**Melchizedek**, (O.T.) pre-Israelitish kg. and priest of Salem; temp. Abraham.

**Meleager**, 1) famous hero of Gr. legend; one of the Argonauts (q.v.); killed Calydonian boar and slew the brothers of his mother, Althaea, who thereupon laid upon him a curse which led to his death. 2) Gr. epigrammatist of 1st cent. B.C., whose work forms an outstanding feature of the Gr. Anthology.

**Melibeian**, in poetry, alternative response, from shepherd in Virgil's (q.v.) 1st Eclogue.

**Melicertes**: see INO.

**Melilla**, Spanish fortified tn., N. coast Morocco; pop., 60,600.

**Melilot**, *Melilotus officinalis*, yellow melilot, kg.'s clover; member of pea and bean tribe; yellow flowers, used in folk med. internally and as a fomentation. *M. alba* has white flowers.

**Melinite**, high explosive: see PICRIC ACID.

**Melk**, health resort, Austria, on lower Danube (alt., 720 ft.); pop., 3,000; Benedictine abbey (11th century).

**Melkart**, a Phoenician god, the tutelary deity of Tyre; an aspect of the Canaanitish Baal (q.v.), identified by the Greeks with Hercules.

**Mellon**, Andrew Wm. (1855- ), Amer. banker and statesman; chmn. World War Foreign Debt Commn.; funding agreements with var. Europ. debtor States; Amer. Ambass. in London, 1932.

**Melocactus**, perennial Centr. Amer. plant of cactus fam., with ribbed, spiny stems and rosy flowers.

**Melodrama**, drama into wh. music is introduced; opera; operetta with spoken dialogue; hence drama of highly coloured, sensat., or romantic incidents.

**Melody**, tune; notes in succession producing an agreeable effect; most prominent voice or part in a composition. **Melodics**, the composition of melody.

**Melon**, *Cucumis melo*, vine of order Cucurbitaceae, indigenous to Asia, introd. into Brit. in 16th cent.; bears a large, juicy fruit with thick rind. Many varieties cultivated in warm climates and in hothouses. **Cantaloups** are elongated with furrowed rind and coloured pulp. **Water m.** (*Citrullus vulgaris*), of trop. and S. Africa, is a member of same order.

**Melos**: see MILO.

**Melpomene**, muse of tragedy.

**Melrose**, 1) police burgh, Roxburghsh., Scot., on Riv. Tweed; abbey; Scott associations; pop., 2,100. 2) City, Mass., U.S.A., 7 m. S. Boston; pop., 23,200.

**Melton**, (text.) fine, closely woven and fulled wool cloth, with smooth surface, used for overcoats, etc.

**Melton Mowbray**, mkt. tn., Leics, Eng.; hunting centre; noted church; pork pies; Stilton cheese; pop., 10,400.

**Melun**, cap. dépt. Seine-et-Marne, France; pop., 15,940.

**Melusine**, in O. Fr. and 15th cent. legend, fairy condemned to assume snake form, married to a knight; disappeared while surprised bathing.

**Melville**, Herman (1819-91), Amer. author: *Typee*, 1846; *Moby Dick*, 1851.

**Melville Island**, 1) isl. off N. coast of Territory, Australia; 140 sq.m. 2) N. Arctic Ocean; part of Canada; 16,400 sq. miles.

**Member banks**, (finan.) U.S.A. banks forming part of Federal Reserve System (q.v.).

**Membrane**, 1) (phys.) thin skin or part for transmission of vibrations; used in gramophones, telephones, loud-speakers, etc. 2) (chem.) See OSMOSE. 3) (Anat.) fine-supple skin, covering organs, canals, etc. of the body.

**Membrum virile** (Lat.), the male external penis.

**Memel**, 1) lower course of Riv. Niemen, forms part of boundary betw. E. Prussia and Lithuania; flows into Kurisches Haff. 2) Territory (935 sq.m.) on Baltic (coast of Lithuania); pop., 146,000 (half German); surrendered by Germany, 1919; administered by Allies until 1923; handed over to Lithuania in 1924 as an autonomous State (with certain safeguards) under a governor appointed by Lithuania. Meanwhile Lithuania had seized tn. of M. in Jan., 1923. 3) (v.)

**Klaipeda**, cap. of terr. of M., port on Baltic; pop., 36,800; timber trade, ship, fisheries.

**Memento** (Lat., remember), a reminder. **M. mori**, remember death; a reminder that death is unavoidable.

**Memling**, Hans (c. 1433-94), Flem. painter; *Last Judgment*, Danzig; pictures in Hosp. of St. John, Bruges.

**Memnon**, 1) legendary kg. of the Ethiopians. 2) Name assoc'd. with colossal statue of Amenophis III at Thebes (Egy.), 2nd mill. B.C.; emitted sounds at sunrise wh. were believed to be voice of Memnon.

**Memorabilia**, *Recollections of Socrates*, work by Xenophon, defending Socrates against charges of impiety and corruption of the Athenian youth.

**Memorandum of association**, charter or constitution of a jt. stk. co. defining the object for wh. co. is formed, its name and location, amt. of its share capital, and formal statement that its liability is limited. Details req'd. are strictly regulated by the Companies Acts. When a company is formed, *Articles of Association* are also prepared. These prescribe company's procedure as to meetings, transfer of shares, etc., being the *bye-laws* of the company. Both M. of A. and A. of A. are req'd. to be filed

with the Registrar of Companies and may be inspected by members of the public.

**Memphis**, 1) anc. cap. of Egypt, on lower Nile, dating from B.C. 3000; ruins, pyramids, cemetery of Saqqara. 2) City in Tennessee, U.S.A., on Riv. Mississippi; pop., 252,000 (50% Negroes); cotton and timber.

**Memphremagog, Lake**, betw. Vermont, U.S.A., and Canada; 30 m. long, 1-4 m. wide (two-thirds in Canada).

**Menaechmi**, comedy by Plautus; plot turns on mistakes arising from resemblance of twin brothers; adapted by Shakespeare in *Comedy of Errors*.

**Menagerie**, place where animals are kept and trained; esp. collection of wild or exotic animals kept for exhibition.

**Menai Strait**, channel sep. Anglesey and Carnarvonshire, N. Wales, 14 m. long, 200 yds. to 1½ m. wide; crossed by *Menai Suspension Bridge* (1826; road) and by *Britannia Tubular Bridge* (1850; railway).

**Me-nam**, longest riv. (935 m.) in Siam; flows S. through plain of Lower Siam, into Gulf of Siam, with Bangkok on its delta; main trib., Me-ping.

**Menander**, **Menandros** (343-291 B.C.), Gr. comic playwright; papyrus fragments recently discovd.; *The Flatterer*; *The Lady from Cnidos*.

**Mencius**, **Meng-tse**, 372-289 B.C., Chin. philosopher; first recog. people as basis of State.

**Mende**, cap. dépt. Lozère, France; pop., 6,060; cathedral.

**Mendel**, Gregor, Fr. (1822-84), monk and biol.; estab. laws of distributive mechanism of organic inheritance (Mendelism).

**Mendel's laws**, **Mendelism**, state numerically the manner in which any heritable characteristic or factor (e.g., eye-colour, flower-colour, tallness, musical ability) is transmitted to offspring when one parent possesses it. Pairs of factors (e.g., tallness and shortness) are often *dominant* and *recessive*, respectively; individual possessing mixture of the two exhibits only dominant characteristic, but carries recessive characteristic, and will have some offspring exhibiting latter. *Factors* are believed to be peculiar bodies called *genes*, which are arranged in strings like beads in the chromosomes of the cell-nucleus.

**Mendeleieff**, Dimitri Ivanovitch (1834-1907), Russ. chemist. Discovered periodic system of the elements.

**Mendelssohn**, **Moses** (1729-86), Ger.-Jewish philos. and writer; champion of Jewish emancipation. **M.-Bartholdy**, **Jakob Felix** (1809-47), Ger. composer and conductor. *Midsummer Night's Dream*; symphonies; oratorios; *Songs without Words*.

**Menderes Chai**: see MAEANDER.

**Mendès**, Catulle (1841-1909), Fr. poet novelist, and dramatist; fndd. *Revue Fantaisiste*, 1859; *Philomela*, 1863; *Le Roi Vierge*, 1880; *La Grèce des Vignes*, 1895; *Gog*, 1897.

**Mendicant Friars**, those orders of friars wh. depend upon alms for their subsistence; viz., Franciscans, Dominicans, Augustinian Hermits, Carmelites, and Servites.

**Mendips**, **Mendip Hills**, limestone range, N.E. Somerset, Eng., 25 m. long; *Blackdown* (1,068 ft.); caves, swallow-holes; Cheddar Gorge (q.v.).

**Mendoza**, Diego Hurtado de (c. 1503-75), Span. poet and historian; *Guerra de Granada*, 1627.

**Mendoza**, 1) Prov., W. Argentina, S. Amer.; 57,000 sq.m.; pop., 400,000; petroleum, cereals, tobacco. 2) Cap. of prov., E. of Cordilleras de los Andes; pop., 72,000.

**Menelaus**, in Homer's *Iliad*, Kg. of Sparta, husb. of Helen; bro. of Agamemnon.

**Menelek II** (1844-1913), Emp. of Abyssinia, "Kg. of Kgs." (*negus negusti*) of Ethiopia.

**Mene, mene, tekel upharsin** (or peres), (O.T.) warning words mysteriously written on wall at feast of Belshazzar (q.v.) interpreted by Daniel as: "Thou hast been weighed in the balance and found wanting."

**Menes**, fndr. 1st dyn. Kgs. of Egy., before 3000 B.C.

**Mengs**, Raphael (1728-79), Ger. painter. Altarpiece at Magdalen Coll., Oxford.

**Menhir**, Celt. "high stone," prehist. upright monolith, esp. in Brittany. Referred to Neolithic Period (q.v.). See STONE CIRCLE.

**Ménière's disease**, disease of semi-circular canals of the ear, chief symptom of which is a feeling of giddiness.

**Menin**, tn., W. Flanders, Belgium, on Riv. Lys, 7 m. W.S.W. of Courtrai; pop., 18,800; linen, flannel. **M. Gate**

(opened 1927), at Ypres, the chief Brit. war memorial in Belgium (70 ft. span, 50 ft. high, 120 ft. long); carries the names of 54,896 Brit. soldiers who have no known graves.

**Meningitis**, (med.) inflammation of meninges or membranes covering the brain. **Cerebro-spinal m.**: see SPOTTED FEVER.



Felix Mendelssohn-Bartholdy



Menhir



Menin Gate



**Meniscus**, (phys.) curve of surface of a fluid, e.g., of mercury in a thermometer, caused by surface tension. Convex when liquid does not wet solid (mercury in glass); concave when it does (water in glass).

**Menno**, Simons (1492-1559), Ger. religious leader of a sect orig. fndd. in Zurich (1523) by Obbe Philipszi, but named, after M., the **Mennonite** sect; its members practised Christianity but recognised no authority other than the Bible.

**Meno**, (mus.) less; **m. mosso**, less lively.

**Menopause**: see CLIMACTERIC.

**Mensheviks**, (Russ.) minority; right wing of Russ. Soc.-Dem. party, deftd. at 1903 conf. by Bolsheviks (*q.v.*); contrllg. influence in Russ. revln. up to Nov., 1917.

**Menshikoff**, Alex., Prince (1663-1729), Russ. statesm. and F.-M. in service of Peter the Great and Catherine.

**Mentelth**, territorial dist. of Porthl., Scotland.

**Menthol**: see PEPPERMINT.

**Menton**, **Mentone**, tn., dépt. Alpes-Maritimes, France, at E. end of Fr. Riviera; winter resort; pop., 23,000.

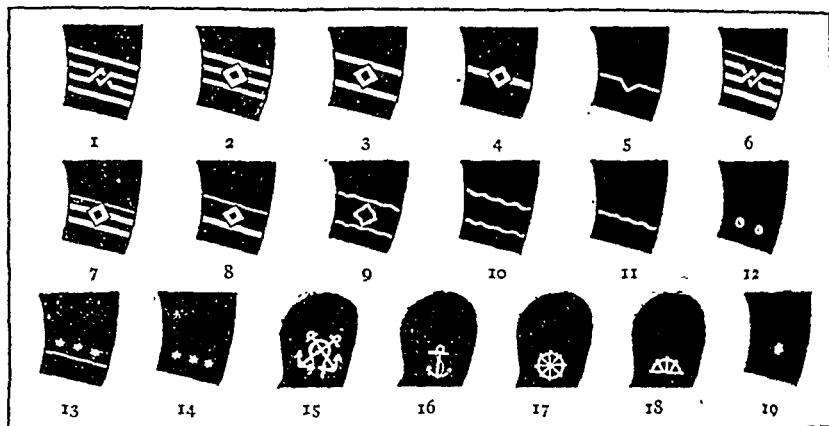
**Mentor**, in Homer's *Odyssey*, guardian of Telemachus (*q.v.*).

**Menzel**, Adolf von (1815-1903), Ger. painter and illustrator. *The Forge*, 1875; illustd. work of Fredk. the Great.

**Mephistopheles**, the Devil in Goethe's *Faust*.

**Merano**, tn., S. Tyrol, Italy, on Rr. Adige; pop., 21,000; orchards and vineyards.

**Mercantile marine**, general name for shipping engaged in commerce and the transport of passengers; in Gt. Brit. under control of Board of Trade; office of "Master of the Merchant Navy and Fisheries," created



Sleeve Badges: Mercantile Marine:

- 1 Certificated Master
- 2 Certificated Chief Officer
- 3 Certificated Second Officer
- 4 Certificated Third Officer
- 5 Uncertificated Junior Officer
- 6 Second Master

- 7 First Officer
- 8 Junior Second Officer
- 9 First Wireless Operator
- 10 Second Wireless Operator
- 11 Third Wireless Operator
- 12 Cadet or Apprentice
- 19 Cook

- 13 Chief Steward
- 14 Assistant Chief Steward
- 15 Boatswain
- 16 Boatswain's Mate
- 17 Quartermaster
- 18 Quartermaster's Mate

**Men's house**, in South Seas; house where men live before marriage; often also a place for feasts and debates.

**Mens rea** ("guilty mind"), wilful fault or culpable negligence of wh. proof is essential in crim. cases. **Mens sana in corpore sano** (Lat.), a healthy mind in a healthy body; i.e., mental health is contingent upon physical health.

**Menstruation**, monthly, periodic bleeding of sexually mature women from the uterus every 28 days; assoctd. with elimination of an unfertilised ovum. Aver. duration 3-4 days. Begins 12-14th year; ends 45-55th year. M. ceases during pregnancy, and often while nursing. See also CLIMACTERIC.

**Mensuration**, (maths.) the measurement of surfaces or volumes.

1928, with Pr. of Wales as its first holder.

**Mercantillism**, (econ.) a somewhat unsystematic body of economic theory prevalent in Eng. and Fr. during 18th century. Princ. factors were: 1) belief that colonial developmt. should be for econ. benefit of mother country, i.e., complementary, supplying raw materials and taking manufactured goods; 2) that a country should strive to sell more than it buys, i.e., exports should exceed imports, or have a *favourable balance of trade*, just as a private trader should strive to make his profit by selling higher values than he buys. Object and result were inflow of gold. Theory held until classical economists showed relation of other items in balance of internat. pymts. (*q.v.*) and effects of large continuous gold inflow on prices.

**Mercator**, Gerardus (1512-94), Ger. cartographer.

**Kremer**, Flem. cartographer; the 1st of his maps designed on system of projection since known as **M.'s Projection**, produced 1568. See **PROJECTION**.

**Mercerising**, (text.) treatment of cotton with cold caustic lye under tension, giving it strength and lustre, and greater power of absorbing dye. Process invtd. by John Mercer (1791-1866).

**Mercers' Company, The**, first and richest of the twelve great livery companies (q.v.) of the City of London. Its hall in Ironmonger Lane rebuilt 1844, the façade of the previous bldg., designed by Wren, now forming the front of Swanage Town Hall; it contains relics of Whittington, etc. It was here that the Bk. of England opened in 1694, and was for a few months housed.

**Merchant**, one who carries on trade or commerce. *Wholesale M.* buys goods in his own name and re-sells, making profit by selling at higher price. *Agent* does not buy, but sells for a principal. *Broker* sells for sev. principals.

**Merchant Taylors' Company, The**, one of the 12 great Livery Companies (q.v.) of City of London; first charter granted by Edw. III, 1327. Its hall in Threadneedle St. was acquired in 14th cent. and rebuilt, 1866. **M. T. School**, Eng. public sch. for boys; fndd., 1561, by Worshipful Company of Merchant Taylors; moved, 1875, from orig. premises in Suffolk St., London, E.C., to bldgs. in Charterhouse Square formerly occupied by Charterhouse School. Removed to Sandy Lodge, Herts, 1933.

**Merchiston Castle School**, Edinburgh, Scot. public sch. for boys; establd., 1833; abt. 300 boys.

**Mercia**, Anglo-Saxon kgdm., centr. England, reaching (at greatest extent) from Humber to Thames (incl. London). In 7th cent. suzerainty of Northumbria (q.v.) was overthrown by Penda, who enlarged kgdm. W. and S. On his death (c. 654) M. again temporarily under Northumbria becoming once more indept. under Offa (c. 757-796). Dan. invasions at end of 9th cent. repelled by united efforts of Aethelred and Alfred the Great.

**Mercier, Auguste** (1833-1921), Fr. gen.; as Min. for War, procured condemnation of Dreyfus, 1874. **M., Désiré** (1851-1926), Belg. philosopher; Cardinal Abp. of Malines; publicly opposed Ger. during occupation.

**Mercury** 1) (myth.), in Rom. myth, god of merchants and thieves, messenger of the gods; identified with Gr. Hermes (q.v.). **Wand of M.** (*Caduceus*) entwined with two serpents; the winged symbol of commerce,



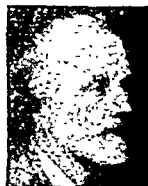
Cardinal Mercier

and adopted as badge by the Royal Army Medical Corps. 2) (Astron.) First of the 4 inner planets; symbol ♿ (for statistics, see Table, PLANETS); seldom visible without telescope; no moons. 3) (Chem.) Metallic element, Hg, at. wt. 200.61, sp. gr. 13.56; heavy silvery liquid (hence name "quick-silver");



Mer de Glace

occas. occurs in nature in free state, usu. as sulphide; forms no. of compounds, most of wh. are poisonous. Corrosive sublimate is *mercuric chloride*,  $HgCl_2$ , used as an antiseptic and germicide. Vermilion is *mercuric sulphide*,  $HgS$ . Calomel, a widely used purgative, is *mercurous chloride*,  $Hg_2Cl_2$ . M. used in the barometer and thermometer (qq.v.) and, medicinally, in treatment of syphilis. With other metals, it forms amalgams and is hence used for obtaining gold and silver from their ores.



George Meredith

**Mercy, Sisters of**, R.C. order fndd. 1827, in Dublin, for performing spiritual and temporal acts of mercy; has many houses in England, Irel., Scotld., Austral., and esp. in U.S.A.

**Mer de Glace**, glacier 8½ m. long, descending from Mont Blanc, N. of Chamonix.

**Meredith, George** (1828-1909), Eng. novel. and poet: *The Egoist*, 1879; *Diana of the Crossways*, 1885. **M., Owen**: see LYTON, EDW., ROBERT.

**Merezhkovski, Dmitri Sergeievich** (1865- ), Russ. novelist and critic; *Death of the Gods*, 1901.

**Merganser**, the sawbill, fish-eating bird of the duck family with a serrated bill bent like a hook at the end; fnd. in N. parts of Europe, Asia, America.

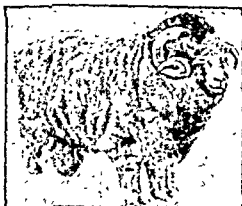
**Mérida**, 1) Sp. tn., prov. Badajoz on riv. Guadiana; rly. junction; pop., 15,500; Roman remains. 2) Cap. Yucatan, Mexico: pop., 80,000; cotton.

**Meridian**, (geog. and astron.) imaginary circle round terrestrial or celestial sphere, passing through the poles and intersecting

the Equator (*q.v.*) at right angles; representation of this on map or globe; (by transf.) noon, midday; (fig.) highest, culminating point of success or happiness, etc. **M. Highway**, extends through centre of N. America from Winnipeg to Mexico; 1,769 miles.

**Mérimée**, Prosper (1803-70), Fr. novelist; *Colomba*, 1840; *Carmen*, 1847.

**Merino**, fine wool-  
len fabric, orig.  
made of wool from  
**M. sheep**, a breed  
of Span. sheep.



Merino Sheep

**Merionethshire**,  
marit. co., N. Wales;  
area, 669 sq. m.;  
pop., 43,200; surface  
mountainous (*Cader Idris*, 2,927 ft.); rivs. Dee,  
Dovey; mainly agric. and pastoral; Welsh  
ponies; slate-quarries in N.; woollens; co. tn.,  
*Dolgelly*; Barmouth port and seaside resort.

**Meristem**, (bot.) embryonic plant tissue;  
cells in process of growth.

**Merit, Order of**, (Brit.) fndd. 1902 as a  
recognition of special distinction in any field.  
Membership carries neither spec. title nor  
precedence; 2 classes, milit. and civil, limited  
to 24 members; ribbon: crimson and blue.  
Prussian *Order for Merit*, 1st cl. (milit.) fndd.  
by Fredk. the Great, 1740; 2nd cl. (civil)  
fndd. by Fredk. Wm. IV, 1842, abol. 1918.

**Meritorious Service Medal**, medal  
(rarely awarded) for distinguished service,  
in peace or war, to sergeants of the British  
Army and Marines, with annuity not exceed-  
ing £20. Estab. 1845 for army; 1849 for  
marines; ribbon: crimson with white edges  
and white centr. stripe for army; blue for  
marines.

**Meriwether Lewis**, nat. park (1925) in  
Tennessee, U.S.A., 50 acres; contains grave  
of Capt. N. the explorer; see LEWIS AND  
CLARK EXPEDITION.

**Merlin**, 1) famous bard of Welsh tradi-  
tion; sorcerer of Arthurian Cycle; son of  
the Devil and a princess. 2) Bird of falcon  
family, inhab. Europe and N. and Centr.  
Asia; prevailing colour bluish grey; 10-12 in.  
long; preys on smaller birds.

**Mermaids** and **mermen**, semi-human  
beings common to the folk-lore of most na-  
tions; usually conceived as human down to  
the waist and, in case of mermaids, of great  
beauty, and shaped like a fish from the waist  
down; capable of social relations with man-  
kind and credited with certain vaticinal and  
vaguely malevolent supernatural powers.  
Belief in M. has been so strong that various  
instances of their capture have been recorded  
as fact.

**Meroë**, site on Riv. Nile, Anglo-Egyptian  
Sudan, 150 m. below Khartoum; anc. cap.

of Ethiopian kgdm. (700-300 B.C.) and later  
of Meroitic kgdm.; ruins of royal palace,  
and temples. **Meroitic language**, Ethi-  
opian language deciphered 1910.

**Merovingians**, 1st Frankish dynasty,  
5th-8th cents.; Clovis (481-511) fndd. kgdm.  
and embraced Christianity, assuming title  
of "Most Christian Kg. of France," borne  
by subsequent sovereigns. Succeeded by  
Carolingian dynasty (Pepin), 752.

**Merrick**, Leonard (1864- ), Eng.  
novelist and playwright; s. of W. Miller;  
changed his name by deed poll; *When Love  
Flies Out of the Window*, 1906; *White Paris  
Laughed*, 1918; *When the Lamps Are Lighted*.

**Merrimac River**, Massachusetts, U.S.A.;  
empties into Atlantic; 150 miles.

**Merriman, Henry Seton**, pseud. of  
Hugh S. Scott (1862-1903), Eng. novelist;  
*The Sowers*, 1896; *In Kedar's Tents*, 1897;  
*The Vultures*, 1902; *The Last Hope*, 1902.  
**M., John Xavier** (1841-1926), S. Afric.  
statesman; commissioner of public works,  
1875, 1881-84; joined Rhodes ministry, 1890;  
treasurer-gen., 1890-93; 1898-1904; chmn. of  
Cape parliamentary committee enquiring  
into Jameson Raid; opposed measures to de-  
franchise Cape rebels, 1900; succ. Jameson  
as Pr. Min., 1908; in drawing up constitution  
of new S. African union supported unitary  
rather than federal principles; opposed  
Hertzog's policy.

**Merry-go-round**: see ROUND-ABOUT.

**Mersey**, riv., Cheshire and Lancs, Eng.;  
rises in Peak Dist., flows past Stockport and  
Warrington into Mersey estuary betw. Liver-  
pool and Birkenhead; length 70 miles.

**Merthyr Tydfil**, co. bor., Glam., S.  
Wales; pop., 71,100; coal-mines, manuf.  
steel and iron.

**Merton and Morden**, urb. dist., Surrey;  
part Greater London; pop., 41,200.

**Merton College**, Oxford; fndd., 1264, by  
Walter de Merton, of Merton, Surrey.  
Bacon and Wycliffe were associated with  
the college.

**Meru**, volcano, Tanganyika Terr., E.  
Africa, S. of Kilima Njaro; 15,600 feet.

**Merveilleuse** (Fr., marvellous), name  
given to woman of fashion at the time of the  
French Directory (*q.v.*). Cf. INCROYABLE.

**Merwede Canal** (43 m.), from Merwede,  
on lower Meuse, to Amsterdam.

**Méryon**, Charles (1821-68), Fr. etcher;  
esp. scenes of Paris: *Abside de Notre Dame*.

**Mesabi Range**, Minnesota, U.S.A.; high-  
est point c. 1,900 ft.; large iron ore de-  
posits.

**Mesa Verde**, nat. park (1906) in Colorado,  
U.S.A.; 80 sq.m.; prehistoric cliff dwellings.

**Mescal**, 1) spirit distilled from pulque  
(*q.v.*). 2) A variety of cactus fnd. in Mexico  
and Texas; the natives chew the succulent top  
of the plant, wh. has a narcotic effect.

**Mesdag**, Hendrik Willem (1831-1915), Dut. painter, noted for marine paintings; *Après l'Orage, Rentrée des bateaux de pêche, Une Soirée sur la plage de Scheveningen*.

**Mesentery**, (anat.) folds of peritoneum (*q.v.*) containing the greater part of the intestinal canal.

**Meshach**: see SHADRACH, etc.

**Meshed**, **Mash-had**, tn., Khurasan, Persia, on W. side Hindu Kush; pop., 66,200; tomb of Imam Riza; the Mecca of the Shiahs (Shiites).

**Mesmer**, Franz Anton (1733-1815), Austr. physician; gave his name to mesmerism, a form of hypnotism; see HYPNOSIS.

**Mesoderm**, **mesoblast**, (zool.) middle germ-layer of the embryo.

**Mesolithic or Epipalaeolithic Period**, (archaeol.) intermediate period betw. Palaeolithic and Neolithic; comprises Azilian, Tardenoisian, Maglemosian, and Shell-Mound (Kitchen Midden) cultures. Climate more temperate than that of Palaeolithic Period.

**Mesolonghi**: see MISSOLOGHI.

**Mesopotamia** ("Between the Rivers"), region betw. Euphrates and Tigris, from Armenian highlands to Persian Gulf; Lower Mesopotamia included in Iraq (*q.v.*). In antiquity part of the Assyro-Babylonian Empire; Turkish from 1648, till World War, when conquered by British; kgdm. of Iraq since 1921.

**Mesothorium**, radio-active disintegration product of thorium (*q.v.*). Used as constituent of luminous paints.

**Mesozoic Period**, one of the main geol. eras; see GEOLOGICAL FORMATIONS.

**Messenger**, André (1853-1929), Fr. composer: *Veronique*, 1898.

**Messallina**, Valeria, consort of Rom. Emp. Claudius; exec. A.D. 48; notorious for her sexual excesses.

**Messenia**, dist. (1,290 sq.m.) S.W. Peloponnesus, Greece, W. of Taygetus Mtns.; pop., 130,000; mod. cap., *Kalamata*. Conquered by Sparta in First Messenian War (before 700 B.C.); inhab. either emigrated (see MESSINA) or were turned into helots (*q.v.*). Revolted unsuccessfully c. 650 and 464 B.C. Restored by Epaminondas after battle of Leuctra (371 B.C.), and new cap., *Messene*, founded 369 B.C.

**Messiah** (the anointed), 1) title of kgs. in O.T., esp. David; synonym for Christ in N.T.; 2) (mus.) oratorio by Handel, 1742.

**Messidor**, June 19th-July 18th in Fr. Repub. calendar (*q.v.*).

**Messier**, Charles (1730-1817), Fr. astron.; globular star clusters designated by his initial M, and a number; see STARS.

**Messina**, 1) Prov., N.W. Sicily; 1,270 sq.m.; pop., 654,000; mountainous; fruit, corn, oil. 2) Cap. of prov., on *Strait of M.*

(betw. Italy and N.W. Sicily; 2 m. wide; currents include the once-dreaded Scylla and Charybdis [*q.v.*]); pop., 204,000; univ. (1538); fortified harbour; destroyed by earthquake, 1908. Founded before 700 B.C.; received refugees from Messenia (*q.v.*) who changed name from *Zancle* to *Messana* (later *Messina*).

**Messines**, vill., W. Flanders, Belgium, 6 m. S. of Ypres, tactically important in World War. Capture of *M. Ridge*, 7 June, 1917, by Brit. II Army (Gen. Plumer) was conspicuous example of successful "limited offensive."

**Mess of pottage**, expression derived from chapter heading of Gen. xxv in *Matthew's Bible* (1537), not found in *A.V.*; denotes a disadvantageous exchange; see ESAU.

**Mestizo** (fem. *mestiza*), orig. person of mixed Span. or Portug. and Amer. Indian descent; occas. used of any half-breed.

**Meštrović**, Ivan (1883- ), Yugoslav sculptor; exhibited at Austrian Exhibition, London (1906), Victoria and Albert Mus. (1915), Grafton Galleries (1917), etc.; chf. works: memorial figure of Bp. Strosmajer; portrait of Pres. Masaryk of Czechoslovakia.

**Metabolism**, the chem. changes taking place in the protoplasm (*q.v.*) of living matter; sometimes divid. into *anabolism*, chemical building-up of simple food materials into complicated protoplasm constituents, and *katabolism*, breaking-down of these into waste products.

**Metacentre**, (phys.) point of a floating body at wh. the buoyancy appears to act. The M. in a ship must be higher than centre of gravity to ensure stability.

**Metagenesis**, or alternation of generations; alternate reproductn. by sexual and asexual processes, occurring in some invertebrates and plants.

**Metal Exchange**, more or less independent branch of produce exchanges for copper, lead, zinc, and tin; princ. M.E., in London, New York, Berlin, Hamburg.

**Metal**: see METALS. **M. spraying**, method of forming bright coating on paper, cloth, etc., from wire fed into oxyhydrogen or oxyacetylene flame (Schoop method).

**Metallography**, science of the atomic and crystalline structure of sol. metals and alloys: metal is polished highly, gently etched with suitable chemical, and examined by microscope; X-rays and ultra-violet light also used.

**Metalloids**, arsenic, boron, phosphorus and sulphur, having properties intermediate betw. those of metals and non-metals.

**Metallurgy**, art of smelting metallic ores for recovery of pure metal, and of making alloys, etc.

**Metals**, chemical elements, all solid except mercury, possessing lustre; good conductors of heat and electricity mostly malle-

able and ductile. Chemically *electropositive* (see IONIC THEORY) forming hydroxides and salts by replacing hydrogen in water and acids. Some, however, also form acids with oxygen, e.g., chromic acid. Form alloys (compounds, mixtures, and solid solutions) with one another, and combine with non-metals to form oxides, sulphides, etc.; some of these compounds, e.g., selenides, tellurides, are metal-like. *Noble* metals, gold, platinum, iridium, etc., occur native, as also do copper, silver (iron and nickel in meteorites and prob. in interior of earth). Other metals occur as mineral compounds; the useful and available minerals are called *ores*. Hydrogen, although a gas, is chemically a metal, but as liquid and solid not metallic. Most metals exhibit several chemical *valencies* (q.v.).

**Metamorphic rocks**, rocks which have been transformed by heat, pressure, and chemically by water and substances carried in solution.

**Metamorphoses**, poetical work by Ovid, based on princip. class. legends.

**Metamorphosis**, transformation. 1) (Myth.) Changing of person into an animal, tree, or inanimate object. 2) (Zoology) Collective term denoting the stages thr. which an animal passes before reaching full development. In insects, when these stages pass from larval and pupal state to the imago, or mature state, M. is said to be *complete*; where pupal stage is absent, M. is *incomplete*.

**Metaphor**, similitude briefly expressed without indication of comparison, e.g., "after life's fitful fever."

**Metaphysical poets**, 17th-cent. Eng. poets addicted to far-fetched imagery and witty conceits; incldg. Cowley, Crashaw, Donne, Herbert, Traherne, and Vaughan.

**Metaphysics**, systematic study of ultimate foundations of being and knowledge; named from works of Aristotle wh. followed "after" (Gr. *meta*) his "physics," hence transcending physics, going beyond and deeper.

**Metastasio**, Pietro Bonaventura (1698-1782), assumed name of Ital. poet: P. Trapassi: *Attilio Regolo*.

**Metastasis**, (med.) the conveying of diseased material from the original focus of disease to another part of the body by the lymphatic vessels or bloodvessels; material may be malignant, or septic.

**Metathesis** (Gr.), rearrangement of letters, e.g., in the word "wasp," where the two final letters were originally in reverse order.

**Metaurus**, Battle of the (207 B.C.), defeat of invading Carthaginians, under Hasdrubal (killed), by Romans under the consuls Livius and Nero; named after Riv. (now Metauro), N. Italy, flowing into Adriatic. Ranks as one of world's decisive battles.

**Metazoa**, (biol.) multicellular animals.

**Metempsychosis**, doctrine of transmigration of the soul after death into another body, whether of a human being or of a lower animal; fundamental characteristic of Indian philosophy. See PYTHAGORAS.

**Meteorological Office**, centre of Brit. meteorol. observations, fndd. 1854; formerly a dept. of Board of Trade, now attached to Air Ministry. **Royal M. Society**, fndd. 1850 for encouragement of meteorol. scienc. publ. *Quarterly Journal* and *The Meteorol. Record*; hdqrs., 49, Cromwell Rd., London.

**Meteorology**, science of atmospheric processes and conditions in their effect upon weather and climate; based on study of pressure and temperature of air, direction and strength of wind, and precipitation (q.v.). *Apparatus*: thermometer, barometer, anemometer, hygrometer, rain and snow gauge, evaporimeter, nephoscope, sunshine recorder, etc. Organised meteorol. observations carried out by individual nations at *Weather Bureau*, *Meteorol. Offices*, etc., which issue official forecasts of probable weather over specified areas.

**Meteors**, cometary bodies, "shooting stars," wh. become luminous through friction caused by passage through earth's atmosphere at average speed of 25 m. per second. Showers of M. appear at certain regular times of year apparently from fixed point in heavens; chf. systems of these, named fr. constell. forming their radiant point, are: *Lyrids*, Apr. 19th-20th; *Pegasisds*, Aug. 10th; *Perseids*, Aug. 9th-11th; *Andromeds*, Nov. 27th; *Orionids*, Oct.-Nov.; *Taurids*, Nov. 1st-15th; *Leonids*, Nov. 13th-14th. Very bright, slow-moving meteors are known as *fire-balls*.

**Meteorites**, fragments of exploded Ms. wh. fall to earth; composed of crystalline stone or iron and nickel; largest known meteoric stone nearly 647 lbs. av.; largest iron meteorites, over 49 tons at Grootfontein; heaviest shower of meteorites, over 100,000 fragments at Pultusk, Poland, 1868.

**Meter, electric**, various instruments for measuring current (*ammeter*), tension (*voltmeter*), power (*wattmeter*), frequency, power-factor, etc. *Supply meters* measure energy (Brit. Board of Trade Units) supplied to users; *ampere-hour meters* assume constancy of voltage, *watt-hour meters* measure true energy.

**Methane**, (chem.), marsh gas; sym. CH<sub>4</sub>; simplest hydro-carbon, occurs in marshes; colourless, tasteless gas; burns with non-luminous flame; present in coal gas up to 40%; when mixed with air forms fire-damp, which causes explosions in coal mines. **M. series**: paraffin series, saturated hydrocarbons; gen. formula, C<sub>n</sub>H<sub>2n+2</sub>, e.g. ethane, propane, butane, etc.; transition from gases to liquids and from liquids to solids.

**Methil:** see BUCKHAVEN AND METHIL.

**Methodists**, Eng. relig. sect fndd. 1729 by John Wesley (q.v.) and his brother Charles, for purpose of practising religion more "methodically"; spread quickly and soon subject to much internal division. Wesleyan M., or "Wesleyans" did not formally secede from C. of E. until 1795; other denominations are: *Episcopal Methodist Ch. of U.S.A.*, fndd. by Thos. Coke; *The Countess of Huntingdon's Connexion* (q.v.); *Welsh Calvinistic M.*; *M. New Connexion*; *Primitive M.*; *Bible Christians*; in 1857 the *United Methodist Free Ch.* was formed by union of Protestant M., Wesleyan M. Association, and Wesleyan Reform Association, and this in 1907 united with the M. New Connexion and Bible Christians to form the *United M. Ch.* All English M. were re-united into one church in 1932.

**Methodius**, St. (825-85), apostle of the Slavs, bro. of St. Cyril; Abp. of Syrmia (prov. in vall. of Drave, Hungary).

**Methuen**, Field-Marshal Paul Sanford M., 3rd bn. (1845-1932); C. O. 1st Div. 1st Army Corps in S. Africa, 1899-1900; Gov. of Malta, 1915-19.

**Methuselah**, (O.T.) son of Enoch, said to have lived to age of 969 (Gen. v).

**Methven**, territorial dist. of Perthsh., Scotland.

**Methyl**, (chem.) - CH<sub>3</sub>; organic radical, methane minus one hydrogen atom., occurs only in combination. **M. violet**, mixed dye prod. from dimethylaniline, C<sub>6</sub>H<sub>5</sub>N(CH<sub>3</sub>)<sub>2</sub>; used for ink, inking pads, staining bacteria, and also as dye.

**Methylated spirits**, sold in Gt. Brit. as mixture of ethyl alcohol and wood naphtha, pyridine, thus rendered unfit for drinking. Indust. M.s. contain ethyl alcohol 95%, wood naphtha 5%, pyridinised M.s. 0.5% in above mixture. Mineralised M.s. contain ethyl alcohol 90%, wood naphtha 9.5%, pyridine 0.5%, with small quant. of mineral naphtha and an aniline dye. Used as a fuel and as a solvent for manuf. processes; if drunk, may cause blindness.

**Methylene**, (chem.) organic radicle, =CH<sub>2</sub>; occurs only in combination. **M. blue**, C<sub>16</sub>H<sub>15</sub>N<sub>3</sub>SCl, very important fast coal-tar dye for silk and cotton; for staining bacteria (Löffler's reagent); in med. for testing efficiency of kidneys, as it is eliminated in urine.

**Metics**, **Metoikoi**, resident aliens in anc. Gr. city; entitled to protection but not to civic rights; paid a poll-tax.

**Metis**, 1) (Gr. myth.) personification of prudence; first wife of Zeus. 2) (Astron.) Name given to a planetoid disc. 1848.

**Metope** (archit.): see COLUMN.

**Metre**, 1) (abbr., m.), the basic unit of length in the metric system, introduced in

Fr., 1799; orig. intended to equal 1 ten-millionth of the earth's surface, measured from the pole to the Equator, now defined as the distance (39,371 in.) betw. lines on a platinum-iridium bar (at 0° C) kept at the Internat. Metric Bureau, Paris. *Metrokilogram* (mkg.), the technol. unit of work, i.e., the work required to raise 1 kg. 1 m. (= 7,233 ft. lbs.). 2) (Prosody) Any verse scheme, quantitative or accentual or stanzaic arrangement.

**Metrical foot**, division of verse containing stressed syllable, divided accordg. to rules of prosody.

**Metric system**, the system of measurement used in most European and many other countries. It is based on the metre (q.v.), the unit of length, and kilogram (q.v.), the unit of mass. The litre (q.v.), the unit of capacity, is the vol. of 1 kg. of water at 4° C.; and the relationship between the three units is:—1-roth. cu. m. = 1 litre, and 1 litre of water weighs 1 kg. All other units are the decimal subdivisions or multiples of these; divisions named by the Latin prefixes *milli-*, *centi-*, *deci-*, multiples by the Gr. prefixes *deca-*, *hecto-*, *kilo-*, *myria-*, all of which see. **M. ton**, *tonne*, *millier*, 10 quintals, or 1,000 kilograms, or 2204.6 lbs.

**Metronome**, (mus.) piece of adjustable mechanism for beating time at various tempi; the one in general use invented by Mälzel (1773-1838).



Metronome

**Metropolitan**, (eccles.) an abp.; in Gr. Orth. Ch., the head of a group of churches, ranking next beneath a patriarch and next above an archbishop. **M. Borough**, one of 28 areas into wh., outside City, London is divided. **M.B. councils** have, broadly, same status and powers as councils of prov. boroughs, but form less distinctive areas. **M. Water Board**, founded 1902 to centralise water supply for London and neighbourhood; 66 members, nominated by local authorities in supply area (574 sq.m.); average daily supply nearly 300 million gallons.

**Metsu**, Gabriel (1630-67), Dut. painter: *The Sportsman*, 1661.

**Metternich-Winneburg**, Pr. von, Clemens (1773-1859), Austrian statesman; Min. of For. Affairs, 1809; Pres. Congress of Vienna, 1815.

**Metz**, fortress tn., France, cap. dépt. Moselle, on Riv. Moselle; pop., 70,000; bpric. since 5th cent., 13th cent. Gothic cathed. (see III. next page); tobacco; preserved fruits and vegetables. Captured by Germans after short siege, 1870; restored to France, 1918.



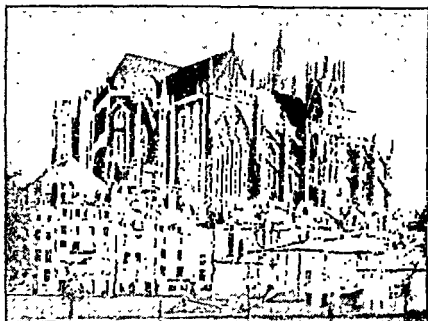
Metternich

**Meum et tuum** (Lat.), mine and thine; with reference to personal property.

**Meunier**, Constantin (1831-1905), Belg. sculptor and impressionist painter: *The Hammerer*, 1886.

**Meurthe**, riv., France, right trib. of Moselle; rises in Vosges; length, 106 miles.

**Meurthe-et-Moselle**, dépt. N.E. France;



Metz, Cathedral

2,036 sq.m.; pop., 592,600; vineyards; iron ore deposits; cap., *Nancy*.

**Meuse**, 1) or **Maas**, riv., E. France, Belgium, and Holland (498 m.); rises Plateau de Langres (see LANGRES); joined to Riv. Waal (q.v.; S. branch of the Rhine) at Merwede; flows through sev. distributaries (Oude Maas, Nieuwe Maas, etc.) into N. Sea; united by numerous canals with rivs. Scheldt, Aisne, etc., and by Merwede Canal with Amsterdam. 2) Dépt., N.W. France (2,400 sq.m., pop. c. 218,000); surface hilly; cap., *Bar-le-Duc*.

**Mewar**: see UDAIPUR.

**Mexico**, 1) federal repub., N. Amer.; bounded N. by U.S.A. and S. by Centr. Amer. (Guatemala and Brit. Honduras). Separates Atlantic (Gulf of M.) from Pacific. Main terr. comprises the S. end of N. Amer. Continent, tapering to isthmus of Tehuantepec (betw. Bay of Campeche and Gulf of Tehuantepec), and then spreading outwards on N. to form penins. of Yucatan. From N.W. frontier the long narrow penins. of Lower California runs S., parallel to the mainland, enclosing Gulf of California. Area, 767,200 sq.m.; pop., 16,500,000 (50% half-breeds, 33% Indians).



Narrow coastal plains, with series of lagoons betw. the mtns. and the sea. The Sierra Madre (9,000 ft.) rises steeply from the W. plains, protecting a high inland plateau (6,500 ft.): a corresponding series of ranges border the plateau on the E. Highest peaks Orizaba (18,210 ft.) and Popocatepetl (17,890 ft.). Frequent earthquakes. Rio Grande del Norte (largest riv.; 1,750 m.) forms boundary betw. M. and Texas; many

other rivs. (few navigable). Climate varies with altitude and latitude (most of M. within tropics). Four regions distinguished: a) *Tierra Caliente*, coastal districts, low-lying, hot, and unhealthy; trop. vegetation; alligators and turtles; poisonous insects; lagoons and sand-bars impede shipping. b) *Tierra Templada* (3-5,000 ft.), warm and moist; most suitable for agriculture assisted by irrigation (riv. valls. very fertile): chf. crops, maize, sugar-cane, sisal hemp (Yucatan), bananas, oranges, rice, cotton, tobacco. c) *Tierra Fria* (5-9,000 ft.), temperate and dry; forests. d) *Tierra Helada* (abv. 9,000 ft.). cold. Fauna include wolf, coyote, and bear, ocelot, lynx, tapir, vampire bat; great variety of birds (parrots, turkeys, humming birds, etc.).

Mineral resources enormous: mines of silver, gold, copper, lead, zinc, graphite, etc. Equally important is the production of petroleum. Rlys., 18,100 m.; cap., *Mexico City* (q.v.); chf. ports, Vera Cruz and Tampico, both on Gulf of Mexico. *Constitution*: Federal repub. of 28 states, one Fed. Dist. and three territories: President (6 yrs); two chambers. Each state has its own legislators, executive and judiciary. *History*: Aztec empire conquered by Cortez, 1510-21. As *New Spain*, M. became richest Span. colony (governed by viceroy). Independent 1821. Iturbide first emp., 1822-23; repub., 1823-63. War with U.S.A., 1846-48 (loss of Texas). Archduke Maximilian of Austria, brother of Francis-Joseph, Emp. of M., 1863 (deposed and executed, 1867). Repub. since 1867 (Díaz, pres., 1877-80 and 1884-1911). Civil War, 1911-20; country still disturbed over relations of Church and State, petroleum, and policy in regard to U.S.A. 2) See MEXICO CITY. 3) Inland State of repub. of Mexico; 9,200 sq.m.; pop., 978,400; encloses Fed. District. 4) Tn., Missouri, U.S.A.; pop., 8,000.

**Mexico City**, cap. of Mexico and of Federal Dist., (580 sq.m.), pop., 968,450; lies in centr. plateau midway (c. 200 m.) betw. Gulf of Mexico and Pacific, 3 m. above L. Texoco; cathed. on site of Aztec temple; nat. palace (govt. offices) on site of palace of Montezuma; nat. museum and library; univ.; Plaza Mayor and other squares; Alameda (public garden); iron foundries, cotton mills, tobacco factories.

**Mexico, Gulf of**, inlet of Atlantic Ocean, forming N.W. (and shallowest) part of Caribbean Sea; area, 1716,000 sq.m.; water warm; source of Gulf Str.

**Meyer**, Viktor (1848-97), Ger. chem.; invtd. meth. of estimating molecular weight.



Meyerbeer

**Meyerbeer**, Giacomo (1791-1863), Ger. composer of grand opera (*q.v.*); *Robert le Diable*, *Les Huguenots*, *L'Africaine*, *Le Prophète*.

**Maynell**, Alice Christina (1850-1922), Brit. poet; dau. of T. J. Thompson; m. W. Meynell, 1877; *A Father of Women*, 1917; *The School of Poetry*, 1923; *The Second Person Singular*, 1921.

**M.E.Z.**, abbr. *Mitteleuropäische Zeit* (Ger.), Centr. European time. See **TIME**.

**Mézières**, fortified tn., N.W. France, cap. dépt. Ardennes, on Riv. Meuse; pop., 10,000. Ger. G.H.Q., 1914-15.

**Mezzo**, (mus.) half; mf. = *M. forte*; mp. = *M. piano*; mv. = *mezza voce*, with half the voice.

**Mezzotint**, method of engraving on a plate of which the surface has been roughened by means of a "rocker," giving a rich, velvety background, the light passages being obtained by scraping away the surface. Introduced into England by Prince Rupert and fashionable for reproduction of portraits in 18th century.

**Mg**, chem. symbol of magnesium. **mg.** abbr. myriagram. **mg.**, milligram.

**Mgr.**, abbr. monseigneur (Fr.), my lord; title of a prelate in R.C. Ch. connected with Papal court.

**MHO**, electrical unit of conductivity, or reciprocal ohm (*q.v.*).

**Miami**, tn., S.E. Florida, U.S.A., on Biscayne Bay; pop., 85,000; winter resort.

**Miasma**, pollution of air by noxious germs or particles.

**Mica**, a group of silicates, chiefly of aluminium, which split readily into thin, tough, transparent sheets; used for lamp chimneys and glasses, side-screens for motorcars, and for parts of heating apparatus where transparency is necessary or desirable. Common *M.* is talc (*q.v.*); other varieties are *Muscovite* (potash *M.*), and *Phlogopite* (magnesia *M.*). **M. schist**, slaty rock composed of quartz and mica.

**Micah**, (O.T.) 1) character in Bk. of Judges (xvii and xviii). 2) Prophet, contemp. of Isaiah (c. 756-697 B.C.). **Bk. of M.** written early in Hezekiah's reign, masterpiece of Hebr. lit., containing ethical teaching.

**Mich.**, abbr. Michigan.

**Michael**, St. chief archangel (Dan., Jude, Rev.); triumphed over Satan.

**Michael**, name of Byzantine Emperors: 1) **M. I** (d. 845), Emp. 811-13. 2) **M. II**, the *Stammerer*, Emp., 820-29. 3) **M. III**, *The Drunk*, Emp., 842-67; murdered by his successor, Basilus. 4) **M. IV**, the *Paphlagonian*, Emp., 1034-41. 5) **M. V**, *Calaphates*, Emp., 1041. 6) **M. VI**, *Stratiotes*, Emp., 1056-57. 7) **M. VII**, *Parapinaces*, Emp., 1071-78. **VIII** and **IX**: see MICHAEL PALAEOLOGUS.

**Michael**, Czar of Russia (1596-1645), first ruler of house of Romanov; elected, 1613.

**Michaelmas**, feast of St. Michael, Sept. 29th; 3rd quarter-day in England. **M. daisy**, variety of autumn-flowering aster (*q.v.*) with mauve or pink blossoms resembling the daisy.

**Michael Palaeologus**, name of two Byz. emps.: 1) **M. VIII** (1234-82), emp. from 1261. 2) **M. IX**, emp. (jointly with his father, Andronicus II), 1295-1320.

**Michelangelo**, **Michelagnolo Buonarroti**, 1475-1564, Ital. sculptor, painter, and architect; toombs of Medici, incl. Lorenzo, at Florence, c. 1530; fig. of *Moses*, part of monument to Pope Julius II, now in ch. of St. Peter in Chains, Rome, c. 1513; *Piety* in Florence Cathed., c. 1530; paintings: ceiling of Sistine Chapel, 1508-12; architect.: dome of St. Peter's, Rome.



Michelangelo

**Michelet**, Jules (1798-1874), Fr. histor.; *History of France*, 1833-67; *Hist. of the French Revolution*, 1847-53.

**Michelson**, Albert (1852-1931), Amer. phys. Invt'd. *interferometer*; employed it to measure rigidity of earth, and in famous *Michelson-Morley Experiment*, wh. proved that velocity of matter relatively to ether cannot be determined. Fundamental in *Theory of Relativity* (*q.v.*). Made most accurate determination of velocity of light. Nobel Pr. (Physics), 1907.

**Michelozzo di Bartolommeo** (1391-1472), Ital. archit. and sculptor; *Palazzo Medici-Riccardi*, Florence, 1444.

**Michigan**, 1) ("Auto," "Wolverine") State, U.S.A., 57,960 sq.m.; pop., 4,900,000, on two penins. formed by lakes M., Huron and Superior; iron and copper mines; timber; sheep-farming (wool); motor indus.; cap., *Lansing*. 2) 2nd largest of Great Lakes (22,400 sq.m.) lying wholly in U.S.A., bordered by Wisconsin (N. and W.), Illinois and Indiana (S.), and Michigan (E.), and connected with L. Huron by Mackinac Str.; length, 307 m.; breadth, 118 m.; max. depth, 923 feet.

**Micoquean Culture**, (archaeol.) divn. of Lower (Earlier) Palaeolithic (*q.v.*) Period, named after *La Micoque*, rock shelter in Vézère Vall., Dordogne, France, where hand-axes and other flint implements have been found.

**Micro-**, as prefix in units of measurement, means one-millionth; e.g., micro-volt, micro-ampère, micro-ohm.

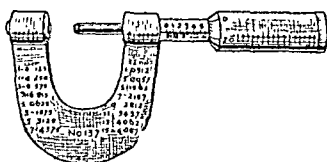
**Microbes**: see BACTERIA.

**Microcephaly**, abnormal smallness of skull, accomp'd. by normal growth of body.



**Microcosm**, man regarded as a complete epitome of the universe within himself; see MICROCOSM.

**Micrometer**, instrument for the accurate measurement of very small distances (to  $\frac{1}{1,000}$  mm. or  $\frac{1}{10,000}$  in.).



Micrometer

**Micron**, (abbr. *usu.* *mu*) =  $\frac{1}{1,000}$  mm; 1 in. contains 25,400 microns.

**Micronesia**, groups of isls. in W. Pacific, N. of Melanesia (*q.v.*); include Ladrões (Marianas), Caroline, Gilbert, and Marshall isls.; 1,320 sq.m.; pop., *c.* 25,000. See OCEANIA.

**Microphone**, apparatus by which variations in air-pressure, constituting sound, are caused to produce corresponding variations in elec. current or voltage. **Carbon m.**, commonest and original (Hughes, 1878); thin membrane in contact with granules of carbon forming part of elec. circuit; sound vibrations cause variation in contact resistance betw. granules. **Condenser m.**, has membrane forming one plate of condenser, capacity of wh. varies with movement of membrane. **Moving-coil m.**, any moving-coil loud speaker (*q.v.*) will act as M.; sound causes coil to move in magnet gap, whereby currents are induced in it corresponding to sound vibrations. Voigt's *Cathodophone* made use of direct disturbance of ionised gas by air vibrations; used to make first talking pictures.

**Microscope**, optical instr. for examining very small objects; two optical systems: *objective*, wh. gives a reversed real image of object under exam. highly magnified; and the *eye-piece* (*q.v.*), a 2nd system of lenses thr. wh. the eye sees the picture. Transparent objects are viewed by light reflected from below; opaque ones are lighted from above. Objects approaching in minuteness length of light waves cannot be seen. An *ultra-microscope* (*q.v.*) permits their existence, but not their shape, to be recognised. First M. supposed to have been made by Johann and Jacob Janssen (1590). See also OPTICS.

Eye-piece



Microscope

Object lens  
Stage  
Mirror

**Microtome**, device for cutting very thin and uniform successive sections of animal or veg. tissue for microscopic examination. Tissue is *usu.* hardened by various chemicals, and stained by substances wh. attach to parts of structure and not others, thus enabling it to be seen; then made solid for cutting by

embedding in wax, or freezing. M. consists of 1) holder for specimen, wh. can be advanced by equal regular small amounts; 2) means of exactly guiding razor-blade, so that it cuts thin slice off specimen at each advance. M. is most important weapon of biological research next to microscope.

**Midas**, legendary Kg. of Phrygia; whatever he touched became gold; grew ass's ears after judging Pan's music superior to that of Apollo.

**Middelburg**, cap. Zeeland, Holland, on Walcheren Isl.; pop., 20,000; canal to Flushing.

**Middle Ages**, abbr. *Mid. A.*; period approx. from A.D. 500-1500. **M. classes**, term loosely applied to commercial and professional classes betw. the nobility, landed gentry, and clergy on the one hand, and the labouring-classes on the other. **M. ear**, cavity behind the ear-drum, *i.e.* the membrane at the inner end of the external ear. In the M.E. a series of 3 small bones transmit vibrations of drum to inner ear, where they stimulate the endings of the auditory nerve. See INCUS.

**Middleman**, dealer intervening between producer and consumer; an agent, esp. one who buys in large quantities from manufacturer or importer and resells, in small parcels, to retailers.

**Middlesbrough**, co. bor. and seap. on Yorks coast; pop., 138,500; centre iron and steel district; shipb., manuf. iron and steel; salt-works.

**Middlesex**, inland Eng. co., lying N. of R. Thames; area, 232 sq.m.; pop., (excl. L.C.C. area) 1,638,500; contains large part of Greater London; administ. centr., Guildhall, Westminster.

**Middleton**, Thos. (*c.* 1570-1627), Eng. dramatist; entered Gray's Inn, *c.* 1594; city chronologer, 1620; *A Trick to Catch the Old One*; *Women Beware Women*; *The Witch*; also collaborated with Dekker, Rowley, Munday, Webster, Drayton, Ben Jonson, and Fletcher.

**Midgard**, (in Norse myth.) the Earth.

**Midi**, S. of France. **Canal du Midi** (Languedoc Canal) conn. Bay of Biscay with Gulf of Lion; 150 m. long; wine transport.

**Midianites**, (O.T.) descendants of Midian, son of Abraham and Keturah; settled in E. Palestine and Sinaitic penins.; combined with Moabites agst. Israelites in Wilderness; conquered by Gideon (*q.v.*).

**Midland Bank, Ltd.**, Brit. bank, indd. as Birmingham and Midland, 1836; on amalgamations became successively the London and Midland (1891), the London, City, and Midland (1898), and the London Joint City and Midland (1918); pres. title adopted 1924. Has absorbed many local banks. See BANKS, BIG FIVE.

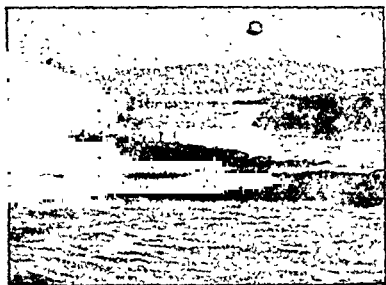
**Mid-Lent Sunday** (R.C., *Laetare S.*),

4th S. in Lent; in Eng. called *Mothering S.* from mediaeval practice of then visiting one's mother, or cathed., church with Easter offerings.

**Middleton**, Wm. St. John Fremantle Broderick, 1st Earl of (1856– ), Brit. statesm.; M.P., 1880–1906; Sec. of State for War, 1900–03; and for India, 1903–05; entered Hsc. of Lds., 1907, as 5th Bn. Broderick (Gt. Brit.) and Visct. Middleton (Irel.); ldr. of southern Irish Unionists; served on Irish Convention, 1917–18; created 1st Earl of M., 1920; member of I.F.S. Senate, 1921.

**Midlothian**, **Edinburghshire**, marit. co., S. Scot., on Firth of Forth; area, 362 sq.m.; pop., 526,300; fertile agric. country in N., rising to the Pentlands (1,898 ft.) in S.W. and Moorfoots (2,136 ft.) in S.E.; coal-mining, paper-making, sea-fishing; cap., *Edinburgh*.

**Midnight**, instant midway betw. two successive noons. **M. Sun**, phenomenon visible at and about midsummer in circum-



Midnight Sun

polar regions, when sun does not, even at night, dip below sky-line. Visible at North Cape from May 12th to July 29th.

**Midrash**, collective name for Jewish commentaries and expository writings dealing with the Hebrew Scriptures, ranging in date from the 2nd to the 13th cents. A.D. Most midrashim are narrative in form but mainly doctrinal in intention.

**Midshipman**, in the Royal Navy, junior officer, ranking below warrant officers; serves 5 years as M.; promoted to sub-lieut. on reaching age of 19 and passing an examination.

**Midsummer**, period of summer solstice (*q.v.*), June 21st; **M. Day**, June 24th; feast of Nativity of St. John the Baptist; 2nd quarter day in England. See **LAMMAS**.

**Midwife**, nurse who attends women in childbirth. **M. toad**, species of European toad whose male carries



Midwife Toad

strings of eggs on his thighs until the larvae hatch out.

**Mieres**, tn., Oviedo, N.W. Spain; pop., 41,000; coal mines.

**Mierevelt**, Michiel Jansz van (1567–1651), Dut. portrait painter: *William of Orange*; *Louise de Coligny*; etc.

**Mieris**, Frans van, the Elder (1635–81), Leyden painter; *Lady in a Crimson Jacket*; *The Young Astrologer*; *Doctor Feeling a Lady's Pulse*.

**Mignard**, Pierre (1610–95), Fr. painter: *Louis XIV.*

**Mignon**, opera by A. Thomas (*q.v.*) (1866).

**Mignonette**, *Reseda*, herbaceous plant, having flowers in spikes; *R. alba*, garden M., is sweet-smelling. *R. luteola*, dyer's weed, dyer's rocket, grows on chalky soil, 1 to 2 ft. high; Mignon. formerly used to dye wool yellow. *ette* Wild M., *R. lutea*, is smaller than above.

**Migraine**, severe headache, often accomp. by disturbances of vision, nausea and vomiting.

**Migration**, (*see* Graphs, next page); large-scale change of dwelling (*e.g.* tribal, in Dark Ages). Persistent flow of pop. from country to towns. Also applied to instinctive mass movement of animals or birds.

**Mihrab**: *see* MOSQUE.

**Mikado** (exalted gate), title of the Emp. of Japan; used mostly by foreigners, native title being "Tenno."

**Milan**, **Milano**, cap. prov. of M., Lombardy, It.; pop., 980,100; white marble Gothic cathed.; palaces and other mediaeval buildings; univ.; museums; picture galleries; Scala Theatre; fine streets, squares, gardens; financial, commercial and indust. centre of Italy; rly. junction; textiles, metals, paper, leather, silk, elec. and automobile engineering.



The Mikado

**Milan Obrenović IV** (1854–1901), Kg. of Serbia, 1868; abdic., 1889.

**Mildew**, various parasitic fungi wh. produce a white discolouration in plants (vines, cereals, etc.), and manufactured goods such as paper, leather, etc.

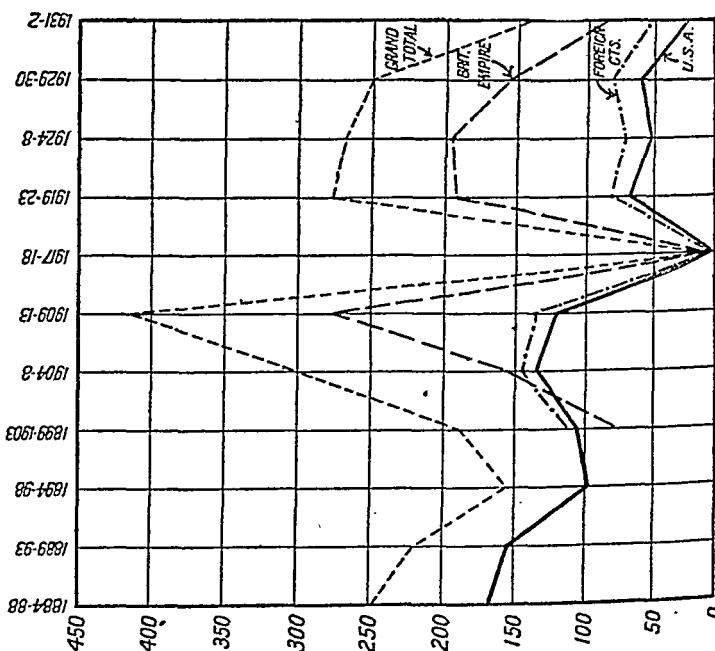
**Mild steel**, metal wh. cannot be hardened; poor in carbon, forgeable, weldable; used esp. for boiler-plates, rivets, nuts, etc.

**Mile**, 1) Brit. and U.S. linear meas.; **statute m.**, 1,760 yds. (5,280 ft.); **geogr. m.**,  $\frac{1}{60}$  degree, or one minute of latitude; varies from 6,046 to 6,108 ft.; **nautical m.**, strictly same as geogr. m., taken as 6,080 ft.; **Irish m.**, 2,240 yds.; **Scots m.**, 1,984 yds.;

# MIGRATION

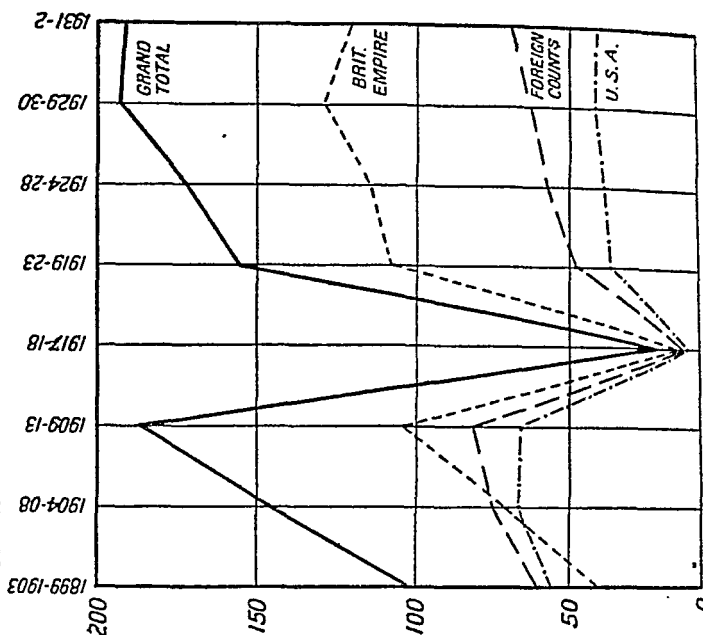
## MIGRATION - EMIGRATION

NO. OF OUTWARD BOUND PASSENGERS OF BRITISH NATIONALITY FROM U.K. TO COUNTRIES OUT OF EUROPE DISTINGUISHING THE PRINCIPAL COUNTRIES IN WHICH THE PASSENGERS CONTRACTED TO LAND IN THOUSANDS



## MIGRATION - IMMIGRATION

NO. OF INWARD BOUND PASSENGERS OF BRITISH NATIONALITY THAT ENTERED U.K. FROM COUNTRIES OUT OF EUROPE DISTINGUISHING THE PRINCIPAL COUNTRIES IN WHICH THE PASSENGERS EMBARKED. IN THOUSANDS



Emigration from Grt. Brit. incr. at end of 19th cent., but M. almost at standstill during World War. Revival later, but hampered by depression. Especially in U.S.A. communities) of 1919-32 caused fall of nearly 50% in Emigration and continuance of higher rate of Immigration. 1931, Immigration to U.S.A., September 1931, 1931-2.

old **Ger. m.**, 8,237 yds. (over  $4\frac{1}{2}$  m.); old **Rom. m.**, 1,617 yds. 2) **Square m.**, Brit. and U.S. sq. meas., 640 ac. (4,840 sq. yards).

**Mileage tariff**, rly. tariff accdg. to wh. the charge per mile for carrying passengers or goods does not vary.

**Mill End**, district of E. London, in bor. of Stepney, so called because it starts 1 m. from Aldgate. In M.E. Road is the *People's Palace*, built as a result of Walter Besant's *All Sorts and Conditions of Men*, for recreation and education of the "artisan population of the East End"; opened by Qn. Victoria, 1887; Queen's Hall destroyed by fire, 1931.

**Miletus**, in antiq. the richest and most powerful Ionian city on W. coast of Asia Minor; destr. by Pers., 494 B.C.

**Milfoil**, water milfoil, *Myriophyllum spicatum*, aquatic plant, grows below water in tangled masses, with feathery, comb-like leaves.

**Milford Haven**, Louis Alexander, 1st Marquess of (1854-1921), e. s. of Prince Alexander of Hesse and husband of Victoria, dau. of Princess Alice, 2nd dau. of Qn. Victoria; Brit. adm. of the fleet; known as Pr. Louis of Battenberg until 1917, when Eng. branch adopted name of Mountbatten. Succd. by s., George, 2nd marquess, b. 1892.

**Milford Haven**, port, Pembrokesh., S. Wales, on natural harbour same name; 10 m. long, 1-2 m. wide; pop., 10,100.

**Milhaud**, Darius (1892- ), Fr. composer; symphonies, chamber music, songs, ballets: *Le Train Bleu*; opera, *Columbus*.

**Military**, of the size of a grain of millet.

**M. tuberculosis**, acute generalised tuberculosis; a fatal disease, due to the discharge of tubercle (*g.v.*) bacilli into the blood stream.

**Milieu** (Fr., middle), surroundings, environment.

**Military attaché**, officer attached to embassies, etc., to report on local milit. matters. **M. Cross**, silver cross awarded to captains and lower grades of commissioned officers, and warrant officers of the Brit. Army for distinguished services (since Aug., 1918, only "in the field"). Estab., 1914; ribbon: white, with purple centre. **M. Medal**, silver medal awarded to N.C.O.'s and men of the Brit. Army for bravery in the field; also to women for devotion to duty under fire. Fndd., 1916; ribbon: blue, with four stripes, alternately white and red, in centre. **M. Knights of Windsor**, small body of retired military officers who, as a reward for meritorious service, are granted a pension and apartments at Windsor Castle. The pensions, ranging from £50 to £130 a year, are provided from the revenues of an ecclesiastical college at Windsor, and from contributions which every Knight of the Garter must make on his appointment. The knights wear an early 19th-cent. uniform;

they must reside at their quarters for nine months in the year and attend St. George's Chapel on certain Saints' Days.

**Militia**, troops called upon to serve only in case of war or emergency or for periods of training. Nat. system of mil. service in some countries (*e.g.*, Switz.). M. in Gt. Brit. form reinforcements for the Regular Army. In U.S.A., M. under authority of Gov. of State.

**Milk**, secretion of mammary glands in female of all mammals, supplying food for young. M. of goats and sheep used as human food, esp. in country districts; **cow's m.**, so used universally, contns. c. 87% water, 13% solids (casein, albumen, fat, salts, etc.); in Gt. Brit. M. for hum. consumptn. must contn. at least 3% fat and 8.5% other solids (Food and Drugs Act); under regults. of Min. of Health classified accdg. to freedom from bacteria as: *Certified*; *Grade A* (tuberculin tested); *Grade A* (examined), and *pasteurised*. **Condensed m.**, preserved by evaporation and sealed in tins; sweetened or unsweetened. **Dried m.**, usu. made from skimmed M., with cream removed. **M. glass**: see GLASS. **M. of lime**, suspension of lime in lime-water; used for softening water, in wh. it combines with the carbon dioxide holding carbonate of lime in solution. **M. products**, chfly. butter and cheese; cf. CASEIN. **M. teeth**: see TEETH.

**Milking machine**, suction-pump for milking cows, driven by hand or electricity; enables several cows to be milked simultaneously; ensures cleanliness.

**Milkweed**, pop. name for many common plants with milky sap, esp. chervil (*g.r.*). **M. butterfly**, a fine species, sometimes known as the Monarch, with yellow, black, and red wings; widely distributed; rarely seen in England; larvae feed on milkweed.

**Milky Way**, *Via Lactea*, or *Galaxy*, luminous tract or belt across night sky, composed of innumerable, extremely distant stars; est. to complete revolution of celest. sphere in 250 mill. years.

**Mill**, John Stuart (1806-73), Eng. philosopher, polit. econ. and logician; *System of Inductive and Deductive Logic*, 1843; *Political Economy*, 1844.

**Mill**, 1) apparatus driven by wind, water, steam, etc., for grinding grain into flour; also bldg. in wh. grinding and var. manufacturing processes take place. 2) Plant and premises for manuf. of var. articles, *e.g.*, paper, cotton. 3) (Slang) Term for boxing-match.

**Mill Hill**, eccles. parish N. Middx., included in bor. of Hendon (*g.r.*); observatory. **M. H. School**, Eng. public sch. for boys;



J. S. Mill

fndd. in N.W. London, 1807, for education of Nonconformists; reconstituted on broader lines, 1869; c. 460 boys.

**Mill on the Floss, The**, novel by George Eliot (*q.v.*), 1860.

**Millais**, Sir John Everett (1829-96), Eng. painter; fndr., with Holman Hunt, of the Pre-Raphaelites, but later seceded; R.A., 1863; P.R.A., 1896.

**Millennium**, 1,000 yrs.; vague period during wh. Christ will rule on earth in person, and world's ills will be removed. Cf. CHILIASM.

**Miller**, Oskar von (1855- ), Ger. engin.; fndr. and director of the Deutsches Museum of Nat. and Techn. Science, Munich.

**Millerand**, Alexandre (1859- ), Fr. statesm.; Pres., 1920-24.

**Miller's thumb**, small member of the gurnard family, not more than 5 in. long with soft scaleless skin and narrow 1st dorsal fin. Lives in streams.

**Millet**, Jean François (1814-75), Fr. painter: *The Angelus*, 1860.

**Millet**, (bot.) 1) E. Indian cereal grass, cultivated in S. Eur., Asia, and N. Africa. 2) Tall grass of N. America.

**Milliard**, 1,000 millions (1,000,000,000), called a billion (*q.v.*) in Fr. and U.S.A.

**Millier**, tonne (metric ton), 10 quintals (or 19.68 cwt.).

**Millikan**, Robt. Andrews (1868- ), Amer. physicist; photo-electric. determination of light quant.; Nobel Prize (Phys.), 1923.

**Millimicron**, symbol,  $\mu$ ;  $\frac{1}{1,000,000}$  millimetre.

**Milling**, 1) process of grinding material, esp. grain. 2) Serrated edge of a coin.

**M. machine**, cuts metal away in any desired profile from work gripped to a sliding holder and pressed against revolving *M. cutter*, a circular cutter of suitable profile with sharp teeth.

**Million**, cardinal number, a thousand thousand (1,000,000).

**Millstone grit**, (geol.) a very hard sandstone, employed in building, and for making grindstones.

**Millwall**, dist. of London, in bor. of Poplar, sitd. in Isle of Dogs (*q.v.*); **M. Dock**, built 1864, covers c.

231 acres; greater part of grain imptd. into London is unloaded there.

**Milne**, 1) **Alan Alex.** (1882- ), Brit. journalist, novelist, and playwright; assist. ed. *Punch*, 1906-14; essays, etc.: *The Day's Play*, 1910; *When We Were Very Young*, 1924; plays: *The Dover Road*, 1922; *The Fourth Wall*, 1928. 2) **M., Sir George Francis** (1866- ), Brit. F.M.; com. Brit. forces in Macedonia, 1916-18; in Near East, 1918-20; Ch. Imp. Gen. Staff, 1926.

**Milner**, Alfred Milner, 1st visct. (1854-1925), Brit. statesm.; High Comm. for S. Africa, and Gov. of Cape Colony, 1897; mem. of War Cabinet, 1915; Sec. for War, 1918-19; Col. Sec., 1919-21.

**Milo**, in antiq. **Melos**, Gr. isl. in Cyclades; volcanic; many hot springs. Statue of Venus of Milo found (1820) near ruins of M., cap. of isl.; now in Paris.

**Milreis**, 1) former Portug. gold coin, = abt. 4s. 6d. (\$1.08) at par. 2) Braz. silver coin and monetary unit, = abt. 2s. 3d. (\$1.54) at par.

**Miltiades**, Gr. gen. and statesm.; deftd. Persians at Marathon, B.C. 490.

**Milton**, John (1608-74), Eng. poet and statesm.; Latin Sec. under Commonwealth, 1649; became blind, 1652. Poems: *Paradise Lost*, 1667; *L'Allegro*, *Il Penseroso*, *Comus*, 1637; *Paradise Regained*, *Samson Agonistes*, 1671; prose works: *Arcopagilica*, 1644; *Eikonoklastes*, 1649.

**Milwaukee**, largest tn., Wisconsin, U.S.A.; port, on L. Michigan; pop., 600,000 (half Ger.); grain and coal trade; iron industry.

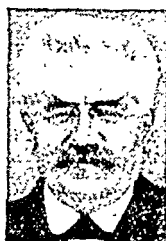
**Mime**, "imitation," species of prose drama, reproducg. scenes of everyday life; made popular by Sophron c. 440 B.C., tradition continued in puppet plays, mediev. farces, etc.; dramatic representatn. by gesture rather than dialogue.

**M.I.M.E.**, abbr. Member, Institution of Mining Engineers.

**Mimicry**, (biol.) 1) resemblance of cert. animals to others of diff. or variant species; occurs most freqtly. in insects. Harmless edible species may imitate dangerous, distasteful variety in colouring and shape (*protective m.*), or predatory species may assume colouring and appearance of harmless variety (*aggressive mimicry*). 2) Resemblance by colour-pattern, shape, etc., of cert. animals and



Millais



Millerand



Lord Milner



Venus of Milo



Milton



Mimosa

plants to their environment serving as protectn. agst. their enemies, e.g., stick-insect, leaf-insect; also dappled pattern on cert. birds and wild animals blending with lights and shadows of forest, etc.

**Mimosa**, family of tropical leguminous trees and shrubs. Some have sensitive leaves wh. curl when touched; globular flowers. Australian wattle (*Acacia*) is sometimes wrongly called mimosa.

**M.I.N.A.**, abbr. Member, Institution of Naval Architects.

**Minaret**, slender tower on a mosque, with a gallery from which the muezzin (q.v.) calls.

**Minas Geraes**, inland State, E. Brazil, S. Amer., watered by Riv. São Francisco; 229,000 sq.m.; pop., 7,500,000; diamonds; iron-ore deposits; coffee-planting; cattle-breeding. Cap., *Belo Horizonte*.



Minaret

**Minch, North**, channel betw. Outer Hebrides and Scottish coast, 60 m. long, 24-30 m. wide. **Little M.** (13 m. wide) separates Outer from Inner Hebrides (Skye, etc.).

**Mincing Lane**, narrow thoroughfare in City of London, centre of wholesale tea trade; derives its name from the nuns, or "Minchens" of St. Helens, who owned it in 13th century.

**Mincio**, left trib. of Riv. Po; rises in Tyrol, traverses L. Garda, joins Riv. Po near Mantua; navig.; 41 m. long.

**Minden**, city, Westphalia, Prussia; cathed.; pop., 26,000. *Battle of Minden*, 1759, defeat of Fr. by Brit. Hanoverians and Prussians.

**Mine**, 1) A digging for extrac. of minerals (see MINING.) 2) In milit. engin., explosive charge, packed in galleries driven forward under the enemy's position, for the purpose of blowing it up; or concealed in front of one's own position to repel attacks (*jougasse*). In naval warfare, free (floating mines) or anchored (minefields).

**Minehead**, mkt. tn. and seaside resort, Bristol Channel, Som., Eng.; pop., 6,000.

**Mineral**, (popularly) any substance wh. is neither animal nor vegetable; (techn.) any substance wh. is extracted from the earth by mining, including the metals, stone, and also coal. **M. acids**, inorganic acids, e.g., sulphuric, phosphoric, nitric, hydrochloric, silicic, carbonic, whose metallic compounds occur as minerals. **M. colours**, term for certain salts of heavy metals; e.g., white lead, chrome yellow, cinnabar; used for painting, printing, wall-papers, etc.;

distinguished from tar dyes. **M. oils**, crude petroleum (q.v.) and its refined products; the crude oil is split up by distillation and *cracking* into light volatile oils (petrol, paraffin) and thick heavy oils (greases); see OIL. **M. salts**, see NUTRITIVE PREPARATIONS. **M. waters**, waters containing salts or gases in solution (esp. as naturally present in medicinal springs, etc.), e.g., carbonic acid or sodium chloride (common salt); bitter waters with aperient properties, e.g., magnesia or Glauber salts; sulphur springs, containing sulphurated hydrogen; chalybeate waters, containing carbonate of iron; and those contg. radio-active elements; (popularly) aerated drinks, e.g., soda-water, ginger-beer, lemonade. **M. wax**: see OZOCERITE.

**Mineralogy**, science of the properties, composition, occurrence, and formation of minerals, wh. are considered under classifications according to their chem. or physical characteristics.

**Minerva**, Rom. goddess of Wisdom; see ATHENA.

**Ming dynasty** (1368-1644), Chin. dyn. wh. overthrew the Mongols (Yüan dyn.) and was itself overthrown by the Manchus (Ching). **M. style**, period of Chinese art, called after dynasty.



Grotesque Animal of Ming period

**Mingrelia**, dist. of Georgian A. S. S. R., Black Sea; minerals; manganese ore; valls. very fertile. Pop., c. 250,000 Mingrelians (Georgian Moslems).

**Minho**, riv. (155 m.), N.W. Spain, rises in Sierra de Meira, lower course and estuary on Portu. frontier; flows into Atlantic.

**Miniature-painting**, the art of painting portraits or scenes on a very small scale; used in Mid. Ages in decoration of missals, etc.; the first painter of separate miniatures probably Holbein.

**Minim**, 1) (mus.) note, orig. that of shortest duration, now of the value or time of half a semibreve or two crotchets. 2) Apothecaries' liquid meas.,  $\frac{1}{8}$  dram; same as drop.

**Minims** ("The Least"), order of hermits founded by St. Francis of Paula, 1436, also called *Paulines* and, in Paris, *Bons Hommes*; mendicant friars, strict vegetarians.

**Minimum**, least quantity assignable in given case; smallest amt., lowest pt. or degree. **Barometric m.**: see METEOROLOGY. **M.**



Old Italian Miniature: Dante at the Gates of Inferno

**wage**, lowest wage an employer is allowed to pay under terms either of legislative provision or agreement betw. employers' assocn. and trade union; *see* TRADES UNIONS.

**Mining**, extraction from earth of valuable minerals, e.g., iron, gold, and other metal ores, diamonds and other stones, coal. According to the situation of such mineral deposits, mining may be effected at or near earth's surface or by sinking shafts and tunnelling into earth's crust. Among the problems to be considered are those of the most profitable lay-out of shafts and tunnels, drainage and ventilation, transportation of minerals along tunnels to shaft and their haulage to surface, lighting, the protection and health of miners, the precautionary measures to be taken against accidents, explosions, etc., and the profitable marketing of minerals. Width of tunnels and distance betw. them are determined by character and strength of overlying and surrounding rock beds, and their length by considerations of practicable and economical haulage of minerals to the shaft; drainage is effected by pumping, and ventilation by shafts; loosened ore, coal, etc., usually loaded on to trucks, wh. are hauled on rails to the shaft by man-, pony-, or mechanical-power; lighting is provided by electricity where practicable, or by safety lamps, in wh. the flame is protected from contact with explosive gases. Chief sources of danger are collapse of tunnels, flooding with water, foul gases and explosions, and, despite all precautions, accidents due to each of these causes are not infrequent. Worked-out veins of ore are either propped up, filled in with rock, or allowed to cave in. *See also* ORE-DRESSING. **M. rights**, ownership of minerals existing below surface of land; in common law, belong to owner of surface-land, unless reserved by previous owner, but have in many cases been detached by law from surface-owner in public interest. Gold and silver deposits are usually considered (in U.K.) to belong to the Crown. **M. stock**, shares in undertakings to mine precious and base metals and diamonds, etc.

**Minion**, a size of type (*see* POINT SYSTEM: TYPE).

**Minister**, chfly. in phrases "minister of religion" (especially in Scot. Ch. and Eng. Noncon. Ch.); **m. of the Crown**, i.e. mem. of govt.; and **Cabinet m.**, mem. of inner circle of Brit. Govt. *See* CABINET.

**Minium**, (chem.)  $Pb_3O_4$ , red oxide of lead; *see* LEAD.

**Miniver**, the Siberian and Russ. squirrel; also the fur of this, or a coat made from it. Name applied in Mid. Ages to fur generally.

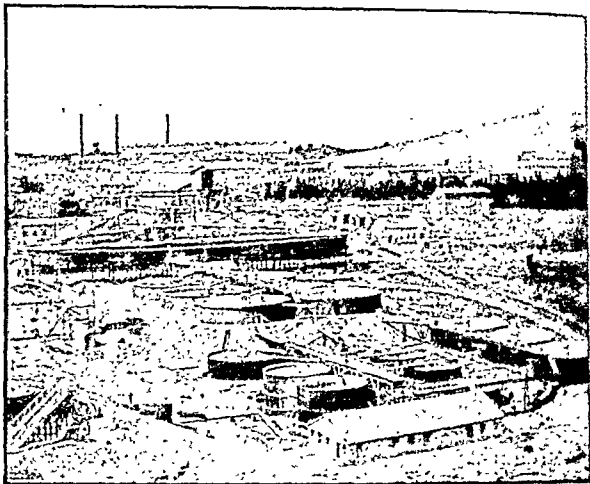
**Mink**, semi-aquatic mammal resembling the stoat, of genus *Putorius*; carnivorous; fish-eating; found in Finland, Poland, Russia, and (*Putorius vison*) N. Amer.; also, the fur of the various species.

**Minn.**, abbr. Minnesota.

**Minneapolis**, largest tn., Minnesota, U.S.A., on Mississippi Riv.; pop., 455,000; largest wheat market in world.

**Minnehaha Falls**, on Minnesota Riv., Minnesota, U.S.A.; 50 feet.

**Minnesingers**, 12th-14th-cent. Ger. lyric poets, chief theme love; almost exclusively of noble descent; sang their elaborate verses to



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their own accompaniment; highest development in Swabia and Austria; classical representative, Walther von der Vogelweide (q.v.).

**Minnesota** ("Gopher") State, U.S.A.; 84,682 sq.m.; pop., 2,600,000; bounded by Canadian provs. Manitoba and Ontario to N., L. Superior to E., Iowa to S., Dakota to W.; well wooded; prairie; grain, cattle-breeding. Cap., *St. Paul*.

**Minnow**, small fresh-water fish of the genus *Leuciscus* which includes the dace, roach, and chub.

**Minoan**, name given by Sir Arthur Evans to Cretan divn. of Aegean Civilisation (q.v.); three periods: Early, Middle, and Late; each sub-divided into three phases; *see* BRONZE AGE.

**Mino di Giovanni** (1431-84), called D. Fiesole; Ital. sculptor; tomb of Pope Paul II, St. Peter's, Rome, 1474.

**Minor**, 1) person under 21 yrs. of age. *M.* has no capacity to carry out legal act, to *see*

own name, or be sued upon a contract for payment. 2) (Mus.) interval a semitone smaller than major; scale, mode or tonality which 3rd is a tone-and-a-half from tonic or note, e.g., in C min. the 3rd is E flat. **relative m.**, key having same signature as relative major, e.g., A Min. is relative M. C Major.

**Minor planets:** see PLANETOIDs.

**Minorca**, isl. (278 sq.m.), W. Mediterranean; one of Balearic Isls. (q.v.); wheat, olive, wine, iron, lead, copper. Cap., *Port of Spain*. **M. Fowl**, breed of domestic fowls; red-faced variety of the black Span. fowl. **Minorite**, (eccles.) a Franciscan or Redcliff (q.v.).

**Minorities question:** where territory with mixed pop. has, in acc. with theory of self-determination, been placed (esp. since World War) under control of State to which majority of inhab. is akin, question arises of protecting racial or linguistic minority; latter especially committed to League of Nations.

**Minority**, lesser part, esp. of votes (see VOTE). Also status or period before majority reaches age of legal competence: in England, 18 for king, 21 for others; see ENGLAND.

**Minos**, legend. Kg. of Crete, son of Zeus and Europa; law-giver; later, a judge in the Underworld (Hades). Gives name to Minoan period (q.v.).

**Minotaur**, monster of Gr. myth. who dwelt in the Cretan Labyrinth (q.v.); man with a bull's head; slain by Theseus.

**Minsk**, cap. of White Russian S.S.R.; pop., 131,530. Univ., theatre, match factories. Suffered severely until 1921 in Russian retreat, German and Polish invasions, and revolutionary and nationalist upheavals.

**M. Inst. C. E.**, abbr. Member, Institute of Civil Engineers.

**Minstrel**, professional musical entertainer of the Mid. Ages, either attached to a great household or wandering from place to place. The M. (*gleeman, jongleur*) played the harp, etc., recited poems, juggled, etc. In modern usage, one of a troupe of banjo-players, etc., with blackened faces, who sing Negro melodies, etc.

**Mint**, place where money is coined. In Eng. the Royal Mint at Tower Hill, London; branches at Melbourne, Sydney, Perth, Ottawa, Pretoria. **M. par of exchange**, relation of weight of gold in coins of 2 different countries, e.g., M. par betw. Eng. and Fr. is 25.22 francs for £1; i.e., 25.22 francs contain same weight of gold as £1. **M. price**, number of coins into which given quantity of bullion can be minted. U.K. mint price of gold is £3.17s.10½d p. oz; may be lower than market price of bullion if coinage is worn or debased.

**Mint**, *Mentha*, family of labiate plants; lilac or purple flowers; aromatic odour. Garden M., *Mentha viridis* (Spearmint); other varieties are peppermint (*M. piperita*); pennyroyal (*M. pulegium*); corn M. (*M. arvensis*); hairy M. (*M. hirsuta*).

**Mint-mark**, (numis.) letter or sign on coin indicating place of coining, mint master or die-cutter, date, etc.

**Minto**, **Gilbert Elliot**, 1st E. of (1731-1814), Brit. Whig politician and diplomatist; M.P., 1776; assisted Burke in attack on Warren Hastings and Impey; Gov. of Corsica, 1794; Bn. Minto, 1797; envoy-extraordinary, Vienna, 1799-1801; Gov.-Gen. of India, 1806-13; raised to earldom 1813. **M., Gilbert John Elliot-Murray-Kynynmond**, 4th E. of (1845-1913), Brit. statesman; Gov.-Gen. Canada, 1898; Viceroy India, 1905; first to appoint Indian representatives on Council, 1907.

**Minton ware**, porcelain and earthenware produced at the factories of Messrs. Minton, Stoke-upon-Trent, which, in the latter half of the 19th cent., occupied a leading place among those of Europe. M.W. is characterised by extensive gilding and painting.

**Minuet**, stately dance for 2 pers. in 3/4 time; in mus. comp. in same time and rhythm, e.g., in suites of Bach and Handel, and in Haydn's symphonies.

**Minuscule**, semi-uncial cursive script, developed in 7th-9th cents. from uncial (q.v.); basis of mod. small Rom. and Gr. letters.

**Minusinsk**, tn., Asiatic Russia, on Riv. Minusinsk; pop., 22,307. Flour milling indust. Many remains of Stone, Bronze and Iron ages.

**Minute**, 1) unit of time,  $\frac{1}{60}$  of hour. 2) (Geom.)  $\frac{1}{60}$  of degree (q.v.).

**Minyans**, anc. Gr. race, orig. from Thessaly; their eponymous hero, Minyas, fndd. Orchomenos (q.v.). **Minyan ware**, pottery of c. 2200 B.C. from Gr. mainland.

**Miocene**, geol. period betw. the Oligocene and Pliocene; the Middle Tertiary period; see GEOLOGICAL FORMATIONS.

**Miosis**, contraction of the pupil, e.g., in morphine poisoning.

**Miquelon**, **Great and Little**, isl. group (83 sq.m.), off S. coast Newfoundland, belonging to France. See ST. PIERRE and MIQUELON.

**Mir**, primitive Russ. vill. community in which land was held in common; largely broken up by Stolypin's legis. after 1906.

**Mira**, variable star,  $\alpha$  in constell. Cetus; varies from 2nd to 10th. magn.; see PL. ASTRONOMY, S.C.H., H.

**Mirabeau**, Honoré Gabriel Riqueti, Ct.



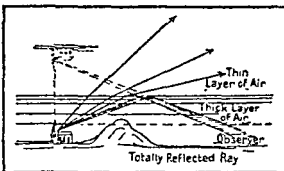
de (1740-91), Fr. statesm.; led defiance of Kg., 1789; Pres. National Assembly, 1791.

**Mirabile dictu** (Lat.), wonderful to relate.

**Mirabilis**: see MARVEL OF PERU.

**Miracle**, supernatural or extraordinary phenomenon or event wh. cannot be explained by known natural laws; esp. one of the marvellous acts of Christ, or of the Apostles and Saints. **M. plays**, mediaeval relig. plays fndd. on lives of saints; never very pop. in Eng.; see MYSTERIES.

**Mirage**, appearance of one or more reflected pictures of distant objects, caused by refraction at the boundary betw. air layers of unequal density arising from unequal air temperatures. M. giving illusory image of distant objects is known as *fata Morgana*.



Mirage

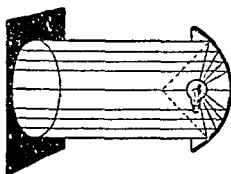
**Mirandola**, Giovanni Pico della (1463-94), Ital. philosopher and scholar; drew up list of 900 questions in theolog. and philos. for public debate, wh. were forbidden by the Pope; 1st to seek proof of Christian mysteries in the Kabbalah; planned a great work agnst. enemies of the Church; pub. *Heptaplus*, a mystical setting forth of the Creation, c. 1490.

**Mirdites**, the most important tribe of Albania, occupying territory to the S.E. of Scutari; R.C. in religion; for long maintained their independence of Turkey. In 1921, Yugoslavia sponsored the proclamation of a Mirdite republic, but this received no other support.

**Miriam**, (O.T.) sister of Moses and Aaron. **Song of M.**, triumphal song after crossing of the Red Sea (Ex. xv, 21).

**Mirror**, light-reflecting surface, gives virtual image. **Polished metal m.**, metal coating on glass, or totally reflecting surface.

**Concave mirror**, reflecting surface, usu. glass silvered, spherical or (better) parabolic in shape. **Focus**, point at wh. a parallel beam of rays is concentrated; halfway between centre of spherical surface and point where ray passing thr. former strikes latter. Used as *reflector* (q.v.) for searchlights, projectors, etc. **Mangin concave mirror**, glass concave mirror silvered on back, *spherical aberration* (q.v.) corrected by giving front surface of glass greater curvature than back.



Concave Mirror



Mirabeau

**Miscellanea** (Lat., mixed); writings dealing with various subjects; random paragraphs in a newspaper.

**Misdemeanour**, offence less heinous than felony, e.g., perjury, battery, conspiracy, crim. libel.

**Mise en scène** (Fr.), stage-setting of a play; metaphorically applied to circumstances and conditions of an event in real life.

**Miseno** (anc., **Misenum**), cape at NW entrance of Gulf of Naples.

**Miserere**, 1) the 51st Psalm, or its setting. 2) Lamentation, call for mercy. 3) (Archit.) Seat in the stalls of Gothic churches made to turn back and having a small ledge or bracket on under side; designed to support occupants of stalls when standing during the recital of Holy Office; often richly carved.

**Misericord**, 1) room in monastery where monks might take special food as an indulgence. 2) Same as MISERERE 3) (q.v.). 3) The mediaev. dagger for piercing joints of armor and giving *coup de grâce* to fallen knight.

**Mishael**: see SHADRACH.

**Mishna** (Hebr., teaching), the basis of the Talmud (q.v.), containing the polit., civil, and relig. code of the Jews in a summary of earlier rabbinical works; completed c. A.D. 200.

**Miskolcz**, tn., Hungary; pop., 56,682; cap. co. of Borsod-Gömör-Kishont (1,331 sq.m.; pop., 266,410); trade in wine, cere., cattle; flour mills, porcelain works.

**Miss**, abbr. Mississippi.

**Missa** (Lat., from *mittere*, to send), Mass (q.v.); musical setting to which M. is sung. **M. cantata**, sung M. **M. solemnis**, solemn high Mass.

**Missal**, (R.C.Ch.) book containing the service of the Mass for the whole year.

**Missel thrush**, species of large thrush. *Turdus viscivorus*, so called bec. it feeds largely on mistletoe berries.

**Missionaries**, in widest sense; active religious propagandists; esp. those who seek to foreign lands to convert non-Christians and heathens to Christianity. St. Paul, St. Patrick, St. Augustine of Canterbury, and St. Boniface were famous as early Ms., and in later times St. Francis Xavier (India), Matteo Ricci (China), John Eliot (N. Am. Indians) and Moffat, Hannington, and Livingstone (Africa). Since the early 19th cent. **M. societies** have been very active throughout most of the world and have been instrumental in reducing to writing many African, Polynesian, and other languages. Most of the Churches—R.C., Orthodox, Protestant, and Nonconformist—now have their own organisations for work in the mission-field.

**Mississippi**, 1) riv., U.S.A., 2,486 m. (with Missouri, 4,221 m.); rises Minnesota and flows into Gulf of Mexico; drainage basin c. 1,256,950 sq.m.; tribs. Missouri, Arkansas,

ed R., Wisconsin, Ohio; navig. by ocean-  
ing steamers as far as New Orleans. 2)  
"Eagle," "Magnolia," "Bayou"), State,  
S.A., on Gulf of Mexico, 46,865 sq.m.;  
pop., 1,900,000 (60% Negro); sub-trop-  
imate; cotton, maize, sugar. Cap., Jack-  
son.

**Mississippi Scheme** (Law's Bubble),  
rejected in Paris by John Law, 1716. Its  
professed object was to pay off Fr. Nat. Debt  
by issue of paper money. A bank of issue  
was establd. and monopoly of trade in Can-  
ada and the Mississippi granted. Project  
failed (1720) and thousands were ruined.

**Missolonghi, Mesolonghi**, cap. prov.  
Aeolian and Aetolia, Greece, on Gulf of  
Patras; pop., 9,270. Cenotaph to Byron  
d. here 1824).

**Missouri**, 1) Riv. trib. (2,945 m.) of  
Mississippi Riv., from Rocky Mtns.; junctn.  
St. Charles. 2) State, U.S.A., on Lower  
Mississippi; 69,420 sq.m.; pop., 3,400,000;  
prairie, wheat, and maize; cattle-breeding,  
coal-mining; cap., Jefferson.

**Missouri Pacific Lines**, U.S.A., railroad  
system operating in Missouri, States south-  
ward, Texas and Colorado; 7,451 miles.

**Mist**, visible condensed water-vapour  
lying on or close to ground, less dense  
than fog (q.v.). **Scotch m.**, heavy, wetting  
drizzle.

**Mistletoe**, *Viscum*, parasitic plant wh.  
grows only on other plants and roots itself  
in the growing wood; common  
English M., *V. album*, has dull  
leathery leaves and white berries;  
often found on apple trees, rarely  
on the oak; formerly object of  
superstitious reverence of  
Druids, and a belief in its extraor-  
dinary medic. properties still survives to some  
extent in folk med. Now, however, princ.  
assctd. with pop. Christmas ceremony of  
"kissing under the mistletoe."



Mistletoe

**Mistra**, mediaeval city (fndd. 1248),  
Peloponnesus, Greece, 3 m. W. of Sparta.  
Ruins of Byz. churches.

**Mistral**, Frédéric (1830-1914), Fr. Pro-  
vençal poet; co-fndr. of the *Félibriges*, 1854;  
leader of Provençal literary renaissance;  
*Miréio*, 1859; Nobel Prize (Lit.), 1904.

**Mistral**, very cold, dry N.W. wind on  
Mediterran. coast of France, esp. along vall.  
of Rhône.

**Mitcham**, urb. dist., Surrey, Eng., 8 m.  
S. London; lavender growing; fair; pop.,  
56,900.

**Mitchel Field**, aerodrome, Long Is.,  
U.S.A.

**Mitchell**, Sir Peter Chalmers (1864- ),  
Brit. zoologist; sec. to Zoological Society of  
London, 1903-; important researches into  
sleeping sickness; *Biological Problems of To-  
day*, 1896; *Nature of Man*, 1904; *Childhood*

*of Animals*, 1912; *Evolution and the War*,  
1915.

**Mite**, 1) coin of very small size and value,  
orig. Flemish; in pop. usage a half-farthing;  
hence, any small thing or person. 2) (Zool.)  
Group of minute insects which, with ticks,  
form the group *Acarina*; parasites of mam-  
mals and birds; some burrow beneath the  
skin, causing mange and sheep scab; larval  
harvest mites cause great irritation to man  
in the autumn. The *red spider* is injurious to  
plants.

**Mitford**, Mary Russell (1787-1855), Eng.  
author; *Our Village*, sketches pubd. 1812-82.

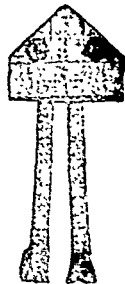
**Mithras**, an Iranian sun-god, represented  
in the form of a bull. His worship had many  
points of similarity to Christianity, of wh.,  
in the 2nd and 3rd cents., it was a serious  
rival.

**Mithridates VI**, the Great (132-63 B.C.),  
Kg. of Pontus, 111 B.C.; opposed Rome in  
Asia Minor; deftd. by Lucullus, 69 B.C.

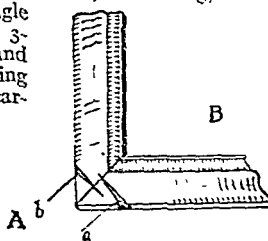
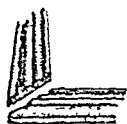
**Mitrailleuse** (Fr. machine-gun), early  
many-barrelled weapon firing  
rifle ammun., for bursts of fire  
at short ranges; used by the  
Fr. in the War of 1870.

**Mitral valve**, (anat.) bicus-  
pid valve of heart betw. left  
auricle and left ventricle. **M.**  
**murmur**, sound heard through  
stethoscope, due to some ab-  
normality of M.V., often a  
sequel to acute rheumatic fever.

**Mitre**, 1) tall ornamental  
cap ending in 2 peaks, worn  
by: a) Ch. dignitaries, e.g.,  
popes, abps., etc.; also former-  
ly b) by Jewish high priests; c) inhabi-  
tants of Asia Minor. 2) In sewing, knit-  
ting, to form angle  
by cutting out 3-  
cornered strip and  
joining resulting  
edges; 3) in car-



Mitre



Mitre; Carpentry

A, pieces to be joined; B, after mitring  
pantry, bookbinding, etc., to join squarely  
at right angles.

**Mizen-mast**, aftermost mast of a three-  
masted ship, or of a two-masted vessel, as a  
yaw, where the fore-mast is the greater of the  
two.

**Mizraim**, Bibl. name for Egypt.

**Mile.**, abbr. mademoiselle, miss.

**MM.**, abbr. *Messieurs* (Fr.), gentlemen.

**mm.**, abbr. millimetre; **mm<sup>2</sup>**, square  
millimetre; **mm<sup>3</sup>**, cubic millimetre.

**Mme.**, abbr. *madame*, Mrs.

**Mn**, (chem.) symbol of manganese.

**Mnemonics**, system of rules, methods, precepts, etc., for helping or improving the memory.

**Mnemosyne** (Gr. memory), mother of the Muses.

**Mo**, (chem.) symbol of molybdenum.

**Mo.**, abbr. Missouri.

**Moa**, extinct ostrich-like giant bird of New Zealand.

**Moabites**, (O.T.)

Semitic people frequently at war with

Israel and Judah. **M. Stone**, slab of black basalt with inscription in Hebrew-Phoenician, oldest record of Semitic alphabet (c. 9th cent. B.C.); discvd. 1868, at Dhibân, in S. Palestine, S.W. of the Dead Sea; now in the Louvre.

**Moallakat**, collectn. of old Arab. poems, 6th cent. A.D.

**Moat**, deep trench round ramparts of fortified place.

**Mobile**, largest tn. Alabama, U.S.A., at mth. of Mobile Riv. on Gulf of Mexico; pop., 70,000; lumber, cotton.

**Mobilisation**, conversion of an army from peace to war strength by calling out reserves.

**Moccasin**, 1) soft shoe of hide, worn by N. Amer. Indians, gen. embr. with beads. 2) (Zool.) Venomous water-snake (*Ancistrodon*) of Southern United States. 3) (Bot.) Name in U.S.A. for lady's slipper (*Cypripedium*).

**Mocha**: see МОКHA. **M. stone**, chalcedony (*q.v.*), moss-agate.

**Mock hare**, minced meat mixed with egg and bread and roasted. **M. turtle soup**, broth made of calf's head, port wine, and condiments.

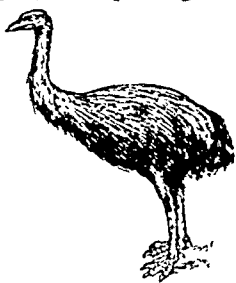
**Mocking bird**, small Amer. bird of the family *Mimidae*, remarkable for its song and power of mimicry of notes of other birds.

**Modality**, of a proposition concerns the degree of its certainty, e.g.: *A is B* (assertory); *A may be B* (problematic); *A must be B* (necessary).

**Modder**, riv. (175 m.), Orange Free State and Cape Prov., S. Africa, l. trib. of the Vaal.

**Battle of M. Riv.**, 11 Dec., 1899, unsuccessful Brit. attack on Boer position.

**Mode**, (statist.) value of a graded quantity in a statistical group (of height, temperature, or some other measurable quantity) at wh. the numbers registered are most numerous. Usually incapable of exact math. computation. Used in cases where there is predominant type, e.g., shoe manuf. about to produce a standard-size shoe would probably



Moa

use the mode of a no. of measurements rather than arithmetic mean, the modal-shoe fitting large, and shoe based on A.M. a much smaller number.

**Modena**, tn., Emilia, It.; pop., 92,000, univ., archiepisc. see; cap. of prov. Modena (1,000 sq.m.; pop., 396,000).

**Moderations** ("Mods."), intermediate exam. for B.A. degree at Oxford Univ.

**Moderato**, (mus.) restrained; **allegro m.**, moderately lively.

**Moderator**, name given to: 1) (academ.) certain examiners and officers of the univs. of Oxford and Cambridge, and to candidates at Dublin Univ. for honours degree of B.A.; 2) (eccles.) the presiding officer at the General Assembly of the Ch. of Scotland.

**Modernism**, movement to reconcile modern scientific thought and the ancient doctrines, etc., of R.C. Ch.; the Abbé Loisy and Fr. Tyrrell prominent representatives of M.; condemned by an encyclical of Pius X in 1907.

**Modica**, tn., prov. Syracuse, S.E. Sicily; pop., 59,000.

**Modulation**, (mus.) inflexion. **Modulator**, chart showing relations of tones and scales, esp. Curwen's Tonic Sol-fa M.

**Modulus**, (phys.) former name for physical constant in formula. Now used of Young's *M*. of elasticity: If bar of length *L* and sectional area *A* increases to *L + l* when subjected to force *P*, and *e* is Young's *M*. for the material, then  $l = LP \div Ae$ .

**Modus** (Lat.), manner, way. **M. operandi**, method of working. **M. vivendi**, method of living; temporary agreement pending final arrangement.

**Moerae**, anc. goddesses of destiny; see FATES.

**Moewe**, name of sev. Ger. warships. Auxil. cruiser *M*. repeatedly broke through Eng. blockade in World War, mined area W. of Scapa Flow, 1916; sank 27 merchant ships in Atlantic, 1917.

**Mofettes**, carbonic acid springs in volcanic areas; see FUMAROLE.

**Moffat**, Robert (1795-1883), Scot. Congregationalist missionary to Africa; settled at Kuruman, 1820-70; transl. Bible and *Pilgrim's Progress* into Sechwana; father-in-law of David Livingstone.

**Moffat**, inland spa, Dumfriessh. Scot.; pop., 2,000.

**Mogadishu**, port, cap. Ital. Somaliland; pop., 37,000; cotton export.

**Mogador**, seapt. and trading tn. on Atlantic coast, Fr. Morocco; pop., 18,400 (4,000 Europeans).

**Mogul Empire**, name given to the Mahomedan Emp. in India, fndd. by Baber (*q.v.*); see also GREAT MOGUL.

**Mohair**, 1) fine silky hair of Angora goat; 2) fine camlet (*q.v.*) cloth made from this; 3)

imitatn. made of mixture of wool and cotton.

**Mohammed** (c. 570-632), Arab. trader of Mecca; the Prophet and fnder. of Islam (salvation), revealing its doctrines in the Koran, *q.v.*; date of his flight from Mecca to Medina A.D. 622, marks beginning of Moham. Era. **M. Ali** (1769-1849), viceroy of Egy.; sent to help Brit. in expelling Fr. from Egy., 1799; Gov. of Egy., 1805; responsible for massacre of Mamelukes, 1811; suppressed Wahabi revolt, Arabia, 1818; conq. Nubia, Sennaar and Kordofan, 1820-22; invaded Syria, 1830; compelled to relinquish Syria by European Powers, 1841; fndd. schools and colleges; introd. Europ. manufactures; protected his Christian subjects.

**Mohammedan calendar**, measurement of time reckoned from the era of the Hejira (16 July, A.D. 622) and used in all Moslem countries. The year consists of 12 lunar months, with no compensating intercalation; so that it retrogresses through the entire tropical year in the course of every  $32\frac{1}{2}$  years. The names of the months, with number of days in each, are: Muharram (30), Saphar (29), Rabia 1 (30), Rabia 2 (29), Jomada 1 (30), Jomada 2 (29), Rajab (30), Shaaban (29), Ramadan (30), Shawwal (29), Dulkanada (30), Dulheggia (29; 30 in "Kabisah" years).

**M. religion:** *see* ISLAM.

**Mohawks**, tribe of N. Amer. Indians; *see* INDIANS.

**Mohicans**, N. Amer. Ind. tribes formerly round N.Y. and Conn.; now only remnants.

**Mohur**, Anglo-Indian gold coin, worth c. 15 rupees (*q.v.*); current until 1899.

**Moidore**, former Portug. gold coin, worth 15 rupees or c. 27s. (\$6.50).

**Moiré**, finish given to silk or cotton by damping and pressing in such a manner as to give characteristic wavy appearance.

**Moiseiwitch**, Benno, (1890- ), pianist, b. at Odessa; settled in Eng., 1908.

**Moissan**, Henri (1852-1907), Fr. chemist; prepared artificial diamonds; Nobel Prize (Chem.), 1906.

**Moji**, port, N. Kyushu, Japan, on Shimonesaki Str.; pop., 103,100; naval base; exports coal.

**Mokha**, **Mocha**, **Makha**, port, Yemen, Arabia, on Red Sea; pop., 5,000; coffee plantations (mocha).

**Mol:** *see* GRAM MOLECULE.

**Molars:** *see* TEETH.

**Molasses**, thick, non-crystalline, dark syrup, wh. drains from raw sugar during manuf.; thickest kind of treacle (*q.v.*).

**Mold**, co. tn., Flintsh., N. Wales; pop., 5,100.

**Moldau**, 1) riv.; *see* VLTAVA. 2) Prov.; *see* MOLDAVIA.

**Moldavia**, 1) principality of the Balkans,

united in 1861 with Walachia to form Rumania (*q.v.*), now a prov., N. Rumania (14,700 sq.m.), betw. rvs. Siret (Sereth) and Prut (Pruth); pop., 2,237,500; corn, cattle; cap., *Jassy*. 2) Autonomous repub., Ukraine, U.S.S.R., on left bank Riv. Dniester, adjoining Bessarabia (Rumania); 3,200 sq.m.; pop., 615,250; admin. centre, *Bircular*.

**Mole**, 1) small, burrowing, insectivorous mammal of genus *Talpa*, widely distribtd. (Gt. Brit. to Japan).

Subterranean in habit, burrowing thr. soil in search of insects and worms; excavates dwelling chamber connected with its "runs" underground, earth thrown out forming a *mole-hill*.

2) Breakwater projecting into sea, river, or lake as protection agst. action of waves, silting up of sand, etc.

**M.-cricket**, burrowing orthopterous insect allied to true cricket (*q.v.*).

**M.-rat**, burrowing rat, genus *Spalax*, similar in appearance and habits to mole (*q.v.*). **M.-skin**, 1) skin of mole, dressed and used as fur; 2) kind of cotton fustian, with thick pile, shaved before dyeing; 3) *pl.*, trousers made of this variety of fustian.

**Molecule**, smallest indivisible quantity of a chem. compound; made up of atoms; many elements form molecules instead of atoms, *e.g.*, phosphorus, a molecule of which has 4 atoms. Metals have one atom, gases mostly two. **Molecular weight**, (phys.) sum of the at. wts. of component elements of a compound, *e.g.*, M.W. of common salt,  $\text{NaCl} = \text{Na (at. wt. 23.00)} + \text{Cl (at. wt. 35.46)} = 58.46$ .

**Molesworth**, Sir Guilford Lindsey (1828-1923), Eng. engineer and economist; consulting engineer to Govt. of India, 1871; took part in Afghan and Burmese wars; pres. Inst. of Civil Engineers, 1904; pubd. many engineering textbooks; *Economic and Fiscal Facts and Fallacies*, 1902, etc.

**Molière** (1622-73), pseudon. of Jean-Baptiste Poquelin, Fr. comedian and playwright; *Le Misanthrope*, 1666; *Le Bourgeois Gentilhomme*, 1670; *Le Malade imaginaire*, in which he was playing when seized with mortal illness.

**Molina**, Tirso de (c. 1570-1648), pseudon. of Gabriel Tellez, Span. dramat.: *Don Juan*.

**Mollison**, James A. (1905- ), Brit. airman, m. Amy Johnson (*q.v.*), 1932; record solo flights Australia-England, 1931; England-S. Africa, 1932 (4 days, 17½ hrs.); Ireland-New Brunswick, Aug., 1932 (30½ hrs.); England-S. America (Port Natal, Brazil), 1933, (3 days, 10 hrs., 8 min.).



Mole



Molière

**Molluscs**, order of Invertebrates consisting of soft-bodied animals, usu. having a hard shell into which they can more or less completely retract. Includes the garden snail and slug, the whelks, cowries, mussels, oysters, clams, octopus, and cuttlefish.

**Molnár**, Franz (1878-

), Hung. playwright:

*Liliom*, 1910.

**Moloch**,

**Molech**,

(O.T.) sun god of Ammonites and all Canaanitish and Semitic tribes representg. male generative principle; worshipped with human sacrifice, esp. the immolation of children; Israelites followed this cult at different periods.

**Molossus**, met. foot; - - -; (three long syllables).

**Moltke**, **Helmuth Carl**, Ct. von (1800-91), Pruss. field marshal, scholar, and courtier; defeated Austr. at Königgrätz, 1866, chf. of gen. staff in Franco-Pruss. War, 1870-71. His nephew, **Helmuth Johannes von M.**, (1848-1916), Ger. gen.; chf. of gen. staff, 1906-14; battle of Marne.

**Molto**, (mus.) extremely (Ital.).

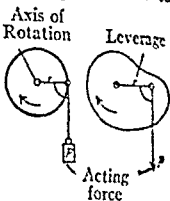
**Moluccas**, **Spice Isls.** (200,000 sq.m.), group, belonging to Holland, in Malay Archipelago betw. Celebes and New Guinea; largest, Halmahera in N. and Ceram (Serang) in S.; mountainous, volcanic; spices, sago, pearl-fisheries. Admin. shared by residencies of Amboina and Ternate (*qq.v.*), pop. c. 400,000; cap., *Amboina*. Discovd. by Portug., 1512; Dut. since 17th century.

**Molybdenite**, an ore, molybdenum disulfide, resembling graphite.

**Molybdenum**, chem. element, sym. Mo; at. wt. 96.0, sp. gr. 10.0, m.p. 2500°; occurs in combination with oxygen, lead (*wulfenite*) and iron (*molybdite*); greyish white metal added (1%) to high-speed steels; also used as blue pigment for pottery.

**Mombasa**, chief port and largest tn., Kenya; population, 43,300 (1,100 Europeans).

**Moment**, 1) (mech.) of a force about an axis: product of force into perpendicular to axis and to direction of force. **M. of Inertia**, measure of resistance of body rotating about an axis to change in its rate of rotation; corr. to inertia of body moving in straight line. For any body it is sum of mass of every particle  $\times$  square



Moment of Rotation of distance from axis;  $\Sigma mr^2$ . 2) (Math.) Of a body with regard to any line or plane is the sum of products of each element of mass of body by its difference from the plane. This sometimes called 1st M. The 2nd M., 3rd M. . . . of plane or solid figure found in same way by multiplying each element by square, cube . . . of distance from line or plane, and summing. If 1st, 2nd, 3rd Ms. be divided by total volume, area or length of figure, we obtain mean distance, mean square of distance, mean cube of distance of figure from line or plane. Mean dist. of plane figure from line in its plane, or of any fig. from plane is, therefore, same as distance of centroid of figure from line or plane. In *Stats.*, M.D., M.S. of D., M.C. of D. sometimes referred to as 1st, 2nd, and 3rd Ms. These play very important part in comparison of frequency distributions (Curve Fitting). Prof. K. Pearson has classified unimodal frequency distribns. into several types and by comparison of 1st 4 Ms. it is possible to assign type to which particular distribn. belongs.



Mommsen

**Mommsen**, Theodor (1817-1903), Ger. jurist and histor.: *Roman History*, 1854-56; *Roman Law*, 1871-76; Nobel Prize (Lit.), 1902.

**Momus**, Gr. evil spirit of censure and mockery.

**Monaco**, independent principality, Côte d'Azur, Fr. Riviera; 7 sq.m.; pop., 25,000; mild climate (Jan., 50°F.); trop. fruits; perfumes; divided into communes of *Monaco*, *Le Condamine*, *Monte Carlo*.

**Monad**, term used by Leibnitz for simple, self-contained unities or spiritual and active atoms, each representg. the universe from its own point of view, and out of which the world is built up in an inter-related harmony pre-established by God.

**Monaghan**, inland co. in prov. of Ulster,



I.F.S.; area, 499 sq.m.; pop., 65,130. Surface hilly; many bogs and lakes. *Monaghan*, cap. of co.; pop., 4,300; linen manuf.; flax and grain trade.

**Mona Lisa (La Gioconda)**, famous portrait of wife of Francesco del Giocondo, by Leonardo da Vinci (Louvre, Paris).

**Monarchy**, State possessing titular head (monarch), esp. if hered. Classified acc. to powers of monarch, e.g., *absolute* in anc. world and E., *constitutional* in mod. Eur. In 19th cent. tendency twds. constitutional; in 20th cent. number of monarchies much reduced.

**Monash**, Sir John (1865-1931), Austral. sold.; entd. army, 1887; in World War served at Gallipoli, and in France was in command of Austral. forces from 1 June, 1918; pub., *The Australian Victories in France*, 1920.

**Monasticism**, system of life based on relig. seclusion and asceticism; practised in the East from remote periods (Brahmans, Buddhists, etc.), and adopted thence by Christians. **Monastic vows**, vows of Poverty, Chastity, and Obedience taken by a candidate before being finally received into a relig. order.

**Monastir**: see BITOLJ.

**Monazite**, natural cerium-lanthanum phosphate with traces of other constituents; used for making incandescent gas mantles, also for extraction of radium.

**Mond, Alfred Moritz**: see MELCHETT. **M., Ludwig**, (1839-1909), father of Visct. Melchett, Brit. chemist; inv. of **M. gas**, combustible gas cntg. carbon monoxide, nitrogen, and some carbon dioxide formed by passing air and steam over heated coal; fndd. Davy-Faraday Research Laboratory.

**Mondamine**, finely ground rice flour.

**Monday**, 2nd day of week, named after moon.

**Monegasques**, inhabs. of Monaco.

**Monel metal**, alloy of nickel and copper obt'd. by reduction of Sudbury mixed ores; contains 68-72% nickel,  $\frac{1}{2}$ -1 $\frac{1}{2}$ % iron, and remainder copper; nearly as strong as steel, but very resistant to chemical corrosion; used largely in chemical engineering.

**Monet**, Claude (1840-1926), Fr. painter; one of the fndrs. of impressionist painting; *Le Bassin aux Nymphéas*, 1900.

**Moneta**, epithet for Juno, in whose temple on Rom. Capitol was a mint; hence the word *money*.

**Monetary union**, agreemt. betw. States to legalise each other's money as medium of reciprocal payment on fixed scalé. **Latin m.u.** betw. Fr., Belg., Switz., Gr., and It.



Mona Lisa  
after Leonardo

**Scandinavian m.u.**, sim. agreemt. betw. Scand. countries. Nullified by post-war inflation (q.v.)

**Money**, general medium of payment; may be either intrinsically valuable (gold, silver, etc.) or valueless (notes, etc.); standard of value of all commodities and medium of exchange; see GRESHAM'S LAW. **Quantity theory of m.**, important econ. doctrine that gen. prices of commodities vary in exact proport. to quantity of M., amt. of production remaining equal. In modern conditions theory is subject to many qualifications and has given rise to much controversy. The most important qualifications are: that involved in the rate at wh. the money in circulation is used—or its *velocity* of turnover; and the inclusion in the term "money" of bank credit and other media of exchange; difficulty also arises in determining an accurate measure of general price level (see INDEX NUMBERS) and of measure of production; most common modern fallacy connected with the theory is belief that by mere increase in media of exchange, a rise in price level can be brought abt.; this is not the case, because incrsd. quantity will not affect prices unless used to purchase goods, its use depending on persons who may prefer to save it. Velocity of turnover depends on many factors; it influences, to a large extent, rise in prices in countries where inflation has occurred, e.g., post-war Germany. **M.-lender**, a person or firm carrying on the business of lending M. with the exception of banks, friendly societies (q.v.), insurance companies. Acts of 1900, 1911, and 1927 strictly regulate conditions under wh. money-lenders may do business; e.g., they may not solicit business by advertisement addressed to private persons; they may not charge compound interest; rate of interest is limited to 48%, etc. **M. market**, market for short-term loans, bills of exchange, etc., as opposed to *capital market*, for long-term investments, securities, etc. **M. rates**, interest rates expressed as annual per cent. of amts. loaned, charged on loans of various kinds made by banks and finan. houses. Rates for loans made vary accdg. to periods and conditions, and fluctuate from day to day; see BANKING, DISCOUNT MARKET, BANK RATE. Money is said to be *cheap* or *easy* when it can be borrowed at low interest rates, and *dear* when interest rates are high. **M. wort**, creeping herb with small yellow flowers; known as *creeping Jenny*.

**Monge**, Gaspard (1746-1818), Fr. mathematician; inventor of descriptive geometry.

**Mongol**, race, c. 500 millions, chfly. in Asia; characteristics: yellow skin, sleek, black hair, narrow, round head, receding forehead, prominent cheek bones. **Mongol fold**, pendent fold in skin over upper eyelid, hence "almond eyes." **Mongol patch**, small blue-

black mark on skin of newly born children above loins. **Mongolism**, a form of idiocy; physical characteristics resemble those of Mongols. **Mongoloid**, a) one resembling a Mongol; b) one affected by Mongolism.

**Mongolia**, plateau, centr. Asia, 2,700-4,500 ft. abv. sea-lvl.; bounded by China on S. and S.W., by Siberia on N. and N.W., and by Manchuria on W. Area: estimates vary betw. 1,367,000 and 1,875,000 sq.m. Mountainous in N. and N.W. (*Altai, Sayansk*) and in E. (*Khingan Mtns.*); Gobi Desert forms a depression extending S.W. to N.E.; few rivs. (chf. riv., Selenga); salt lakes without outlets; Continental climate (extremes of heat and cold); rainfall slight; pop., c. 1,800,000 (Lama-Buddhists); 30% of male pop. priests. Transport primitive, though motor traffic is developing and rlys. are projected. Divided into two distinct regions: **Inner M.**, in S. and S.E., is a dependency of China outside the Great Wall; watered by upper Hwang-ho; inhab. by Chinese farmers and Mongolian herdsman. Plateau of Ordos in S. centre. **Outer M.**, in N., independent republic (the Mongolian People's Revolutionary Government) since 1924, in close relations with U.S.S.R., but nominally under suzerainty of China. Pop., 670,000 (Kalkha Mongols); exports woollens, hides and skins, gold; cap., *Ulan Bator Hoto* (Urga). Broke away from China in 1912 and became, till 1924, an independent theocratic State under Khutukhtu, or "Living Buddha." HISTORY: In 13th cent., M., under Jenghiz Khan, ruled a vast emp. extending from China to Russia; by 1241 the Mongolians had pressed as far W. as Silesia, Poland, and Hungary (battles of Liegnitz and Szydlow). Timur (Tamerlane) conquered great part of India by end of 13th century. Decay of Mongol Emp. began with disintegration of the Golden Horde in 16th cent.; in 17th cent. the E. Mongols accepted Chinese rule; and the former Asiatic terr. of the Mongols was eventually divided betw. China and Russia. Scientific expeditions in the Gobi Desert (1922-25) have resulted in paleontological and archaeological discoveries of the first importance. Of popular interest are the discoveries of dinosaurs' eggs and of parts of the skeleton of the giant baluchitherium.

**Mongolian**: see LANGUAGE SURVEY, *Altaic*.

**Mongoose**, *Ichnemumon*, small, active carnivore, found in Africa and the Orient as far as the Philippines. Deadly foe of rats and snakes, hence often kept as semi-domesticated pet in the tropics. Body long and  
-col-like; legs short; tail fairly long; small



Mongoose

head with short, rounded ears and sharply pointed muzzle; coarse, loose fur on body and tail.

**Mongrel**, name given to animals of mixed, uncertain breed, esp. to dogs; hence, term of contempt applied to human beings.

**Monica**, St. (332-387), mother of St. Augustine of Hippo.

**Monier**, Joseph (1823-1906), Fr. inventor of method of re-inforcing concrete with steel rods.

**Monism**, theory wh. explains the world as the manifestation of a single principle, whether spiritual or material; e.g., idealism, materialism, naturalism. Ant: *dualism* and *pluralism*.

**Monitor**, shallow-draught gun-boat. **M.**, or **dragon lizard**, predatory giant lizard of Africa, S. Asia, and Australia, attaining 8 ft. in length; carnivorous, terrestrial in habit, with the exception of a Papuan species. See KOMODO DRAGON.



Monitor Lizard

**Monk**, Geo.: see ALBEMARLE.

**Monk** (from Gr. *monos*, alone), member of a relig. order, living under vows of poverty, chastity, and obedience; common to Christianity, Buddhism, and the Senussi Moslems.

**Monkey**, popular generic name for smaller members of the order *Primates* (q.v.). **M-flower**, *Mimulus*, Amer. plant with red or yellow flowers. **M.-puzzle**: see ARACARIA. **M.-wrench**, adjustable spanner (q.v.).

**Mon-Khmer**: see LANGUAGE SURVEY, *Austro-Asiatic Languages*.

**Monk's-hood**, *Aconitum napellus*, wolf's bane; very poisonous plant, dark blue flowers. See ACONITE.

**Monmouth**, Jas. Scott (or Fitzroy), Duke of (1649-85); illeg. son of Chas. II; command-in-chief, 1674; banished and deprived of offices, 1679; arrested for conspiracy, 1682, but released; proclmd. kg. by Protestants, June, 1685; destd. at Sedgmoor, July 5th; exec. Tower of London, July 15th.

**Monmouth**, 1) co. tn., Monmouthsh., Eng., on Riv. Wye; pop., 4,730; castle; 6 m. S.W. is Raglan Castle. 2) City, Illinois, U.S.A.; coll.; pop., 9,000.



Monmouth

**Monmouthshire**, marit. co., W. Eng., administratively included in Wales; area, 539 sq.m.; pop., 434,821; drained by rivs. Usk and Wye; undulating in E. (agric. grazing), mountainous in W. (ironworks and collieries), *Sugar Loaf*, (1,955 ft.). Largest tn., Newport; co. tn., *Monmouth*.

**Mono-** (Gr.), prefix, "one," "single."  
**Monochord**, single-stringed mus. inst. having adjustable bridge for altering pitch, used in Mid. Ages.

**Monochromatic**, of one colour only.

**Monochromator**, apparatus supplying light of one colour from a mixed source; similar to spectroscope (*q.v.*).

**Monochrome**, painting in tints of only one colour.

**Monoclinic**, (min.) *see* CRYSTALS.

**Monocotyledon**, (bot.) large class of flowering plants having a single *cotyledon* or seed-leaf.

**Monoecia**, (bot.) class of plants having stamens and pistils on sep. flowers growing on one stem. *Cf.* DIOECIA.

**Monogamy**, princ. of marriage with one spouse. In zool., habit of animals having single mate. *Ant.: polygamy.*

**Monogram**, combinatn. of initials forming a cipher representg. a name, socy., etc., often artistically executed.

**Monograph**, detailed treatise on a single subject.

**Monolith**, sculpt. worked from single block, *e.g.*, obelisk (*q.v.*).

**Monologue**, play or poem purporting to be utterance of one pers. only; sometimes used in sense of soliloquy (*q.v.*).

**Monomania**, mental derangemt. in wh. a single delusion predominates.

**Monophysite** (Gr., "one nature"), or *Eutychian*, one who maintains that the human and divine natures in Christ are united in one single nature, part human and part divine. The doctrine, condemned by councils at Constantinople (448) and Chalcedon (451), was first promulgated in 446 by Eutyches, the heresiarch of Constantinople. It is still an article of faith in the Armenian, Coptic, and Jacobite churches.

**Monoplane**, aeroplane (*q.v.*) with one main supporting surface.

**Monopoly**, orig. exclus. control over a partic. article reserved to Crown or granted by sovereign to an individual. In mod. econ., control of market for a commodity by one person or a commerc. group (*e.g.*, trust).

**Govt. m.**, exercised in some countries over spirits, tobacco, etc., to raise revenue; also of organisations such as rlys., post, telephone, etc. Partial M. in indus. essential to community; govt. exercises control by fixing rates of int., prices (*e.g.*, supply of gas and electricity). Granting of patents is in a sense granting of monopoly.

**Monorail**, (rly.) car or train of cars running on single rail, usu. overhead, from wh. cars are suspended. In **Brennan m.**, cars travel on single rail on ground, tendency to fall over being counteracted by gyrostat (*q.v.*).

**Monothelism**, belief in one God only; *ant.: polytheism (q.v.).*

**Monothelites**, short-lived 7th-cent. Christian heretical sect that agreed with the Monophysites (*q.v.*) that Christ had only *one* nature, but added the corollary that He must have had only one will.

**Monotype**: *see* TYPE COMPOSING MACHINE.

**Monovalent** (chem.): *see* VALENCY.

**Monreale**, tn. prov. Palermo, Sicily; pop., 22,000; Norman cathed. (12th century).

**Monroe**, James (1758-1831), Amer. statesm.; 5th Pres. of U.S.; **M. Doctrine**, in Amer. politics the doctrine of non-intervention by Eur. Powers in matters relating to Amer. continent. Promulgated by Pres. Monroe, 1823, when there was some ground for suspecting that the Powers in the Holy Alliance (*q.v.*) intended to interfere in Spain. Amer. on behalf of Spain.

**Monrovia**, cap. Negro repub. of Liberia, on Guinea coast; pop., 10,000.

**Mons, Bergen**, cap. Hainaut, Belgium, nr. Fr. frontier; pop., 30,000; centre of Borinage coalfield; cloth trade. **Battle of M.**, 23rd Aug., 1914. *See* WORLD WAR.

**Monsoon**, periodical wind blowing over Indian Ocean at 2 seasons of year; **wet m.**, from S.W., Apr.-Sept.; **dry m.**, from N.E., Oct.-March. Also term applied to rainy season in India.

**Monstera**, climbing plant of trop. Amer., of the arum family; cultivated in hot-houses.

**Monstrance**, receptacle in wh. the consecrated Host is exposed for adoration; carried in procession, esp. on feast of Corpus Christi (*q.v.*).

**Mont**, abbr. Montana.

**Montacute House**, mansion, Somerset, Eng., 4½ m. W. Yeovil, built in form of letter H by John of Padua (archit. of Longleat), c. 1600; sacked by Parliamentarians, 1645, and rebuilt; since 1932 the property of Nat. Trust.

**Montage**, (cine.) process of arranging and assembling portions of film representing single episodes or scenes so as to form a connected whole.

**Montagna**, Bartolommeo (c. 1450-1523), Ital. painter; Vicenza school; prob. trained under Alvise Vivarini; *Madonna and Child*; *SS. John the Baptist, Zeno and Catherine of Alexandria*.

**Montagu, Edwin Samuel** (1879-1924), Brit. politician; M.P., 1906-22; Under-Sec. for India, 1910; Chanc. of Duchy of Lancaster, 1915; Minister of Munitions, 1916; Sec. of State for India, 1917-22; issued *M. Report*, recommending constitutional reforms in India, 1918. **M., Lady Mary Wortley** (1689-1762), Eng. letter writer and traveller; corresponded with Pope, who subseqtly. became her bitter enemy.



Gothic Monstrance



**Montaigne**, Michel de (1533-92), Fr. philosoph. and writer; inventor of essay form.

**Montalembert**, Chas. Forbes de T., Comte de (1810-70), Fr. historian, politician, and orator; *Life of St. Elizabeth of Hungary*, 1836; *The Monks of the West*, 1860-68.

**Montana**, ("Bonanza," "Treasure," "Stub Toe") State, U.S.A.; 146,131 sq.m.; pop., 536,000 (11,000 Indians); crossed by Rocky Mtns. from N.W. to S.E., remaining area occupied by Great Plains; irrigation neces. for agric.; cattle-breeding; second largest copper vein in world. Cap., *Helena*.

**Montanism**, named from Montanus (2nd. cent.), effort to retain or revive liberty of prophesying; came into conflict with orthodox Christianity.

**Montauban**, cap., dépt. Tarn-et-Garonne, France; pop., 27,000; agric., orchards. B.-place of J. Ingres.

**Mont Blanc**, mtn. (15,780 ft.), Fr., on frontier of It. and Switz.; several granite peaks (*aiguilles*); snow-line 9,340 ft.; sevl. mtn. rlys. First ascended 1786 (from Chamonix; *q.v.*).

**M. Cenis**, Alpine pass (6,850 ft.) on Franco-Ital. frontier betw. Cottian and Graian Alps; tunnel (7 $\frac{3}{4}$  m.) W. of pass; motor road and railway. **M. Genève**, mtn. pass (6,080 ft.), Fr. and It., betw. Graian and Cottian Alps. **M.-de-Marsan**, cap. dépt. Landes, Fr.; pop., 12,140. **M. Pelée** (4,430 ft.), active volcano, Martinique Isl., Fr. W. Indies; eruption of 1902 destroyed former isl. cap., St. Pierre.



Mont Blanc

**Mont-de-Piété**: see PAWNBROKING.

**Mont St.-Michel**, fortified rock, N.W. Fr., in Mont St.-M. Bay, off coast dept. Manche; castle and abbey. Cf. ST. MICHAEL'S MOUNT.

**Montcalm**, Louis Jos., Marq. de (1712-59), Fr. gen.; comm. of forces in Canada, 1756; captured Fort Ontario, 1756, and Fort Wm. Hy., 1757; defended Quebec agst. Wolfe, but was there destd. and killed 13 Sept., 1759.

**Monte Carlo**, commune, Monaco (*q.v.*), on Mediterranean; winter resort; casino, a noted gaming centre; pop., 10,800.

**Monte Cassino**, hill nr. Casinum, prov. Caserta, It.; first Benedictine monastery founded (529) by St. Benedict.

**Monte Cristo**, isl. in Mediterranean betw. Corsica and Tuscan coast, 4.2 sq.m., alt. 2100 ft.; made famous by Dumas' novel, *The Count of M. C.*, 1844.

**Montejus**, (chem.) vessel in wh. a liquid chem. product is collected, to be forced to a higher level by application of compressed air.

**Montellius**, Oscar (1843-1921), Swed. archaeol.; *Chronology of the Bronze Age*.

**Montenegro**, **Czernagora**, State, Jugoslavia, in E. *Dinaric Alps*, with a small seaboard on Dalmatian coast (port of Kotor). Interior a barren mountainous plateau; fertile only in the mtn. valls. and low-lying ground round Lake Scutari. Iron and copper mines; cap., *Cetinje*. Indept. of Serbia after battle of Kosovo, 1389; continuously at war with the Turks. Kgdm., 1910. Joined Balkan League, 1912, and took part in First and Second Balkan wars, 1912-13, and (as ally of Serbia) in World War. Part of Jugoslavia, 1918.

**Monte Rosa**, mtn. group on Swiss-Ital. frontier; *Dufourspitze* (15,215 ft.), highest Swiss peak.

**Monterrey**, cap. Nuevo León, Mexico, on Riv. Santa Catalina; silver, gold, copper.

**Battle of M.**, tn. captured from Mexicans by U.S. troops, 1846.

**Montespan**, Françoise, Marquise de (1641-1707), mistress of Louis XIV.

**Montesquieu**, Charles de (Baron de la Bride) (1689-1755), Fr. philosopher and writer: *Lettres Persanes*; *Esprit des Lois*.

**Montessori**, Maria (1869- ), Ital. educationalist; devised *M. Method*. Gov. In-Inspector of Schools in Italy, 1922.

**M. Method**, system of self-education for children, evolved at Rome by Mme Montessori; specially designed equipment of toys, games, etc., is provided, and choice of occupation left largely to child's own initiative.

**Monteverdi**, Claudio (1567-1643), Ital. violinist; conductor and composer; madrigals, church music, operas; introd. arias in opera: *Orfeo*, 1608.

**Montevideo**, cap. of Uruguay, S. Amer., on N. shore La Plata estuary; pop., 481,700; cathed.; univ.; exports: live-stock, chilled and frozen meat, and by-products.

**Montez**, Lola (1818-61), pseudon. of Marie Dolores Gilbert, Brit. dancer; mistress of Ludwig I of Bavaria, and influenced his rule; created Ctess. de Landsfeld; d. in New York.

**Montezuma II** (1466-1520), Aztec Emp. of Mexico; destd. by Cortez.

**Montferrat**, terr., Piedmont, N.W. Italy (dept. of Alessandria and part of dept. of Cuneo); cap., *Casale*.

**Montfort**, Simon de, E. of Leicester (c. 1200-65), Eng. statesm. and soldier; m. Eleanor, sister of Henry III, 1238; Gov. of Gascony, 1248-52; later joined barons and defeated kg. at Lewes, 1264; summoned the parliam. of 1265; killed at battle of Evesham.

**Montgolfier**, **Joseph** (1740-1810), and his bro. **Jacques** (1745-99), Fr. paper makers; invented balloon (Montgolfière) having envelope filled with heated air; first public ascent and first human passenger, 1783.

**Montgomery**, 1) co. tn., Montgomerysh., Wales; pop., 1,000. 2) Cap. Alabama, U.S.A., on Alabama Riv.; pop., 50,000; cotton. **Montgomeryshire**, inland co., centr. Wales; area, 798 sq.m.; pop., 48,500. Picturesque, hilly surface (*Moel Sych*, 2,713 ft.); Lake Vyrnwy; Riv. Severn. Co. tn., *Montgomery*; assize tn., Welshpool.

**Month**, unit of time; **lunar m.**, period betw. two new moons; **sidereal m.**, mean time taken by moon for one circuit among the stars; **calendar m.**, one of 12 divisions of the calendar year, or the interval betw. any day of such a month and the corresponding day of the next month. See names of individual months.

**Monticello**, home of Thomas Jefferson from 1770, on hill 3 m. E. of Charlottesville, Virginia, U.S.A.; now a nat. memorial.

**Montmartre**, arrondissement, Paris, on a height (417 ft.); ch. of Sacré-Coeur. Dist. frequented by tourists.

**Montmorency**, tn., dépt. Seine-et-Oise, France, 10 m. N. of Paris; pop., 7,100; Ermitage (house of Rousseau; museum).

**Montpellier**, cap. Vermont, U.S.A. on Winooski Riv.; pop., 7,850; granite industry.

**Montpellier**, tn., S. France, near Mediterranean, cap. dépt. Hérault; pop., 83,000; cathed.; univ. (1289); museums; trade in brandy, wine, fruit.

**Montreal**, city, Quebec; chf. port and largest tn. in Canada; sit. on Montreal isl., at confluence St. Lawrence and Ottawa rivs.; pop., 1,325,000 (over half Fr. descent);



By courtesy of the High Commissioner for Canada  
Montreal: the Docks

Anglican and R.C. catheds.; McGill Univ. and Univ. of M.; commercial, industrial, banking, and railway centre of Canada; canals; centre grain export and fur trade.

**Montreuil-sous-Bois**, E. suburb of Paris, dépt. Seine, France; pop., 58,500; horticulture (peaches), dyeworks. **Montreuil-sur-Mer**, tn., dépt. Pas-de-Calais, France; pop., 2,500; Brit. G.H.Q. in World War, Mar., 1916 to April, 1919.

**Montreux**, holiday resort (alt. 1,300 ft.), in canton of Vaud, Switzerland, on N. shore,

L. of Geneva; pop., 19,000; Castle of Chillon on lake.

**Montrose**, Marquesses and Dukes of, titles in peerages of Scot. and Gt. Brit.: **James Graham**, 5th E. of Montrose (1612-50), cr. 1st marq., 1644; one of covenanting nobles who met Charles I at Berwick, 1639; later changed sides and deftd. Covenanters at Tippermuir, 1644; won victories over Argyll at Inverlochy, and the Campbells at Kilsyth, 1645; but was deftd. at Philiphaugh in same year. Fled to Norway. Returned to attempt to avenge exec. of Charles I, 1650; deftd., and later betrayed by Macleod of Assynt; hanged at Edinburgh; his s., **James**, 2nd marq. (1631-69), styled *The Good Marquess*; his g.s., **James**, 4th marq. (d. 1742), became Lord High Adm. of Scot., 1705; supptd. union of Eng. and Scot., and Hanoverian successn.; cr. Marq. of Graham and Duke of M., 1707; took part in quelling Jacobite rising, 1715; his s., **David**, was made Earl Graham, 1722 (d. 1731), his bro., **William**, and Duke of M. (1710-90); his s., **James**, 3rd Duke (1755-1836) secured annulment of law forbidding highlanders to wear kilt; his grt.-grnds., **James**, 6th Duke (1878-) is hereditary sheriff of Dumbar-tonshire.

**Montrose**, royal burgh, Angus, Scot.; seapt.; manuf. linen, flax; fisheries; pop., 10,200.

**Montserrat**, 1) mtn. (4,070 ft.), N.E. Spain, prov. Barcelona; monastery at 2,900 feet. 2) One of Brit. Leeward Is.; 32 sq.m.; pop., 12,200; surface mountainous; hot springs; exports limejuice, fruit, cotton; cap., *Plymouth*.

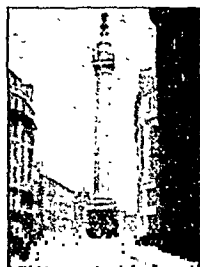
**Monument**, **The**, nr. London Bridge, col. 202 ft. high, by Wren, erected 1671-77, in commem. of the Great Fire (1666).

**Monumenta Germaniae Historica** (M.G.H.), collectn. of all old texts as "sources" for Ger. history; started 1819 by Bn. von Stein; now a State publication.

**Mood**, form of verb expressing mode or The Monument, London manner of action or state of being (active, passive, middle).

**Moody**, Dwight Lyman (1837-99), Amer. relig. revivalist; with I.D. Sankey conducted missionary meetings in U.S.A. and Gt. Brit., 1873-75; 1881-83.

**Moon**, **the**, 1) satellite revolving round the earth once in 27 days, 7 hrs., 43.2 min. (sidereal month); interval betw. 2 full moons 29 days, 12 hrs., 44 mins. (synodic month, i.e. full revolution in relation to stars, not to



sun as seen from moving earth); 49 times smaller than earth; greatest distance from earth 251,947 m. (apogee), least distance 225,719 m. (perigee); rotation round axis occupies same time as revolut. round earth, hence same side of M. always presented to earth, but owing to *libration* (*q.v.*) only 41% of its surface always invisible; non-luminous, receives light from sun and, to less extent, from earth; surface covered with mountains (bright spots), plateaux (dark spots), craters; no atmosphere, hence extreme difference betw. day and night temperatures and impossibility of life on M.; its attraction governs *tides* (*q.v.*). Different phases of the M. due to extent to wh. its illuminated side is directed twds. the earth. 2) or **satellite**, heavenly body whose orbit lies round one of the planets (*q.v.*). Mercury and Venus have no moon; Earth and Neptune, 1 each; Mars, 4; Jupiter, 9; Saturn, 9 or 10; Uranus, 4. **M.-stone**, type of opalescent feldspar (*q.v.*); semi-precious gem used as an ornament. **M.-wort**, (*bot.*) fern bearing leaflets resembling half-moons, *fn.* in temperate and cold regions; formerly credited with magic power of unfastening locks and bolts.

**Moor**, area of waste ground, covered with heather, and marshy or peaty in parts; esp. such ground used as a preserve for grouse, etc.

**Moore, George** (1852-1933), Brit. novelist and critic: *A Mummer's Wife*, 1885; *Esther Waters*, 1894; *Evelyn Innes*, 1898; *The Brook Kerith*, 1916; *Héloïse and Abélard*, 1921. **M., Sir John** (1761-1809), Brit. gen.; served in Corsica, 1793-94; under Sir Ralph Abercromby in W. Indies, 1796, and in Egy., 1801; *lieut. gen.* in Sp., 1808; forced to make rapid retreat in midwinter to Corunna, where, though Eng. was victorious, M. was killed; his death is *commem.* in ode by Chas. Wolfe. **M., Thomas** (1779-1852), Irish poet: *Lalla Rookh*, 1817; *Irish Melodies*, 1808.

**Moorgate**, distr. and thoroughfare on N. border of City of London; site of City gate built 1415, demolished 1761.

**Moorhen**, common water bird, widely spread over Brit. Isls., Eur., Asia, and Africa. Blue-black plumage, with white rump, and red frontal shield on head; long legs and toes; frequents water-meadows and rushy banks of streams and ponds.

**Moorings**, cables, ropes, buoys, etc., by wh. a ship is secured; usu. consist of four anchors arranged at corners of square, with chain cable leading to centre, to which is joined single chain or hawser. To free end of this is attached a *mooring buoy*, to which the ship makes fast. **M. mast**, steel structure, c. 200 ft. high, for securing airships; fitted with a receiving arm in which a cone on bow of the airship engages, providing free movement.

inhabts. of Morocco, mixed Arabs

and Berbers; name for (highly cultured) Arabs who invaded Spain, 8th cent. A.D.

**Moose**, N. American name for the Elk (*q.v.*), largest species of deer with wide, palmated antlers.

**Moose Jaw**, city, Saskatchewan, Canada; pop., 21,250; rly. junction; lumber; agric. implements; ironworks.

**Moradabad**, tn., United Provs., India, cap. dist. same name; pop., 82,700; textiles, metal-work.

**Moraine**, (*geol.*) débris of earth, stones, etc., piled up and left in track of glacier (*q.v.*).

**Morales**, Luis de (1509-86), Span. painter: *Pietà*, in Academy, Madrid.

**Moral insanity**, lack of a sense of moral values, amtg. to criminal tendencies. **M. philosophy**, in its broad and most usual sense covers entire field of human ethics and conduct, emphasising the distinction betw. right and wrong. **M. theology**, science of the laws which regulate duty; moral philosophy (*q.v.*) regarded from a specifically theolog. standpoint.

**Moralities**, variety of drama in 14th cent. evolving from Mysteries (*q.v.*), consisting of dramatised allegorical representatn. for didactic purposes; e.g., *Everyman*.

**Moratorium**, postponement for a period, declared by a State, of pymt. of all debts and obligations; may also be granted by a creditor nation to a debtor nation with resp. to intergovt. debts; e.g., Hoover Moratorium (*q.v.*).

**Morava**, 1) inland *banovina* (county) of Jugoslavia, watered by Serbian Morava (right trib. of Danube); 10,000 sq.m.; pop., 1,500,000; cap., *Nish*. 2) Or *March*, riv., Czechoslovakia, left trib. of Danube; rises Sudetes Mtns.; forms boundary betw. Czechoslovakia and Austria; joins Danube above Bratislava.

**Moravia**, **Mähren**, **Morava**, prov. of Czechoslovakia; 8,613 sq.m.; pop., 2,662,885 (610,500 Germans); mountainous; watered by Czech Morava; agriculture and cattle-breeding; iron and steel; brewing; textiles. Cap., *Brum.* Part of Bohemia since 13th century. **Moravian Gate**, **Moravian Genske**: see SUDETES MOUNTAINS.

**Moravians** (or United Brethren), Protestant sect, deriving (15th cent.) from the Hussites of Bohemia and Poland, but claiming descent from the Greek Ch. of the 9th century. Since early 19th cent. have been specially prominent in mission-work.

**Moravská Ostrava**, tn., Czechoslovakia, on Riv. Ostrawitsa; pop., 113,710; ironworks, rolling-mills; chemical and metal indust.; coal mines.

**Moray**, or **Elginshire**, marit. co., N. Scot., on Moray Firth; area, 476 sq.m.; pop.,



Moose

40,800; rivs. Spey, Findhorn; hilly and well wooded; fertile valls., cattle-raising, distilling, cap., **Elgin**. **M. Firth**, arm of North Sea, N.E. coast of Scot.; import. fisheries.

**Morbihan**, dépt., Brittany, Fr., on the Atlantic; 2,738 sq.m.; pop., 550,000; cap., **Vannes**.

**Mordant**, agent for causing dyes to adhere to cloth. See **DYEING**.

**More, Hannah** (1745-1833), Brit. relig. writer and "bluestocking"; *Coclebs in Search of a Wife*, 1809; etc. **M., Henry** (1614-87), Eng. mystic philosopher; F.R.S.; *Life of the Soul*, 1640. **M., Sir Thomas** (1478-1535), Eng. statesman and writer; *Ld. Chanc.*, 1529; exec. on charge of high treason for refusing to accept Henry VIII as head of Church; social defects of Eng., and ideal State, described in *Utopia*, 1516.



Thomas More

**Morea**, Slav name for the Peloponnesus (q.v.).

**Moréas, Jean** (1856-1910), Fr. poet; *Les Syrces*, 1884; *Stances*, 1905.

**Moreau, Gustave** (1836-98), Fr. idealistic painter; *Oedipus* and the *Sphinx* caused much controversy betw. his admirers and detractors. **M., Jean Victor** (1763-1813), Fr. gen.; com. Fr. republican armies and under Napoleon; exiled for sedition; entered service of Czar Alexander agst. France, 1813.

**Morecambe**, munic. bor. and seaside resort, Lancs, Eng., on **M. Bay**; pop., (incl. *Heysham*, q.v.), 24,600.

**Morel**, (bot.) *Morchella esculenta*, edible fungus; cultivated in France.

**Morendo**, (mus.) dying away.

**Moresnet**: see **EUPEN** and **MALMÉDY**.

**More suo** (Lat.), in his own fashion.

**Morgagni, Giovanni** (1682-1771), Ital. anatomist; fndd. science of pathological anatomy. *De Sedibus et causis morborum per anatomem indagatis*, Eng. trs., 1769.

**Morgan, Sir Henry** (c. 1638-1688), Welsh buccaner; ravaged Spain. Caribbean; captured Porto Bello, 1668, and Panama, 1671; recalled to Eng.; knighted by Chas. II; apptd. Commissioner of Admiralty; Lieut.-Gov., Comm.-in-Chf., and Gov. of Jamaica. **M., John Pierpont** (1837-1913), Amer. banker and financier; head of J. S. Morgan and Co.; his s. **John Pierpont M.** (1867- ), suc. his father as head of firm; financed great part of Allies' war credits, 1914-17, and co-operated with Brit. and Fr. govts. in purchasing foodstuffs and munitions. **M., Lewis Henry** (1818-81), Amer. anthropologist.

**Morgana**, in Celtic and Arthurian legend, a fairy, sister of Kg. Arthur; known also as Morgan (and Morgue) le Fay.

**Morganatic marriage**, marriage betw. persons of unequal rank, in wh. inferior and children of marriage cannot enjoy rank or inherit possessions of superior, though the children are legitimate; esp. used of reigning monarchs or princes.

**Morgen**, old Dut. land meas. of area, still used in S. Africa: 2.11 acres.

**Morgue**, place where bodies of dead persons are exposed for identification.

**Morland, George** (1763-1804), Brit. genre and animal painter; repesd. at Nat. and Tate galls., London; *Stable Interior*, 1791, etc.

**Morley, Henry** (1822-94), Eng. man of letters; ed. *Morley's Universal Library*. **M., John M.**, 1st visct. (1858-1923), Brit. statesman and author; Sec. for India, 1905-10; remodelled Govt. of India, with Minto, q.v.; one of four Counsellors of State, 1911-12, during Kg.'s absence in India; ed. *English Men of Letters*; *Life of Gladstone*, 1903. **M., Thomas** (1557-c.1603), Eng. composer; church music, numerous madrigals, canzonets, airs; *A Plaine and easie Introduction to Pradicall Musicke*, 1597.

**Morley**, munic. bor., W. Riding, Yorks, 5 m. S.S.W. of Leeds; pop., 23,400; woollens; b.-place H. H. Asquith (E. of Oxford and Asquith).

**Mormons** (Ch. of Jesus Christ of Latter Day Saints), sect founded in U.S.A. by Joseph Smith (1830), based upon the exposition of, and additions to, the Scriptures embodied in the *Book of Mormon*, a mystical work (first pubd. Palmyra, N.Y., 1830) of alleged divine authenticity. Smith (killed 1844) was succeeded by 12 Apostles, one of whom was Brigham Young. M. settled in Salt Lake City, Utah, 1847, after much persecution; they are active proselytisers (nearly 100 churches in Eng. and Wales) and now number 600,000 to 650,000 members. A prominent feature, now discontinued, of Mormonism was polygamy.

**Morning star**, any planet (usu. Venus) when near the sun and rising soon before it in East.

**Morocco**, country N.W. Africa, bounded N. by the Mediterranean and Str. of Gibraltar, W. by the Atlantic, E. by Algeria, and S. by the Sahara (E. and S. boundaries not strictly defined). Interior mountainous: *Rif Mtns.* in N. (continued E. by *Maritime Atlas*); *Great Atlas* (up to 15,000 ft.) and parallel ranges in centre; see **ATLAS MTNS.** Chf. riv., Um-er-Rebia, flowing



Morocco

into Atlantic. Temperate climate in coastal dists., greater extremes of temp. inland. Fertile plains in N.W. at foot of Atlas Mtns.; elsewhere steppe and desert (numerous oases); cork, oak, and cedar forests in W.; cultivation of pomegranates, figs, oranges, almonds, olives, cereals, and pulses. World's largest deposits of lime phosphate; undeveloped iron and tin. Important fisheries. Pop., c. 5,053,000 (mainly Berbers; 100,000 Jews). Whole of M. is under Sultan, as civil and religious head; but country is divided into French, Spanish, and Tangier zones. *French Zone*: Fr. protectorate occupying whole of M. except N. coast and enclave of Ifni; area, c. 213,000 sq.m.; pop., 4,229,000; four capitals: *Fez*, *Rabat* (chf. residence of Sultan), *Marrakesh* (largest tn.), and *Meknès*; chf. port, *Casablanca*. Rlys. 1,100 m. *Spanish Zone*: Span. protectorate in Rif dist. (N. coast); c. 18,000 sq.m.; pop., 744,000; cap., *Tetuan*; ports of *Melilla* and *Ceuta* (qq.v.) are separate Span. possessions. Rly. mileage (excl. *Tangier-Fez Rly.*, 192 m.) under 100 m. *Tangier International Zone*: see *TANGIER*.

**HISTORY.** Rom. prov. *Mauritania* (q.v.) in 1st cent. B.C.; Arab invasion, end 7th cent.; Berber revolt, 739; Moorish Empire (from end 8th cent.) by 12th cent. included N. Africa to borders of Egypt, as well as Mohammedan Spain; in 13th cent. whole African empire lost except M. itself; Sp. conquest of Granada, 1492, was prelude to expulsion of Moors from Spain. Span. and Portug. conquests of coastal regions in 16th cent. followed by commercial relations which persisted despite corsairs' activities. Min. wealth of M. now seriously attracted the attention of the Great Powers, whose mutual rivalry caused international complications more than once. Since 1800 Fr. influence steadily increased; in 1894 Gt. Brit. virtually gave France a free hand in M. in exch. for Brit. liberty of action in Egypt. Franco-Spanish treaty, 1904; intervention of Germany, 1905; followed by Algeciras Conference, 1906. German distrust of Fr. and Span. activities led to despatch of Ger. gunboat "Panther" to Agadir in 1911 (European war narrowly averted). After negotiations, Germany waived Moroccan claims in return for a section of Fr. Congo. Fr. and Span. protectorates proclaimed 1912. In World War the neutral Span. zone became a centre of Ger. propaganda. Both Fr. and Span. zones involved in revolt led by Abd el Krim (1921-26); ill-success of Sp. troops in repressing subseq. revolts largely responsible for fall of Alfonso XIII, 1931.

**Morocco**, fine, flexible leather, orig. of goat-skin, now of grained calf or sheepskin; **levant m.**, used in bookbinding, has large grain.

**Moroni**, Giambattista (c. 1520-78), Ital.

portrait painter; school of Brescia; trained under Moretto; *The Tailor*; *Cannibal*; *de' Terzi*; *Ct. Lupi*.

**Morosini**, Francesco (1615-91); Venetian gen.; reconquered the Morea from the Turks 1685; elected doge, 1688.

**Morpheus**, (Gr. myth.) son of Somnus (sleep), and god of dreams.

**Morphine**, princ. alkaloid of opium, widely used as a narcotic to relieve pain; also admin. in treatment of diarrhoea and colic; habit-forming. See *DRUGS OF ABUSE*.

**Morphology**, science of form and structure; 1) (biol.) of plants and animals; 2) (philol.) of languages.

**Morphy**, Paul Charles (1837-84), Amer. chess-player; visited London and Paris in 1858, and consistently distinguished himself by his brilliant and almost unbeatable play.

**Morris**, William (1834-96), Brit. poet and craftsman; with Rossetti and Burne-Jones fndd. firm for manuf. of ch. and household decorations, tapestries, wall papers, stained glass, tiles, etc., 1862; formed Socialist League, 1884; fndd. Kilmesscott Press (q.v.), for which he designed type, ornaments, etc. Pubd. (poems) *Life and Death of Jason*, 1867; *Earthly Paradise*, 1868-70; (transltns.) *The Aeneid*, 1876; *Odyssey*, 1878; *Sigurd the Volsung*, and with Magnusson, *Volsung Saga*, 1870, etc.; (romances) *Gilgastering Plain*, 1892; *Wood Beyond the World*, 1894; (sociol.) *News from Nowhere*, 1891, etc.

**Morris dance**, O. Eng. dance connected with May-Day festivities; dancers wore costumes repres. Maid Marian, Friar Tuck, etc.; recently revived.

**Morrison, Herbert Stanley** (1888- ), Brit. Lab. politician; started as errand-boy; became prominent in party; mayor of Hackney, 1920-21; M.P., 1923-24, 1929-31; Min. of Transport, 1929-31; chairman of Nat. Lab. Party, 1928-29. **M., Robert** (1782-1834), Brit. missionary in China; *Chinese Grammar*, 1814; *Chinese Dictionary*, 1821.

**Mors**, (Rom. myth.) god of Death. Gr. *Thanatos*. **M. Janua vitae** (Lat.), death is the gate of Life.

**Morse**, Samuel F. B. (1791-1872), invtd. **M. Code** (dot and dash) used in telegraphy, flag- and lamp-signalling, etc., and appar. (transm. key; paper-tape receiver) by wh. telegr. was first made commercial. **M. code**: req. only one wire, the earth being used as return; message is printed in ink dots and



William Morris

dashes on paper tape, wh. is pulled rapidly thr. the machine by a clock-spring motor.

— a	— m	— y
— b	— n	— z
— c	— o	— 1
— d	— p	— 2
— e	— q	— 3
— f	— r	— 4
— g	— s	— 5
— h	— t	— 6
— i	— u	— 7
— j	— v	— 8
— k	— w	— 9
— l	— x	— 0

**Morse**, (eccles.) large ornamental brooch for fastening the cope (*q.v.*).

**Mortar**, 1) (bldg.) plastic mixture of cement (sometimes lime), sand, and water; used for binding together stones or bricks; hardens after exposure to air. 2) Vessel of iron or stone in wh. substances are pounded with a *pestle* (thick, heavy stick with rounded end). 3) (Mil.) Heavy high-angle ordnance for use agst. fortified positions; **trench m.**, muzzle-loading ordnance, sometimes fitted with recoil buffers; fires a high-explosive bomb up to  $\frac{3}{4}$  ton in weight. Light T.M. (range up to 3,500 yds.); medium and heavy T.M. (range over 1,000 yds.). See STOKES TRENCH MORTAR.

**Morte d'Arthur**, Arthurian compilation by Sir Thos. Malory (*q.v.*), from Breton sources, 1st printed by Caxton (1485); Tennyson has a poem with same title.

**Mortgage**, securing of a debt by making it a charge upon certain (generally landed) property of the debtor, wh. may be sold by the creditor if he is not paid at the agreed time or times; in Eng. law, such property is conveyed to creditor, conveyance being cancelled if conditions are fulfilled. Debtor is known as *mortgagor*, creditor as *mortgagee*; sale of property covered by unpaid mortgage is called *foreclosure*. If same property is subject to several mortgages, they usu. take precedence in chronological order.

**Mortier**, Édouard (1768-1835), Fr. marshal under Napoleon I and Louis Philippe; Min. of War, 1834-35; killed by a bomb aimed at the kg. by Fieschi.

**Mortimer**, Roger: see MARCH, EARL OF.

**Mortise tenon**, method of joining two pieces of material (usu. wood), one being cut with a tongue, the other having a deep depression into wh. the tongue is fitted.

**Mortlake**, Surrey, W. resid. suburb Greater London; former tapestry works estab. by James I; Ship Hotel on Thames winningpost of Oxford and Cambridge boatrace.

**Mortmain** (dead hand), property belonging to an eccles. or other corporation and on that account inalienable and not subject to ordinary feudal dues, said to be "held in M."

The Statute of M. (1279) and many subsequent enactments passed to prevent the alienation of lands to such bodies.

**Mortuary**, 1) in mod. use, buildg. where dead bodies may be kept temporarily, for identificatn., enquiry into cause of death, post-mortem examinatn., etc. 2) Gift due to minister of parish on death of parishioner.

**Morvi**, state, Kathiawar, N.W. India; c. 900 sq. m., pop. 113,000; cap. Morvi; cotton, sugar, cereals. **M. Rly.**, to port, Navlakhi, 140 m.



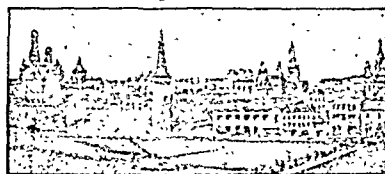
Mosaic

**Mosaic**, 1) (archit.) picture or design composed of minute pieces of coloured stone, glass, or marble; 1st used as flooring (Pompeii), later as wall decoration, esp. in Byzantine Period. 2) Term for "Jewish," from *Moses*. **M. Law**, precepts of Jewish religion. **M. gold**, *Aurum*



*musicum*, a sulphide of tin, golden and lustrous, used for bronzing plaster statuettes, etc.

**Moscow** (Russ., *Moskva*), 1) largest city in Russia, since 1918 cap. of U.S.S.R., and of Russ. Soc. Federative Soviet Rep., on Riv. Moskva; pop., 2,513,650. Seat of U.S.S.R. Govt. in Kremlin (*q.v.*), of all ruling adminis.,



Moscow, Kremlin

economic, and other officials, and of Centr. Exec. Cmttee. of 3rd (Communist) International, and other internat. organisats.; Commun. Academy, Lenin Instit. with MSS., archives, milit. acad., univ. (Russ. and

Chin.), scientific and art institutes, School for Oriental Studies, museums (Revolution, Art, and Icon). Many theatres; over 1,000 cathedrals and churches. Nine rly. stations. Textiles, metal, leather, and foodstuff indus. Burning of Moscow necessitated Napoleon's retreat, 1812. 2) Prov. of Russ. S.F.S.R., bounded by Smolensk, Vladimir, Tula, and Kaluga; c. 17,350 sq.m.; pop., 4,634,115. Dense forests. Rivers frozen 160 days yearly.

**Moseley**, Henry Gwyn-Jeffreys (1887-1915), Brit. phys., promulg., 1913, *Moseley's Law*: linear relationship betw. sq.-root of X-ray-spectrum frequency and atomic number of all elements. M. fell in World War.

**Moselle**, 1) riv. (320 m.), left trib. of Rhine; rises Vosges Mtns., Fr.; breaks through the Rhenish slate mtns. at Treves; joins Rhine at Coblenz; steamers from Treves; vineyards. 2) Dépt., N.E. France, part of Lorraine; 2,400 sq.m.; pop., 693,400; cap., Metz. 3) A delicate white wine, produced from vineyards in Moselle valley.

**Moses**, (O.T.) Jewish lawgiver, leader of Israelites from Egy. to borders of Promised Land; received Decalogue (*q.v.*) from Yahweh (Ex. xix); governed Israelites in Wilderness (Num. xx). **Bks. of M.:** see PENTATEUCH. **M. in Egypt** (*Mosè in Egitto*), oratorio by Rossini (*q.v.*), 1818.

**Moslem, Muslim, Mussulman**, an adherent of Islam, (*q.v.*).

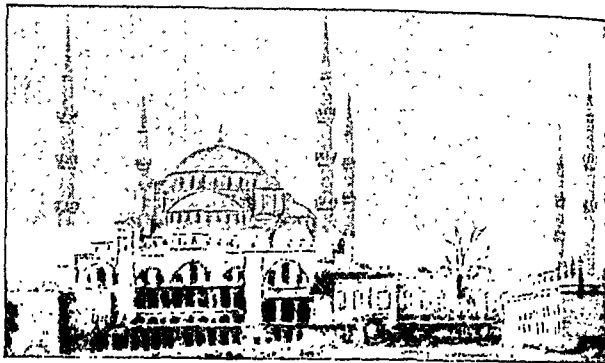
**Mosley**, Sir Oswald Ernald, 6th bt. (1896- ), Brit. politician; M.P., 1918-22 (Cons.), 1922-24 (Indep.), 1924-31 (Lab.); Chanc. of Duchy of Lancaster, 1929-30, resigned to form "New Party," 1930, later adopting Fascist principles.

**Moson, Wieselburg**, tn., Hung., on the arm of Danube, S. of Little Schütt Isl.; pop., 6,340; agric., cattle-breeding.

**Mosque** (Arab.), Mohammedan house of prayer, usu. built with centr. dome, minarets, and court with ablutionary tank. Interior contains pulpit, reading-desk, and *mihrab* (i.e., mark or niche in wall showing

direction of Mecca), and carpets, but no seats.

**Mosquito**, a blood-sucking fly; larvae aquatic; several species are carriers of disease: malaria, yellow fever, etc. **M. Coast**, unhealthy marshy region, E. coast Nicaragua, Centr. America, inhabtd. by Mosquito (or Misskito) Indians.



Mosque of Sultan Ahmed, Constantinople

**Moss**, flowerless, non-woody plant which reproduces by means of spores. **M.-dressing**, dry sphagnum moss, used with great success as absorbent dressing.

**Mossel Bay**, formerly *Aliwal South*, seapt. and bathing resort, S. coast Cape Prov., S. Africa; pop., 6,000.

**Mossi**, chf. branch of Sudanese Negroes, c. 1,650,000 in number.

**Mosso**, (mus.) lively; **più m.**, more lively.

**Most Christian and Catholic Majesty**, title borne by Kgs. of France from the 16th century. **Most Faithful Majesty**, title borne by Kgs. of Portugal from the 16th century.

**Most-favoured-nation clause**; in a treaty, one giving as favourable a tariff on goods imported from one nation as given to any other nation. Occurs in commerc. treaties betw. a large number of indus. countries; first included in Cobden agreement betw. Fr. and Gt. Brit. (1860).

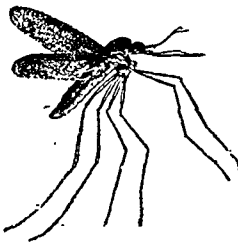
**Mosul**, 1) vilay. (36,210 sq.m.), N.W. Iraq; pop., 703,400; grain, wool, oil. 2) Cap. of vilay., on upper Tigris, opp. ruins Nineveh; pop., 62,300; petroleum, muslin.

**Motet**, (mus.) composition for several voices set to a Bible text; usually without instrumental accompaniment.

**Moth**, class of insects comprising, with butterflies, order Lepidoptera. Many thousand species, majority nocturnal and crepus-



Moses, after Michelangelo



Mosquito

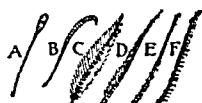


Club-moss

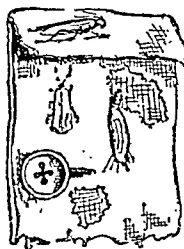


Oak Eggar Moth

cular; a few fly by day (diurnal). Pupae in some cases enclosed in a cocoon; larvae of



Features Distinguishing Moth from Butterfly:  
A) Clubbed antennae (butterfly); B) Dilate antennae (moth); C) Plumose feather (moth); D) Bipeccinate feather; E) Simple feather; F) Toothed feather.



Clothes-Moth

some species injurious to crops, etc.; some beneficial, e.g., silk-moths.

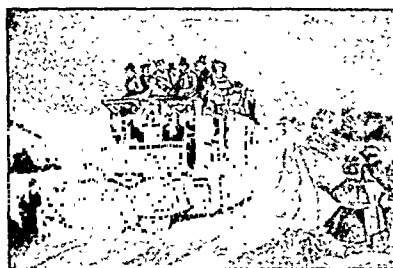
**Mother-of-pearl**, hard, iridescent inner layer of sev. kinds of shell, esp. oyster shells; nacre.

**Mothering Sunday**: see MID-LENT SUNDAY.

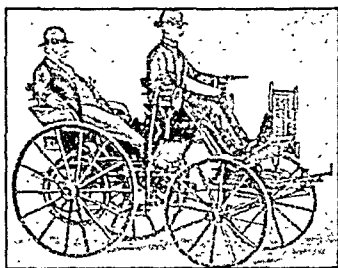
**Mother liquor**, (chem.) liquid remaining after separation of substance by crystallisation; contains substances wh. are more solu-

pose of driving machines or propelling vehicles, etc. (See ELECTRIC-, WIND-MOTOR, STEAM ENGINE; TURBINE; INTERNAL-COMBUSTION ENGINE; DIESEL MOTOR; and, below, MOTOR VEHICLES). **Clockwork M.**, used on gramophones and toys. **Outboard m.**, petrol M. wh. is removable, attached to stern of boat; used in racing. **Hot bulb m.**, heavy-oil M. used in small ships, fishing-boats, etc.

**Motorcycle**, two-wheeled vehicle with 2- or 4-stroke petrol engine. Development of pedal cycle. Frame of seamless steel tubes, recently also sheet-steel; engine usu. air-cooled with cooling-fins on cylinder; ignition magnets (coil rare); controls situated on handle-bars. Saddle is set low to enable rider to touch ground with feet when necessary; gen. foot-boards inst. of pedals. Side-car, also pillion-seat, may be attached. **M. generator**, (elec.) machine for transforming direct current into alternating, or *vice versa*. Two machines, motor and dynamo, directly coupled. **M.-plough**, usu. trailer pulled by tractor (*q.v.*). **M.-racing**, on road or track; *road-racing*, in fully equipped cars



Steam Coach (Curch, 1832)



Earliest Daimler Car, 1886

ble than those crystallised out; thus while crystals are nearly pure, M.L. contains the impurities mixed with original substance. See CRYSTALLISATION.

**Motherwell and Wishaw**, tn. in Lanarksh., Scot., 11 m. S.E. of Glasgow; pop., 64,700; manuf. iron and steel; coal-mining.

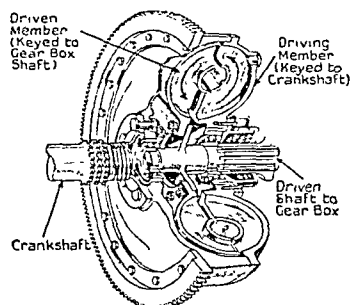
**Motion**, in Eng. parl. usage, proposal in either Hse. that a resolution be passed, but esp. a resolution that a bill ought to be intro. or govt. ought to take action. See INTERPELLATION.

**Motive**, that wh. incites to or causes action; the end or purpose wh. actuates the will; (art) predominant theme underlying a composition, determining its form and development.

**Motley**, John Lothrop (1814-77), Amer. hist. and Ambass. to Gt. Brit.; *Rise of the Dutch Repub.*, 1856; etc.

**Motor**, machine for transforming some form of energy into mechan. work, for pur-

(Tourist Trophy races) or stripped racing-cars, takes place chfly. in Ireland and on



DIAGRAMATIC SECTION OF THE DAIMLER FLUID FLYWHEEL

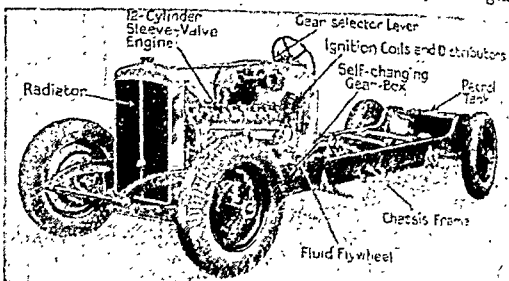
Continent of Europe. *Track-racing* takes place on steeply banked circular tracks (as at



Brooklands and Indianapolis); and consists of short races and long-distance endurance tests. **MOTRING RECORDS:** *Cars:* speed over measured mile, 253.968 m.p.h., Sir M. Campbell (*q.v.*), Daytona Beach, 1932; 100 m. (from standing start), 45 min. 34.09 sec., G. E. T. Eyston, Montlhéry, 1932. *Cycles:* fastest mile (flying start) 151.241 m.p.h., J. S. Wright, Cork, 1930; fastest 100 m. (standing start) 54 min. 8.36 sec., C. W. G. Lacey, 1931. *Boats:* fastest mile (flying start) 127.43 m.p.h., Gar Wood, Lake Michigan, 1932. **M.-ships**, craft depending for propulsion on some form of internal combustion engine; a modern type of vessel that is now being built in greater numbers than are steamships. **M.-sleigh**, pulled by airscrew driven by petrol motor.

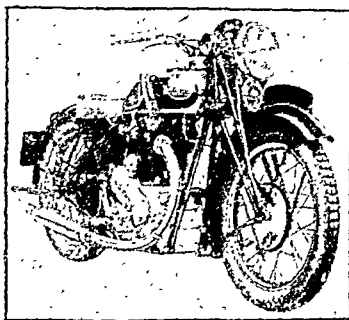
**M. tax**, tax levied in U.K. on motor vehicles; revenue used largely for road making and upkeep; see **TAXATION**. See also **ROAD TRAFFIC**. **Motor vehicles**, power-driven road vehicles, nearly all with *internal combustion engines*; steam and electricity (*accumulators*) used to small extent. Consist of: *chassis*, framework carrying engine, radiator, steering-gear, wheels; and *body*, suited to purpose, with seats and weather protection for passengers, and various types of accommodation (van, lorry, etc.) for goods. Engine may have 2, 4, 6, 8, or more cylinders; since each cylinder usually drives only one stroke in four, the more cylinders the greater evenness of drive. Engine drives through clutch (which can be engaged and disengaged); gear-box (by which ratio of speed of engine to speed of wheels can be altered); propeller shaft to differential (*q.v.*) on back axle.

Cylinders of engine generally cooled by circulating water, which is cooled in passing through radiator, through which draught of air is forced by motion of car aided by fan. Steering effected by wheel operating through worm on front wheels of car. *Dynamo* gen-



Section of Daimler Chassis

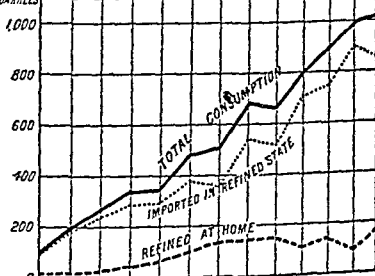
erates electricity, charging battery from which light, and power for starting, are



Motorcycle, petrol-driven (Benz, 1886)

derived. Ignition of engine by *magneto* (*q.v.*) or *induction coil* (*q.v.*). Passenger cars have body coach-work of many different types:

**MOTOR SPIRIT: CONSUMPTION IN U.K. (IN MILLION GALLONS)**  
 MILLIONS 1913-20 -21 -22 -23 -24 -25 -26 -27 -28 -29 1930 -31  
 OBARRELS

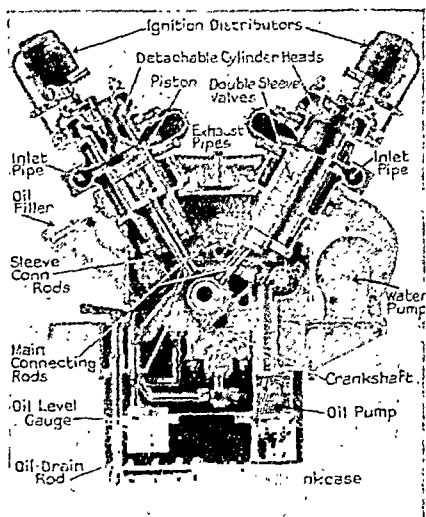


Steady incr. in consumption and in proportion refined at home.

sports, open, two- and four-seater, cabriolet (*q.v.*), coupé (*q.v.*), landaulet, (*q.v.*) limousine (*q.v.*), etc. Commercial vehicles carry 1-5 tons.

**Motu proprio** (Lat.) "of one's own accord"; term applied to certain administrative documents of the papal court, not bearing the papal seal.

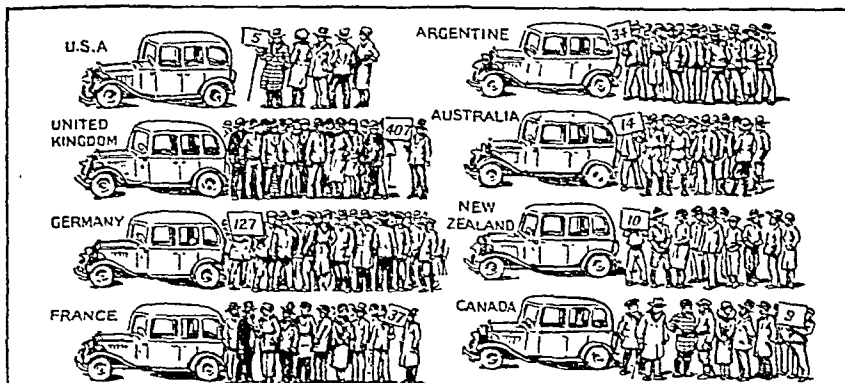
**Motza:** see MAZOTH.



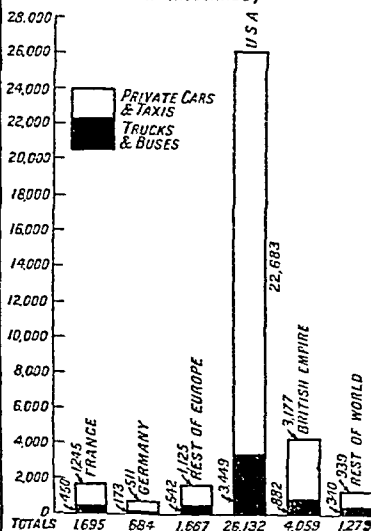
Section of Daimler Motor Engine

steering-gear, wheels; and *body*, suited to purpose, with seats and weather protection for passengers, and various types of accommodation (van, lorry, etc.) for goods. Engine may have 2, 4, 6, 8, or more cylinders; since each cylinder usually drives only one stroke in four, the more cylinders the greater evenness of drive. Engine drives through clutch (which can be engaged and disengaged); gear-box (by which ratio of speed of engine to speed of wheels can be altered); propeller shaft to differential (*q.v.*) on back axle.

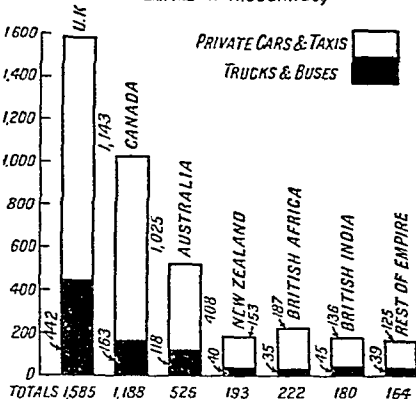
# MOTURING STATISTICS



**MOTORS (VEHICLES IN USE, DECEMBER 1931 IN THOUSANDS)**



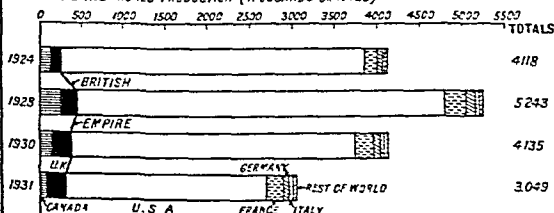
**MOTORS (VEHICLES IN USE, DECEMBER 1931 IN BRITISH EMPIRE IN THOUSANDS)**



The drawing at the head of this set of diagrams shows the POPULATION PER CAR in the U.K., the Brit. Dominions, and certain other countries; the ratio is dependent on density of pop.; the sparser the pop. the greater the necessity for motor cars.

Below this are two diagrams showing number of MOTOR

**MOTOR CARS: WORLD PRODUCTION (THOUSANDS OMITTED)**



To the left is diagram showing

MOTORCAR PRODUCTION: in the

U.S.A. uses nearly 75% of total; U.K.

has relatively large proportion of

trucks and buses.

**Mouflon**, wild mountain sheep of Sardinia and Corsica; spiral horns, saddle-shaped mark on back; now nearly extinct.



Mouflon

**Mould**, family of small, often parasitic fungi, composed of thin threads, each consisting of a row of single cells, and found as furry patches on decaying vegetable or animal matter.

**Moulding**, 1) the art of making moulds for casting metals. When for use only once they are made of moulding sand, wh. is pressed firmly around a wooden or metal pattern, wh. is then removed. Hollows are prod. by inserting *cores* (q.v.). Important developments hv. bn. made in moulding machinery, greatly increasing speed and reducing skill required. Ms. also made of metal and can then be used for a large number of castings. For statuary they are made of clay; sometimes the method called *cire-perdue* is used, the pattern being of wax, wh. is melted after the mould is made, without the latter being taken apart. 2) (Archit.) Projection or ledge ornamenting a wall; may be square, concave, or convex in outline; see EGG AND DART; OGEE.

**Moulin**, vertical shaft in a glacier, formed by a stream of surface water pouring into a crevasse (q.v.); also the stream wh. does this.

**Moulines**, cap. dépt. Allier, France; pop., 23,300; cathedral.

**Moulmein**, seapt., Burma, on Gulf of Martaban; pop., 61,300; docks; exports rice and teak.

**Moult**, **moulting**, yearly change of feathers of birds.

**Mound bird**: see MEGAPODE. **M. City Group**, nat. monument (1923) in Ohio, U.S.A.; prehistoric Ind. mounds.

**Mountain**, **The**, *Montagnards*, extremist party in the Fr. Rev., so called from the high-up seats wh. they occupied in Hall of Assembly; also named Jacobins. **M. ash**, rowan, *Sorbus aucuparia*, rosaceous tree indigenous to Eur. and Asia; the red berries are used in folk medicine. **M. damson**, *Simaruba officinalis*, W. Indian tree; root bark used (folk-med.) as a tonic in weak digestion and after fevers. **M. railways**, used on steep slopes; adhesion, funicular, cog-wheel, and overhead cable railways. **M. sickness**, an illness which occurs when man first attempts to adapt himself to low atmospheric pressures; symptoms are blueness of the skin, nausea, headache, vomiting, and sometimes fainting.

**Mountaineering**, sport of climbing mountains, esp. the Alps; M. Blanc climbed 1786, but M. as a systematic sport usu. dated from 1854 (Sir A. Wills's ascent of Wetterhorn); conq. of Alps was completed by ascent of Matterhorn (1865), when a body of Alpine guides had been formed; conquest of Everest (q.v.) not completely achieved, but summit surmounted by aviators, 1933. Brit. Alpine Club fndd. in 1857.

**Mountains**, **Classification of**—1) shape: **M. mass** radiates from a centre; **M. chain**, long ridge or series of ridges separated by parallel valleys. *Dissected plateau*, surrounded by deep valleys; *isolated peak* of hard rock left after softer rock has worn away. 2) Origin: **Volcanic**; **tectonic**, formed by folding and elevation of earth's crust; various complicated divisions and subdivisions.

**Mountbatten**, 1) family name of Marquess of Milford Haven (q.v.). 2) Fort and promontory, Plymouth Sound; R.A.F. station.

**\*Mount Elbert**, peak of Sawatch Mtns., Colorado, U.S.A.; 14,420 ft.; highest summit in State. **Mount Foraker**, Alaska, in Alaska Range, 17,000 feet. **Mount Greylock**, peak of Berkshire Hills, Mass., U.S.A.; 3,505 feet. **Mount Katahdin**, peak, Maine, U.S.A.; 5,268 feet. **Mount McKinley**, Alaska, in Alaska Range; 20,300 ft.; highest peak in North America; nat. park (1917), 2,645 sq. miles. **Mount Mansfield**, peak of Green Mtns., Vermont, U.S.A.; 4,393 feet. **Mount Marcy**, peak of Adirondack Mtns., N.Y. State, U.S.A.; 5,377 feet. **Mount Mitchell**, peak, Black Mtns., N. Carolina, U.S.A.; 6,684 feet. **Mount Olympus** (see also OLYMPUS), 1) nat. park (1909) in Washington, U.S.A.; 299,400 acres; adminstd. by Dept. of Agric.; reservation for breeding of Olympic elk. 2) Highest point of Olympic Mtns., Washington, U.S.A.; 7,922 feet. **Mount Rainier**, 1) nat. park. (1899), in Washington, U.S.A.; 378 sq.m.; sub-Alpine wild-flower fields. 2) Extinct volcano in Cascade Mtns., U.S.A.; 14,408 feet. **Mount St. Elias**, Alaska, in St. Elias Range, 18,020 feet. **Mount Washington**, peak of White Mtns., New Hampshire, U.S.A.; 6,288 ft.; magnificent scenery. **Mount Whitney**, peak of Sierra Nevada, California, U.S.A.; 14,496 ft.; highest mt. in U.S. outside of Alaska. **Mount Wrangell**, Alaska, active volcano of Alaska Range; 14,005 feet.

**Mount's Bay**, bay, S. Cornwall; contains Penzance and St. Michael's Mount.

**Mourne**, **Mountains of**, range, S. of Co. Down, N. Ire.; *Slieve Donard*, 2,796 feet.

**Mouse**, small rodent, widely distributed

\*For mountains outside America see under their names, e.g.: EVEREST, MOUNT.

throughout the world. **House m.** (*Mus musculus*), orig. indigenous to Asia, most common species; **long-tailed field m.** (*Apedemus sylvaticus*), found in many parts of Gt. Brit., also **harvest m.** (*Micromys minutus*), only 2½-3 in. long. The wild mice of Asia are related to house mouse. Other species are: **White-footed m.** and **groove-toothed m.** of N. America; **Alpine field m.** found in altitudes of 4,000 ft. in Alps and Pyrenees; **Japanese waltzing m.**, wh. runs round in circles, owing to defect in labyrinth of the ear, etc. See also **SHREW**; **LEMING**; **JERBOA**.



House Mouse

**Moussorgsky**, Modeste Petrovich (1839-81), Russ. composer; opera *Boris Godunov* (1874); orchest. works, songs.



Harvest Mouse

**Mousterian culture**, (archaeol.) divn. of prehist. human development corresponding to Middle Palaeolithic Period (q.v.); named after rock cavern at *Le Moustier*, on right bank Riv. Vézère, Dordogne, Fr., where flake implements and other flint objects hv. bn. found. Period of Neanderthal race. Human skeletons found in Ger., Fr., Belgium, Palestine, etc.: ceremonial burial practised.

**Mouth organ**, instr. with metal tongues which resound to the inward and outward passage of the breath; also with sound box.

**Mowbray**: see **NORFOLK**, **DUKES OF**.

**Möwe**: see **MOEWE**.

**Mowing machine**, implement for cutting grass or corn, contg. revolving cylinder with sharp blades; worked by hand or drawn by horse- or steam-power. Spec. *harvesting machines* in agric. incld. M.m. drawn by tractor and machines combining automat. binders with cutting apparatus (introduced c. 1880 in U.S.A.).

**Mozambique**: 1), see **PORTUGUESE EAST AFRICA**. 2) Tn., Port E. Africa, cap. prov. of M., and former cap. of colony; pop., 7,200.

**Mozarabic rite**, liturgy used by Christians of Toledo; probably much older than implied by name, wh. was applied to Christians living under Moorish rule and consequently adopting Arab mode of life; remarkable feature is the elaborate symbolism of the Fraction of the Host in the Mass.



Mozart

**Mozart**, Wolfgang Amadeus (1756-91), Austr. composer; showed genius as a child; at 14 composed and con-

ducted opera at Milan. Among his chf. works are: *The Magic Flute*; *Marriage of Figaro*; *Così fan tutte*; *Don Giovanni*; *Requiem*, and numerous orchestral and other pieces.

**Mozetta**, vestment with small hood worn by dignitaries of R.C. Church.

**M.P.**, abbr. Member of Parliament. **m.p.**, abbr. melting-point.

**m.p.h.**, abbr. miles per hour.

**M.P.S.**, abbr., Member, Pharmaceutical Society.

**MS.**, abbr. *manuscript* (Lat.), manuscript; pl., **MSS.**

**Muckers**, (Ger., "canting bigots"), nickname of relig. followers of J. H. Schönherr (1770-1826) and J. W. Ebel (1784-1861); professed a kind of *dualistic theosophy*; their teaching as to the "purification of the flesh" brought them under suspicion of immoral practices. Also known as *Ebelians*.

**Mucus**, thick, fluid secretion of *mucous glands*. **Bursa mucosa**, sac filled with synovial fluid (see **JOINT**), wh. lessens friction betw. muscle and joint. **M. membrane**, lining of a cavity, e.g., the mouth, or of a hollow organ, e.g., the intestine, having mucous glands, so that surface is always moist.



Mudfish

**Mudfish**, *Umbra limi*, a teleost living in swamps and ditches in Canada and N.E. United States, often remaining embedded in the mud of prairie sloughs and bog-holes.

**Mudie**, Chas. Edw. (1818-90), Eng. bookseller and pioneer of circulating libraries; fndd. M.'s lending library, 1842.

**Mudros**, natural harbour in S. of isl. of Lemnos, Aegean Sea; base of Brit. Dardanelles expeditionary force in World War.

**Muezzin** (Arab.), Moslem official who calls the faithful to prayer from the minaret (q.v.) 5 times a day; he is *ex-officio*, entitled to a place in Paradise.

**Muffle**, (tech.) clay or silica vessel shaped like a tunnel closed at one end, wh. is heated in a *M. furnace* to a high temp. Used for firing enamels, heat-treating and annealing (q.v.) metals, and heating other small objects; also in assaying (q.v.), for estimation of gold cntd. in lead, wh. is oxidised, leaving a gold pellet. Also much used in chem. laboratories for gen. purposes.



Electric Muffle Furnace

**Mufti**, 1) official expounder of Moham. law. 2) Civilian clothes, contrasted with uniform.

**Muggletonians**, Eng. schismatic relig. sect founded by Lodowick Muggleton (1609-98).

**Mugwort**, wormwood, *Artemisia*, common wormwood (*A. absinthium*) yellow flowers,

and *A. vulgaris*, reddish flowers; used in folk med. *A. maritima*, reddish flowers, sea-wormwood, grows in salt marshes. Wormwood is an ingredient of vermouth and absinthe.

**Mugwump**, name given in Amer. to voters of independent views who do not support official party candidate (orig. to indep. Republicans in 1884 Presidential election); in Eng., usually applied to those who refrain from voting. (Algonquin, "big man"; iron.)

**Mühlhausen**, tn., Thuringia, Saxony, Prussia, on Riv. Unstrut; pop., 37,000; mediaeval buildings; textiles, machinery.

**Muir**, Sir William (1819-1905), Brit. Arabic scholar; princ. Edinburgh Univ., 1885-1903; *Annals of the Early Caliphate*, 1883.

**Muirfield**, noted golf-links, nr. Gullane, vill. on Firth of Forth, E. Lothian, Scotland.

**Muir Woods**, nat. park (1908) in California, U.S.A.; 426 acres; famous redwood grove.

**Mujik**, Russian peasant.

**Mukden**, cap. prov. Fengtien, Manchuria, on Riv. Hun-ho, and on S. Chinese Rly; pop., 193,600; chief trading centre of N. China; imperial palaces and govt. offices; graves of the Manchu emperors. Jap. victory over the Russians, 1905.

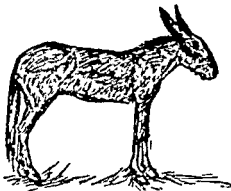
**Mulatto**, cross of white with negress.

**Mulberry**, tree of genus *Morus*; fruit (mulberry) is edible and at one time highly esteemed; sev. varieties; *M. alba*, white *M.* is planted to provide food for silkworms.

**Mule**, 1) hybrid of jackass and mare; sure-footed, hardy; used esp. for mountain (military) transport. Sterile. *Hinny*, hybrid of stallion and female ass; smaller and weaker than mule. 2) (Textile) Spinning machine invented by Samuel Crompton (1753-1827); operates intermittently by drawing yarn out from fixed bobbins by means of a carriage travelling on rails. When a certain length is drawn out, this is twisted and wound upon the cop on return journey of carriage. **Self-acting m.**, invented by Roberts, 1830.



Mulberry



Mule

**Mulhacen**, highest peak (11,400 ft.) in Sierra Nevada, E. Granada, Spain.

**Mülhausen**: see MULHOUSE.

**Mülheim**, 1) **M.-am-Rhein**, indust. suburb of Cologne, Prussia, on right bank of the Rhine; pop., 54,000; silk, yarn, chemicals; shipbuilding. 2) **M.-an-der-Ruhr**, tn., prov. Rhine, Prussia, on Riv. Ruhr; pop.,

134,000; iron foundries, collieries, mineral springs; airport.

**Mulhouse, Mülhausen**, tn., Haut-Rhin, Alsace, France, on Riv. Ill and Rhone-Rhine Canal; pop., 100,000; cotton mills, chemicals.

**Mull**, 1) isl., Argyllsh., Scot., Inner Hebrides, 350 sq.m.; *Ben More*, 3,169 feet. 2) A promontory; common in Scots place-names, e.g., *M. of Kintyre*, at S. end of Penins. of Kintyre, Argyllsh.

**Mull**, 1) (text.) light, semi-transparent muslin; fine-stranded canvas; used for bandages, and in cheap bookbinding. 2) To heat and spice wine or beer.

**Mullah**, Mohammedan relig. teacher, schoolmaster, or reader of the Koran.

**Mad M.**, name given to leaders of native rebellions against Brit. rule on Indian frontier (1897-98) and in Somaliland (1899-1910).

**Mullein**, blanket herb, *Verbascum thapsus*, tall plant, yellow flowers on a spike. Used in folk med. for pulmonary complaints.

**Müller, J. P.**, Danish athlete; inventor of a system of physical exercises (*My System*), combined with deep breathing, rubbing, and bathing. **M., Max** (1823-1900), Anglo-Ger. orientalist and philolog., settled in Eng. and naturalised; curator of Bodleian, delegate of Oxford Univ. Press.; ed. *The Sacred Books of the East*.

**Müller-Lyer**, Franz (1857-1916), Ger. psychol. and sociol.; *Stages in the Evolution of Man*.

**Mullet**, name of two families of fishes: red *M.*, fnd. in Europ. and tropical seas; red, striped in some species with yellow, with two long barbels on lower jaw, highly esteemed as food; and grey *M.*, fnd. on all temperate and tropical coasts; feeds on living matter in mud and sand.

**Mullingar**, cap. Co. Westmeath, Leinster, I.F.S.; pop., 4,500.

**Mullion**, (bldg.) vertical division of window-frame.

**Multiphase current**: see POLYPHASE CURRENT.

**Multiple proportions, Law of** (Chem.): When one element unites with another in 2 or more proportions by wt., these proportions are simple multiples of a common factor, i.e., their at. wt. (*q.v.*).

**Multiple-shop system**, commerc. system by wh. goods are manf'd. by mass production (*q.v.*) or purchased by a centr. dept., and sold in numerous shops belonging to the concern; system is an extension of branch-shop system, also known as *Chain Store System*, esp. in U.S.A.

**Multiplication**, quick method of adding similar numbers, e.g.,  $2 + 2 + 2 + 2 = 4$  times 2 ( $4 \times 2$ ); here 2 is the *multiplicand*, and 4 the *multipplier* or *multiplicator*, both being also called *factors*: the result, 8, is the *product*. Repeated M. of a number with

itself gives a power (*q.v.*), e.g.,  $2 \times 2 \times 2 = 2^3$ . *M.* is reduced to addition by use of logarithms (*q.v.*) since  $\log. ab = \log. a + \log. b$ .

**Multnomah Falls**, on Columbia Riv., Oregon, U.S.A.; 850 feet.

**Multum in parvo** (Lat.), much in little.

**Mumbles, Oyster-mouth**, parish in S. of Gower Penins., S. Wales; seaside resort; oyster fisheries.

**Mummy**, embalmed corpse; treatment of dead practised by anc. Egyptians, also by Mexicans; *M.* also made by natural processes (mud treatment; hot, dry air).

**Mumps, parotitis**, inflammation and swelling of the parotid glands; contagious disease wh. chfly. attacks children, although adults may also be affected.

**Munch**, Edvard (1863– ), Norwg. expressionist painter; mural decorations, Oslo University, 1913.

**Münchhausen**, Karl Friedrich, Bn. von (1720–97), Ger. officer in Russ. service; some of his stories elaborated by Raspe (*q.v.*), in *Adventures of Baron Münchhausen*.

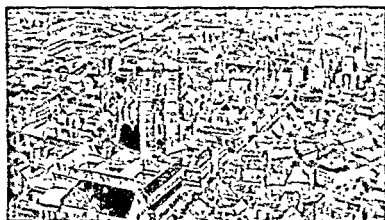
**München**: see **MUNICH**. **M.-Gladbach**, tn., nr. Düsseldorf, Rhineland, Prussia, amalg. with Rheydt; pop., 200,700; textiles; the "German Manchester."

**Munda**: see LANGUAGE SURVEY, *Austro-Asiatic Languages*.

**Mungo**, (text.) shoddy from old woollen rags.

**Mongoose**: see **MONGOOSE**.

**Munich, München**, cap. Bavaria, on Riv. Isar, 1,740 ft. abv. sea; pop., 730,000; abpric. (Frauenkirche); mediaev. buildings;



Munich, Aerial View

univ. (1472); Bav. nat. museum; Pinakothek (picture gallery); Glyptothek (sculptures); indust. centre; breweries; handicrafts; lithography (invented at *M.* in 18th cent.); machinery; airport.

**Munro**, Neil (1864–1930), Scot. novelist: *The Lost Pibroch*, 1896; *The Paymaster's Boy*, 1899.

**Munsey**, Frank Andrew (1854–1925), Amer. publisher; fndd. *The Golden Argosy*,

1882; *Munsey's Weekly*, 1889, and other periodicals; proprietor of *New York Sun*, 1916; *New York Herald*, 1920.

**Munster**, prov., in S.W. of I.F.S.; area, 9,317 sq.m.; pop., 969,900. Mountainous surface (*Carrantuohill*, 3,414 ft.; highest in Ire.); principal riv., Shannon; Lakes of Killarney.

**Münster**, cap. Westphalia, Prussia; pop., 120,500; cap. of dist. *M.* (2,815 sq.m.; pop., 1,500,000); univ.; cathed. (13th cent.); breweries, textiles.

**Muntjak**, small species of Oriental deer, with short, single antlers; three well marked species; found from India to E. Tibet and China.

**Muntz metal, yellow metal**, an alloy of 60 parts of copper with 40 of zinc.

**Murano**, isl., 1 m. N. of Venice, N. Italy; pop., 5,100; 12th-cent. cathed. (mosaics); famous for glass since 13th century.

**Murat**, Joachim (1767–1815), Fr. marshal in army of Napoleon, whose sister Caroline he m., 1800; Kg. of Naples (Joachim Napoleon), 1808; negotiated with Allies, who later refused to admit his title; captured and shot in endeavour to regain kingdom.

**Muratori**, Ludovico Antonio (1672–1750), Ital. Biblical scholar and histor.; discovd. the Muratorian Canon, 1740. *Notus thesaurus inscriptionum*, 1739–43.

**Murcia**, prov. (4,360 sq.m.), S.E. Spain; pop., 676,000; mountainous. Cap., *Murcia* (pop., 156,500); univ., textiles, silks.

**Murder**, the unlawful killing of one human being by another with malice aforethought; in Eng. law, punishable by death. Attempted *M.* is punishable by penal servitude for life; incitement or conspiracy to *m.*, by penal servitude for ten years. Amer. law recognises various degrees of murder, punishable with more or less severity.

**Murex, purpura**, tropical sea-snail, with thick, prickly shell; carnivorous; the ancients probably obtained their purple dye from it.

**Murger**, Henri (1822–61), French author: *Scènes de la Vie de Bohême*, 1848.

**Muriatic acid, muriates**, trade names for hydrochloric acid and chlorides (*q.v.*).

**Murillo**, Bartolomé Esteban (1617–82), Span. painter; *St. Anthony of Padua*, 1656.

**Murmansk**, 1) port in Russian S.F.S.R. on Bay of Kola, Barents Sea; pop., 10,170. Ice-free all the year. Terminus of new rly. (905 m.) to Leningrad. 2) Admin. area, includes Kola Penins., c. 49,600 sq.m.; pop., 23,016.

Shark-skin dressed, and liver oil prepared. 3) **M. Coast**, extends from Finnish frontier, E. to Cape of Syvatoi Noss.



Murillo

**Murray, Gilbert** (1866– ), Brit. classical scholar; Regius Prof. of Greek, Oxford Univ.; helped draft covenant of League of Nations; promoted League of Nations Union: chmn., 1918–19, 1923; *Five Stages of Gk. Religion*, 1925. **M., John** (1745–93), Brit. publisher; fndd. publishing house of John Murray carried on by descendants; his son **John** (1778–1843), pubd. Byron, and fndd. *Quarterly Review*, 1809; his s. **John** (1808–92), fndd. series of guide-books *Murray's Handbooks*; his s. **Sir John** (1851–1928). **M., Lindley** (1745–1826), Brit. grammarian. **M., Sir David** (1849– ), Scot. painter; R.A., 1905; pres. of Royal Institute of Painters of Water-colours, 1917; *My Love Is Gone a-Sailing; In the Country of Constable; Young Wheat*. **M., Sir James Augustus Hy.** (1837–1915), Brit. philologist and lexicographer; began editing the *New English Dictionary* for the Philological Society in 1879, and contd. till his death.1

**Murray**, longest riv. (1,430 m.), Australia; rises Australian Alps; forms boundary betw. New South Wales and Victoria for 1,200 m.; then flows W. and S. through S.E. of S. Australia; drains through Lake Alexandrina into Encounter Bay; chief tribs.: Darling, Lachlan, Murrumbidgee; irrigation works; little navigable.

**Mürren**, vill., Bernese Oberland, Switzerland, alt. 5,440 feet. Winter sports.

**Murrumbidgee**, riv. (1,350 m.), New S. Wales, Australia, trib. (through the Lachlan) of the Murray (q.v.).

**Murviedo**: see SAGUNTO.

**Mus**, P. Decius, see DECIOUS.

**Muscat**, cap. and port of sultanate of Oman, S.E. Arabia; pop. (with Matrah) 25,000; exports dates, pomegranates.

**Muscatel**, sweet, aromatic red or white wine from muscatel grape.

**Muschelkalk**, (geol.) middle stratum of the Triassic system, intermediate betw. the Keuper and Bunter (q.v.); composed of lime from fossilized shells. See GEOLOGICAL FORMATIONS.

**Muscles**, (anat.) band or mass of elastic fibrous tissue by means of wh. movement is effected. In man, the muscular system consists of: 1) **voluntary m.**, which are attached to the skeleton and sometimes known as *skeletal*, and are seen microscopically to have tiny striations, so that they are also known as *striated M.*; 2) **involuntary m.**, which are sub-divided into a) *cardiac M.*, composing the tissue of the heart (which is striated and has the property of contracting rhythmically); and b) *unstriated* or *plain M.*, which composes the main part of the walls of the stomach, intestines, blood-vessels, uterus, and bladder. The voluntary Ms. of the legs and arms are known as *flexors* or *extensors*, according as their function is to flex

or extend the arm or the leg. See MAN, Pl. II. **Muscle Shoals**, section of Tennessee Riv., Alabama, U.S.A.; 37 m. in which riv. falls 132 ft.; Wilson Dam (q.v.).

**Muscovite** (mineral): see MUCA.

**Muscovy duck**, Centr. and S. Amer. var. of duck, inhab. forest swamps; general colour green; crested head; male has warty forehead; domesticated in Eng. as ornamental waterfowl.

**Mus. D.**, abbr. Doctor of Music.

**Muses**, (Gr. myth.) nine daughters of Zeus, protecting art and science: Euterpe (lyric poetry), Erato (erotic poetry), Calliope (epic poetry), Clio (history), Melpomene (tragedy), Polyhymnia (sacred song), Terpsichore (choral dance and song), Thalia (comedy), Urania (astronomy).

**Museum**, institution for collection, preservation, and exhibition of objects illustrating progress of civilisation and development of arts and sciences. Also, building in which such collections are housed.

**Mushroom**, *Psalliota campestris*, the best known of edible fungi; grows freely in meadows and pastures; and is also largely cultivated in cellars, disused tunnels and mines, on beds of stable manure.

**Music**, art wh. produces from sounds and sound groups an artistic creation wh. appeals through the ear to the intellect and emotions. Basic elements: melody, rhythm, harmony, tune, colour. Differentiated acc. to medium, vocal and instrumental music. See MUSIC, HISTORY OF. **M.-drama**, opera in which the music flows continuously, and not in separate numbers, e.g., Wagner's music dramas compared with Verdi's operas. **M., History of**: In its origin M. was, for the most part, religious, but rhythmical singing at work existed contemporaneously, as at the mill, or later at the capstan. M. can be traced in China, Egypt, and Babylonia back to 2nd and 3rd millennia B.C. as song unaccompl. or accomp. by simple plucked instrs. (developed from the warrior's bow) and wind instruments. Hebrew M., itself influenced by Egypt and Babylonia, in its turn in-



Minnesinger MS., 15th cent.

fluenced Christian Church music. First appearance of M. as independent art is among the Grks.; at its prime in days of Aeschylus, Sophocles, and Euripides, whose choruses were sung.

**MID. AGES**: *Fourth* [cent., standardisation of religious\* chant by St. Ambrose (Hymn of Ambrose: *Te Deum Laudamus*): 6th cent.; arrngmt. by Gregory the Great of c. 600.

chorals, hymns, and sequences. *Tenth cent.*: commencement of vocal polyphony in England and France. Maturity in 11th and 16th cents. (Netherlands School, *Orlando di Lasso*; Eng. *Dunstable*, *Wm. Byrd*, and other Tudor classics; It. *Palestrina*, motets and masses). New system of notation with lines and measure (mensural). Meanwhile, in 12th and 13th cents. popular music of strolling minstrels, troubadour and Minnesinger songs; later, commencement of instrumental music. *Sixteenth cent.*: folk-songs, madrigals, Protestant congregational hymns (Luther,



He bleken Nutreden Voor God den Heere  
Hymn of Thanksgiving (Dutch: 16th cent.)

Johann Walther). About 1600, as a result of Renaissance (*q.v.*) endeavours to revive Gr. tragedy, *Opera* arose (1594, *Dafne*, by Florentine, Peri, and *Orfeo*, 1607, by Monteverdi, first gt. master of opera), chamber, orchestral, and church M. (oratorio, cantata, concerto, suite, sonata) developed. Monody, instrumentally accomp'd. melody prevailed. Centre in It., Venice, and Naples. Creator of Fr. opera, Lully; in Eng., Purcell; in Ger.,

Clavier Übung  
bystehenden

Patricien Altmann in Cantilenen Sirabanken Gguez.  
Altmann, und andern Galanterien.

Dona L'Amore zu Gmelle Egozeng verfertigt

Johann Sebastian Bach.

Hamburg, Schallt Chormen unwilligen (Gedächtnis) und  
Director Cn. Music. Leipzig

Partita I.

In Verlegung des Autors  
1730

Title-page of Collection of Suites composed  
and published by J. S. Bach

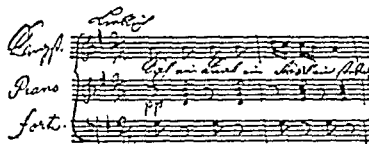
Heinrich Schütz. Modern instruments appear: piano, violin (Amati), 'cello.

EARLY 18TH CENT.: *Handel* (oratorios, operas, *concerti grossi*, perfected), *Bach* (passions, cantatas, masses, organ and piano M., concertos and sonatas for all instruments). Hamburg Opera (*Keiser*); *Telemann*; the brothers *Graun*. Age of counterpoint, figured bass, fugue (*q.v.*). In It., masters of opera: *A. Scarlatti*, *Pergolese*, *Jomelli*; in Fr.: *Rameau*, *Couperin*.

MID. 18TH AND EARLY 19TH CENTS.: Foundation of mod. instrumental M. by Mannheim School (*Stamitz*, *Richter*). Haydn gave symphony and quartet their present form; Glück reformed opera; Mozart increased possibilities of orchestral expression and developed form of Ital. and Ger. opera (*Figaro*, *Don Giovanni*, *Seraglio*, *Magic Flute*).

*Beethoven* first to give expression in chamber and piano M. to personal and passionate sensibility of genius. *Schubert* fndd. Ger. *Lied*.

NINETEENTH-CENT. ROMANTICS: *Weber*, *Schumann*, *Spohr*, *Mendelssohn*, *Marschner*, *Berlioz* (new orchestral colouration); *Chopin* (developed possibilities of piano); *Liszt* (first appearance of the "virtuoso"). Fr. grand opera (*Boieldieu*, *Auber*, *Meyerbeer*) coincided with Ger. romantic opera reprinted by *Wagner* (re-modelling of music-drama). Simultaneous development of other forms: Comic opera (*Lortzing*), ballad (*Loewe*), waltz (*Lanner*, *Strauss*). In It., *Rossini*, *Spontini*, *Bellini*, *Verdi*; in Fr., *Thomas*, *Gounod*, *Bizet*, *Offenbach*, *Saint-Saëns*; in



Schubert, Das Haideröslein (Autograph)

Boh., *Smetana*, *Dvořák*; in Russ., *Glinka*, *Borodin*, *Moussorgsky*, *Tchaikowski*, *Rimsky-Korsakov*. The great Ger. masters of symphony: *Brahms* and *Bruckner*, *Reger*, *Mahler*. Tone-poets, *Hugo Wolf*, *Cornelius*, *Richard Strauss*, important both in opera and symphonic composition.

TWENTIETH-CENT. IMPRESSIONISM: *Debussy*, *Debussy*. Realistic opera; *Puccini*, *Mascagni*, *Leoncavallo*. NEO-ROMANTICISM: *Schillings*, *Pfitzner*, *Elgar*, *Bax*. Revival of folk and children's M. occasioned by Youth Movement. *Schönberg*, *Stravinsky*, *Hindemith*, *Honegger*, *Bliss*, *Walton* lead the way towards a new (in some cases atonal) M.; jazz opera by *Křenek*; syncopated opera by *Weill*; attempts at colour and ether-wave music.

**Musical comedy**, play interspersed with light musical numbers.

**Musk**, 1) substance with pungent odour, secreted by gland on abdomen of male musk-deer and of various other animals; used in perfumery. 2) N. Amer. perennial plant whose branches and leaves are covered with soft hairs giving off a strong odour; frequently cultivated. **M.-deer**, small Asiatic deer; male has no antlers, but long tusks which project 3 in. below margin of upper lip; also abdominal gland secreting highly odorous substance (*musk*), used in perfumery. **M.-ox**, small, shaggy-coated ruminant; now restricted to N. Greenland and Arctic Amer.; allied to the sheep, which it resembles in habit, collecting in flocks; strong, musky odour. **M.-rat musquash**, N. Amer. rodent allied to the voles; lives near streams, where it excavates holes in the banks, often causing serious damage and flooding. Heav-



ily built, c. 12 in. long; dull, brown fur; both sexes have gland secreting substance with strong musky odour. Its introductn. into Cent. Eur. and Gr. Brit. on acct. of its valuable fur has led to legislatn. being passed agst. its importatn. and towards its exterminatn., owing to the damage to waterways that it causes.

**Musket** (Ital., *moschetto*), early muzzle-loading, portable firearm (match-, wheel-, or flint-lock). **Musketeers**, soldiers armed with Ms. (distinct from *pikemen*), 16th-17th centuries.

**Muslim**: see MOSLEM.

**Muslin**, fine, soft cotton fabric used for dresses, curtains, etc.; named from Mosul (*q.v.*), where orig. made.

**Muspelheim**, Flame World of Norse saga; precedes destruction of the world.

**Musquash**: see MUSK-RAT.

**Mussel**, bivalve mollusc with a world-wide distribution. Found in vast numbers attached to rocks by byssus threads, in shallow sea. Shell, externally, deep purple; internally, nacreous. **M.-crab**, *Pea-crab*, small, round crab frequently found in company with a living mussel in the mantle cavity of the mollusc.

**Musselburgh**, police bor., Midlothian, at mouth Riv. Esk; pop., 17,000; Loretto School.

**Musset**, Alfred de (1810-57), Fr. poet, visited It. with George Sand, 1833. *Poésies Nouvelles*, 1840.

**Mussolini**, Benito (1883- ), Ital. statesm., originally [socialist, and Irredentist patriot; journalist, 1908-15; served in army, 1915-17; 1st Fascist group, fndd. 1919, to combat bolshevism in Italy, broke down Communist movement and made political party, 1921, supporting Monarchy; march on Rome, 1922, and govt. taken over, with Mussolini Pr. Min., For. Min., and Min. of Interior.



Mussolini

**Mussorgski**: see MOUSSORGSKY.

**Mussulman**: see MOSLEM.

**Must**, unfermented juice of grape or other fruits.

**Mustagh Range**: see KARAKORAM.

**Mustapha Kemal**: see KEMAL PASHA.

**Mustang**, wild horse of N. Amer. Mustard prairies.

**Mustard**, plant, seeds of wh. are finely ground, with add. of wheat flour; coloured with turmeric (*q.v.*); mixed with vinegar or water; used as strong, hot flavouring. **M.**



**plant**, sevrl. varieties; white **M.** (so called from colour of the seeds) *Brassica alba*, grows wild; yellow flower and leaves sometimes used in salad. Black **M.**, *B. nigra*, yellow flower, cultivated for its seeds wh. form well-known condiment; contain an oil; used in med. as a counter-irritant and rubefacient.

**Mutation**, 1) in Germanic langs., vowel-change due to *i* or *u*, now gen. lost or altered, in following syll., e.g., *a* into *ä*, *o* into *ö*, etc. 2) See HEREDITY; EVOLUTION.

**Mutatis mutandis** (Lat.), the necessary changes being made.

**Mutchkin** 1) old Scots liquid measure, equal to  $\frac{3}{4}$  pint. 2) One-quarter of the old Scots pint, i.e., one Eng. pint.

**Mute**, (*sordino*) device used to dull the sound of musical instr.; strings placed on the bridge (*q.v.*); in wind instr. pushed inside. **M. consonants**, *cs.* produced by entire or partial interruptn. of passage of breath, e.g., *k.p.t.*, *g.b.d.*, *ch*, *ph*, *th*. This classification is discredited by modern phonetic science.

**Mutsu Hito** (1852-1912), Jap. emp.; succ. 1867, under title Meiji Tenno; abol. shogunate; assumed direct personal rule, with a centr. bureaucracy; authorised judicial code based on Code Napoléon; opened up country to foreigners; adopted European calendar; ordered English to be taught in schools; concluded treaties with European countries; successful in war with China.

**Mutton**, flesh of the adult sheep when used as food; for division of joints, see MEAT.

**Muzzle-loader**, fire-arm loaded from the muzzle with a ramrod.

**Mweru**, lake, E. Africa, betw. N. Rhodesia and Belg. Congo; alt., 3,000 ft.; 68 X 25 m.; reached by Livingstone, 1867.

**Myall**, Australian tree of acacia fam., resemb. weeping-willow; its fragrant wood used for ornamental turnery.

**Mycenae**, anc. city, Greece, on hill (860 ft.) commanding Argolic Plain, N.E. Peloponnesus; Agamemnon's cap. (*Iliad*); centre of Bronze Age (Mycenaean) civilisation in 2nd mill. B.C. Excavated by Schliemann, 1873-76; later by Greeks, 1877-1902; and by Brit. School at Athens, 1920-23. Shaft graves, beehive tombs, royal palace, Cyclopean walls, Lion Gate. Trad. fndd. by Perseus: sacked after Dorian invasion; destroyed (with Tiryns) by Argos, 468 B.C.



Mycenaean Goblet

**Myddelton**, Sir Hugh (c. 1590-1631), London goldsmith; M.P., 1603-13; projector of *New River* water supply for London; permitted, by special act, 1605, to bring water from New River, Ware, Herts, to a reservoir

at Islington by means of a canal over 38 miles long; work completed, 1613.

**Mydriasis**, dilatation of pupils, e.g., in belladonna poisoning.

**Myelitis**, (med.) inflammation of spinal cord.

**Myers**, Frederic Wm. Hy. (1843-1901), Eng. poet, essayist and psychiatrist; with Sidgwick, Hodgson, Gurney, etc., fndd. Soc. for Psychical Research; poem, *St. Paul*, 1867; *Essays, Classical and Modern* (2 vols.), 1883; *Human Personality and the Survival of Bodily Death* (2 vols.), 1903.

**Myna**, Indian bird of starling tribe, insectivorous; gen. black, under-parts brownish; yellow beak.

**Myocardium**, (physiol.) muscle of the heart. **Myocarditis**, inflammation of myocardium.

**Myopia**, short sight.

**Myosotis**: see FORGET-ME-NOT.

**Myria-** (metric system), prefix meaning 10,000 times, e.g., 1 *Myriametre* = 10,000 metres (10 kilometres or 6.21 miles).

**Myriads**, orig. multiples of 10,000, hence equivalent to countless.

**Myriapods**, class of arthropods, including millipedes and centipedes, having bodies composed of many segments, each segment being provided with one pair of legs in the case of centipedes and two in millipedes. *Centipedes* are carnivorous and can inject poison through the fangs, large species being dangerous. *Millipedes* are non-poisonous and herbivorous.

**Myrmidons**, (Gr. myth.) warlike race in Phthiotis, Thessaly, subject to Peleus and to Achilles, who led them in the Trojan War. Hence, unscrupulous inferiors who carry out orders without compunction.

**Myron**, Gr. sculptor (5th cent. B.C.); *Discus thrower*.

**Myrrh**, 1) gum resin from *Commiphora myrrha*, shrub growing in N.E. Africa and S. Arabia; has an agreeable aromatic odour and bitter taste; used in med. as an astringent mouth-wash and gargle. Arabian M., formerly used for embalming, [is also known as "Balm of Gilead." 2) gum resin from *Balsamodendron myrrha*, used in manuf. of incense, perfumes, etc.



Myrtle

**Myrtle**, *Myrtus communis*, evergreen shrub with glossy leaves, white, or rosy, fragrant

flowers and black berries; leaves used in folk-med.; plant considered by the ancients as sacred to Venus.

**Mysia**, (anc. geog.) dist. N.W. Asia Minor, on Propontis (Sea of Marmora) and Aegean Sea; included Troad, Teuthrania, (q.v.) and three other divisions. Rom. prov. (with Pergamon) 133 B.C.

**Mysore**, 1) inland native State, Deccan penins., S. India; 29,500 sq.m.; pop., 6,557,900; rice, millet, pulses; goldfields, manganese deposits; largest tn., Bangalore. 2) Cap. of State; maharajah's palace; univ.; pop., 83,950.

**Mystagogue** (Gr.), 1) priest who initiated novices into the Greek *Mysteries* (q.v.). 2) (Early Ch.) A catechist; keeper of holy relics.

**Mysteries**, 1) (class. antiqu.) secret rites revealed only to the initiate (e.g., Eleusinian Ms.). 2) (Eccles.) Doctrines or aspects of Christianity beyond human understanding (Trinity, Incarnation, Eucharist). 3) Mediaeval relig. plays fndd. on Biblical stories prod. under directn. of Ch. at festivals (Easter, Corpus Christi, Christmas); performed orig. in ch., later in churchyard, or in street, by trade guilds; Chester, Coventry York and Woodkirk cycle of Ms. still extant.

**Mytens**, Daniel (c. 1590-1642) Dut. portrait painter; prob. studied under Miereveldt; court painter in Engl., c. 1614-35.

**Myth**, trad. story in wh. operatns. of natural forces and occurrences in human hist. are represented as actions of individ. living beings, esp. of men, or of imaginary extra-human beings acting like men; tale handed down from primit. times, involving elements of early religious views as respecting the orig. of things, powers of nature, etc.

**Mythology**, study of myths; science of racial divinities.

**Mytilene**, 1) Modern name of isl. of Lesbos (q.v.). 2) Cap. of Lesbos; pop., 28,000; wine, oil.

**Myxoedema**, (med.) disease caused by defective action of thyroid gland; symptoms are pasty swelling of skin and loss of mental capacity.

**Myxomycetes**, shapeless, amoeba-like masses of protoplasm (*plasmodia*), capable of creeping movements and which at a later stage separate into spores; in decaying wood and other organic matter; e.g., flower of tan; slime-fungi.

# N

**N**, (chem.) symbol of nitrogen.

**N.**, abbr. north.

**Na**, (chem.) symbol of sodium (natrium).

**Naaman** (O.T.), high officer of Benhadad II of Syria; cured by Elisha of leprosy (II Kings v).

**Naas**, mkt. tn., Co. Kildare, I.F.S.; pop., 3,400; anc. seat of kgs. of Leinster; race-meetings, Apr.-July and Oct.; steeplechases, Jan. and March.

**Nabataeans**, anc. Arabian people of Transjordan, cap., Petra (*q.v.*); identified with Nebaioth of O.T. (Isaiah lx. 7); their ancestor Nabajoth was said to be eldest son of Ishmael (Gen. xxv. 13).

**Nablus**, tn., N. of Jerusalem, Palestine; pop., 15,950; as Shechem, cap. of kgdm. of Israel, and later of prov. of Samaria.

**Nabob**, administrator of a prov. in the former Mogul Emp. of India; later, any native (or, derisively, Anglo-Indian) of wealth; correct form, Nawab.

**Nabonassar**, Kg. of Babylon, 747-732 B.C.; from commencement of his reign dates the *Era of N.*, an arbitrary date fixed by Ptolemy in 2nd cent. A.D., hence also called the Canon of Ptolemy.

**Nabopolassar**, Kg. of Babylon, 625-605 B.C.; destroyed Assyrian Empire.

**Naboth** (O.T.), Jezreelite whose vineyard Ahab coveted; N. was executed by order of Jezebel (*q.v.*).

**Nabu**: *see* NEBO 2).

**Nacelle**, (aeron.) enclosure for passengers or power-plant on aeroplane.

**Nachtigal**, Gustav (1834-85), Ger. African explorer; Ger. imp. commissioner, W. Africa, 1884; annexed Togoland.

**Nadir**, (astron.) imaginary point in heavens, directly opp. to zenith (*q.v.*), the lowest of the 2 poles of the horizon; point directly under observer's feet; (fig.) lowest point of depression or decline.

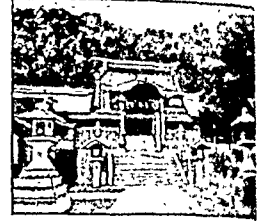
**Nadir Shah** (1688-1747), Shah of Persia, 1736-47; extended emp. to Euphrates, Indus, and Caspian Sea. Sacked Delhi, 1739.

**Naevius**, Gaius, Rom. poet and dramatist of 3rd cent. B.C.; epic on First Punic War.

**Naevus**, a birthmark due to a local abnormality of the blood vessels, causing formation of blue-red patch on skin.

**Nagana**, cattle disease of S. and E. Africa, transmitted by tsetse-fly (*q.v.*).

**Nagano**, 1) administr. dist., Japan; area 5,240 sq.m.; pop., 1,629,225. 2) Tn., Isl. of Hondo, Japan; pop., 66,575; silkworm rearing.



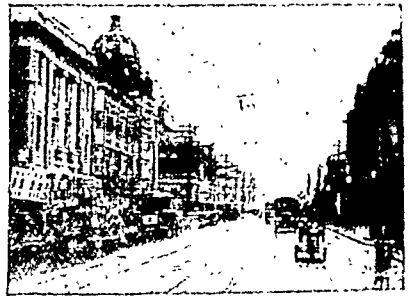
Nagasaki

**Nagasaki**, 1) administr. dist., Japan; 1,590 sq.m.; pop., 1,163,945. 2) Tn. on W. coast of Kyushu; pop., 199,800; naval port; shipbuilding.

**Nagorni**: *see* KARABAGH.

**Nagoya**, tn. E. coast Isl. of Hondo, Japan; pop., 904,700; univ.; commercial high school; industries: enamel and silk.

**Nagpur**, 1) division, Centr. Provs., India; area, 23,000 sq.m.; pop., 3,000,000. 2) Dist.



By courtesy of Nippon Yusen Kaisha  
Hirokoji-Dori, Nagoya

Centr. Provs.; 3,834 sq.m.; pop., 793,000. 3) Cap. Centr. Provs.; pop., 215,000; univ.; textiles.

**Nahua**, collective name for pre-Conquest Mexican races, incldg. the Aztecs (*q.v.*).

**Nahum**, (O.T.) a prophet, prob. of Judah; **Bk. of N.** (c. 664-607 B.C.) foretells destruction of Nineveh.

**Naiads**, (Gr. myth.), water nymphs (*q.v.*).

**Nail**, Brit. cloth meas., 2½ inches.

**Nain**, (N.T.) tn. in Galilee on plain of Esdraelon; at its gates Christ restored the widow's son to life (Lu. vii).

**Nainsook**, striped or plain cotton fabric.

finer than cambric and thicker than muslin; made orig. in India.

**Nairn**, co. tn. of Nairnsh., Scot.; royal burgh and seapt.; pop., 4,200.

**Nairne**, Carolina, Bness. (1766-1845), Scot. writer of Jacobite songs, incldg. *Charlie Is My Darling, A Hundred Pipers, Caller Herrin*, and *The Land of the Leal*.

**Nairnshire**, marit. co., N. Scot., on Moray Firth; area, 195 sq.m.; pop., 8,300; fertile, wooded; rivs., Findham and Nairn; agric. and fishing.

**Nairobi**, cap., Kenya Colony, 350 m. from sea (Mombasa), on Uganda Rly.; pop., 47,500 (5,200 whites).

**Nakhichevan**, 1) tn., S. Caucasus, admin. centre of auton. Russian repub. of N. (c. 2,310 sq.m.; pop., 105,700), on Riv. Kishai; pop., 9,950. Armenian legend declares Noah to have fidd. Nakhichevan after the Ark had rested on Ararat. 2) **N.-on-Don**, tn., N. Caucasian Area, Russia, 7 m. N.E. of Rostov-on-Don; pop., 73,800 (many Armenians); smelting, rope works.

**Naltschik**, tn., N. Caucasus, Russia, pop., 21,380; Lenin school for Communist Party teachers; domestic arts institute; agriculture.

**Namaqualand**, region of Africa, between 22° 43'S. and 31°S.; divided by Orange Riv. into *Little N.*, part of Cape Colony, and *Great N.*, the southern part of S.W. Africa.

**Namur**, 1) prov. Belgium; area, 1,421 sq. m.; pop., 350,000. 2) Fortifd. tn., cap. of prov., at confluence rivs. Sambre and Meuse; pop., 32,500; steel manuf.; coal mines. Taken by Germans 26 Aug., 1914.

**Nana Sahib** (1825-57), adopted son of Peshwa of the Mahrattas, a leader of Indian Mutiny, 1857; permitted Massacre of Cawnpore (q.v.).

**Nan-chang**, cap. prov. Kiangsi, China; pop., 315,600; straw and paper industry.

**Nancy**, cap. dépt. Meurthe-et-Moselle, France, on Riv. Meurthe and Rhine-Marne Canal; pop., 114,500; univ.; forestry; academy; textiles; furnaces. Till 1766, cap. of German Duchy of Lorraine.

**Nankeen**, cotton cloth, of yellowish-brown colour, orig. made at Nanking; (pl.) trousers made of this.

**Nanking**, tn. prov. Kiangsu, China, on Riv. Yangtze-kiang; pop., 522,700; univ.; indust.; textiles, metal manuf.; treaty port. From 200 B.C. to A.D. 1400, cap. of emp. (Ming period); destroyed in Tai-ping rebellion, 1853; cap. of China since 1928.

**Nansen**, Fridtjof (1861-1930), Norweg. polar explr. and statesm.; 1st to cross S. Greenland, 1888; polar journey in "Fram,"

1893-96; directed famine relief work in Russ., 1921-22; Nobel Peace Prize, 1922.

**Nan Shan Mountains**, collective name for several centr. Asiatic mtn. ranges N.E. of Kuen Lun; see KUKU-NOR.

**Nantes**, cap. dépt., Loire-Inférieure, France, on Riv. Loire; pop., 184,500; 12th-cent. cathed.; medical and law schools; large radio stn.; trade centre of Loire basin, ship-building. The **Edict of N.**, 1598 (Henry IV), gave religious freedom to Huguenots; revoked, 1685, by Louis XIV.

**Nantwich**, mkt. tn., Cheshire, on Riv. Weaver; pop., 7,300; boot and shoe manuf.; 15th-cent. church; brine baths.

**Naomi**, (O.T.) mother-in-law of Ruth (q.v.), who returned with her from Moab to Bethlehem.

**Nap**, 1) (text.) surface of a fabric consisting of free hairs or fibres; produced in velvet by pile, in cloth by teasing after weaving; term also used of very fine natural fur, as in "silk" hat. 2) Card game: see NAPOLEON.

**Naphtali**, (O.T.) son of Jacob and Bilhah, forefather of tribe of Naphtali.

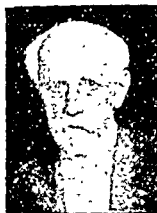
**Naphtha**, clear, liquid, inflammable oil found exuding from bitumen beds in district of Caspian Sea; strong-smelling liquid distilled from crude petroleum; used as solvent for "dry" cleaning, and for lighting.

**Naphthalene**, (chem.) C<sub>10</sub>H<sub>8</sub>, stable hydro-carbon from coal tar, with penetrating odour, occurs as crystalline scales; used to keep moths away from clothes and occas. in med. as a parasiticide; also for producing dyes. **Beta-naphthol**, sim. product used in med. as an intestinal antiseptic.

**Napier**, John (1550-1617), Scots mathematician; invented logarithms (q.v.). **N.'s bones**, calculating rods facilitating multiplcn. and divn., invented by Napier. **N., Sir William Francis Patrick** (1785-1860), Brit. soldier and milit. historian: *History of the War in the Peninsula*. **N. of Magdala**, **Robt. Cornelis Napier**, 1st bn. (1810-90), Brit. field-marshal; served Ind. Mutiny, China, Abyssinia (storming of Magdala, 1868); C.-in-C., India, 1870-76; Gov. of Gibraltar, 1876-83.

**Napier**, seapt. on Hawkes Bay, N. Island, New Zealand; pop., 19,300; cathed.; exports frozen meat and fruit. Devastated by earthquake, Sept., 1932.

**Naples, Napoli**, 1) dept. of Campania, Italy; 1,205 sq.m.; pop., 2,083,000; surface generally flat, with abrupt hills (Vesuvius



Nansen



Street in Naples

in S.); rich volcanic soil; vineyards, cereals, cotton. 2) Cap. of dept., situate in amphitheatre of hills on Bay of N.; pop., 983,000; see of cardinal abb.; over 230 churches; four mediaeval castles; Nat. Mus. (Græco-Roman antiquities, picture gallery, library); university (13th cent.); zoolog. station (aquarium); second Ital. port (naval base); shipb.; textiles, leather, majolica, olive oil, macaroni. In vicinity are Pompeii, Herculaneum, and Capri. HISTORY: In the 7th cent. B.C. the Greeks planted colonies at Cumæ, whence *Palæopolis* ("Old City") and Parthenope, or *Næapolis* ("New City"), were fndd. Neapolis, as Rom. dependency, became a favourite residence of Rom. emps. and patricians. After fall of W. Empire it passed to the Goths, who lost it to Belisarius, 536; retaken from Goths by Narses, 542, and became a dukedom under the E. Empire. Indept. repub. in 8th century. Overthrown by the Normans, 12th cent., who made it part of *Kgdm. of the Two Sicilies* (see SICILY). Rule of the Hohenstaufens after death of Tancred (1194-1266), ushered in era of conflict with the popes and with the feudal barons. Kg. Manfred (natural son of Emp. Frederick II) defeated and killed by Charles of Anjou, 1266; period of Fr. domination ended by *Sicilian Vespers*, 1282 (see SICILY). Kgdm. now passed to Peter III of Aragon. N. became separated from Sicily; temporarily reunited under Alphonso the Magnanimous (1443-58) and again under later rulers. Spanish, 1504-1707; Austrian, 1707; Charles of Bourbon kg., 1738-59; Ferdinand IV kg. of the Two Sicilies, 1759-1825; war with France, 1798; Parthenopæan Repub., 1799, overthrown by Card. Ruffo and his Sanfedisti; Ferdinand restored but, running athwart Napoleon, fled to Sicily, 1805. Joseph Bonaparte kg., 1806-08; Joachim Murat kg., 1808-15. After Ferdinand's second restoration (1815) concordat estab. with the Ch., 1818. Revolution, 1820; Austr. occupation till 1827. Revolution in Sicily (1848) followed by troubles in N.: war with Austria. Francis II (1859-61), last kg. of the Two Sicilies. Garibaldi, having won over Sicily, entered N. in Sept., 1860, and, after series of victories, succeeded in founding Kgdm. of United Italy under Kg. Victor Emmanuel, 1861.

**Napoleon: N. I, Bonaparte** (1769-1821), Emp. of the French; b. Ajaccio, Corsica; lieutenant, Fr. Army, 1785; commanded artillery at Toulon, 1794; suppressed Royalist rising (Vendémiaire) in Paris, 1795; m. Josephine de Beauharnais, 1796. After campaign in Italy, broke up hostile coalition at Peace of Campo Formio, 1797. Planning downfall of England, occupied Egy.; frustrated by battle of the Nile, 1798. First Consul, 1799 (for life, 1802). Reformed admin. and pub-

lished *Code Napoleon*, basis of modern law, 1804. Crowned Emp., 1804. After Trafalgar (1805), started blockade of England (Continental System), 1806; m. Marie Louise of Austria, 1810. Defeated at Leipzig, 1813; exiled to Elba. Took advantage of dissensions at Cong. of Vienna to return, 1815 (Hundred Days); deftd. at Waterloo, surrend. and exiled to St. Helena, where he died. See NAPOLEONIC WARS. **N. II** (1811-15), Kg. of Rome, Duke of Reichstadt, s. of N. I. **N. III** (1808-73), nephew of N. I; Pres. of Repub., 1848; Emp. of the French, 1851; Eugénie de Montijo (1826-1920), 1853; prisoner at Sedan, 1870; deposed, 1871; d. at Chislehurst, England. **Louis N.**, Pr. Imperial (1856-79), son of N. III, killed while serving with Brit. Army in Zululand.

**Napoleon**, 1) gold coin of 1st and 2nd Fr. Emp., value 20 francs (q.v.), equiv. to the louis (q.v.). 2) **N.**, or **Nap**, card game for 2 or more players; each player, on receiving 5 cards, declares how many tricks he can make. ("Go N.": declaration of 5 tricks.)

**Napoleonic Wars**, general term for the European wars, 1792-1815, in wh. Napoleon was the dominant figure: 1st period, 1792-1801, French Revolutionary wars (ended by Peace of Lunéville, 1801); 2nd period, 1803-15; new coalition against France, 1805; Austrian War, 1805 (Ulm, Austerlitz); Trafalgar, 1805; Fr. conquest of Prussia and Poland, 1806-07 (Jena, Auerstadt, Eylau); Treaty of Tilsit, 1807; Peninsular War, 1808-14; Austrian War, 1809 (Wagram); Fr. invasion of Russia, 1812 (Borodino, Retreat from Moscow); Ger. War of Liberation, 1813 (battle of Leipzig); last campaign in France, 1815 (Waterloo).

**Nara**, 1) administr. dist., S.E. Isl. of Honshu, Japan; 1,440 sq.m.; pop., 583,830. 2) Tn. in dist. of N.; pop., 48,880; cap., Japan in 5th cent.; famous temples; art manufactures.

**Narbonne**, tn. in dépt. Aude, on Canal du Nord, France; pop., 30,000; vineyards and wine trade. Roman colony in 118 B.C.; archiepiscopal see, 5th cent. till 1790.

**Narcissus**, 1) youth in Gr. legend of great beauty, who became enamoured of his own reflection in the water; he pined away and was changed into a flower; hence *Narcissism*, perverted mental condition of one who directs his sexual instincts towards himself. 2) (Bot.) genus of bulbous plants of Amaryllis tribe; several varieties: *N. poeticus* or pheasant's-eye N., is a white, sweet-scented flower grow-



Napoleon I.



Narcissus

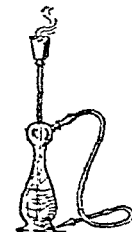
ing on a long, slender stem; the yellow *Daffodil*, with trumpet-shaped flower, belongs to the group *N. pseudonarcissus*. All flower in temperate climates in the spring.

**Narcosis**, unconsciousness produced by a drug; differs from anaesthesia (*q.v.*) in that there is not complete relaxation of muscles.

**Narcotics**, substances used to produce partial or complete loss of consciousness, or loss of sensibility to pain. Hypnotics, substances used to produce sleep, include chloral, paraldehyde, veronal. Opium and its derivatives are mainly used to abolish the sensation of prolonged pain.

**Narenta**, *chf. riv.* of Herzegovina, S. Yugoslavia; flows into Adriatic; navigable to Metković.

**Narghilé** (Arab.), oriental tobacco-pipe in which the smoke is passed through perfumed water; a hookah.



Narghilé

**Narrenschiff, Das**, satirical poem by Sebastian Brandt, 1494; Eng. version by A. Barclay, as *The Ship of Fools*, 1509.

**Narses** (c. 478-573), Byzantine court official and general under Emp. Justinian; defeated insurrection in Byzantium, 532; overcame Goths under Totila, 552, thus recovering Italy, wh. he, for some time, administered.

**Narthex**, (archit.) long arcaded porch across W. end of early (and some recent) Christian churches for use of those temporarily excluded from body of ch. (*c.g.*, penitents, catechumens).

**Narwhal, narwal**, an aberrant dolphin confined to Arctic seas; male has long spirally twisted tusk, 6 to 8 ft. long; generally travel in small "schools."



Narwhal

**Nasal sinuses**, cavities of forehead and jaw situated near and connected with nasal cavity. After chills and influenza frequently become inflamed and discharge matter.

**Naseby**, vill., Northants, Eng., 7 m. S.W. Market Harborough; site of defeat of Charles I and Pr. Rupert by Fairfax, 14 June, 1645.

**Nash, John** (1752-1835), Eng. architect; laid out Regent's Park and Regent Street, London; designed the Marble Arch, etc. **N., Richard** (1674-1762), Eng. dandy, "Beau Nash"; Master of the Ceremonies at Bath. **N., Thos.** (1567-1601), prolific pamphleteer and satirist; took part in Marprelate controversy (*q.v.*); author of first Eng. novel of adventure: *Jack Wilton*, 1594.

**Nashville**, cap., Tennessee, U.S.A., on Cumberland Riv.; pop., 153,000; univs.;

Fisk (1865), Vanderbilt (1873); lumber industry.

**Nasmyth, Alexander** (1758-1840), Scots portrait and landscape painter; *Robt. Burns*. His son, **James** (1808-90), Scots. engineer; inven. steam-hammer.

**Nassau**, 1) part of Prussian prov., Hesse-Nassau, centr. Germany; a county, c. 1160-1806, Duchy, 1806-66, when annexed to Prussia. 2) Spa on Riv. Lahn, 15 m. E. Coblenz; pop., 2,400. 3) Cap. of *Bahamas* (*q.v.*), on New Providence Island.

**Nasturtium**, 1) ornamental climbing plant (*Tropaeolum*) with large varicoloured spurred flowers; native of S. Amer. 2) *N. officinale* of the druggists; see WATER-CRESS.

**Natal**, 1) prov., Union of S. Africa (discovered, Christmas Day, 1497, by Vasco da Gama); bounded N. by Transvaal and Mozambique, W. by Orange F.S. and Basutoland, S.W. by Cape Prov., and S.E. by Indian Ocean; includes Zululand; area 353,300 sq.m.; pop., 1,500,000 (177,400 whites); a series of plateaux with *Drakensberg Mtns.* in W.; sheep-farming, cattle rearing; iron, copper, coal; exports maize, hides and skins, wool, sugar; cap., *Pietermaritzburg*; port, Durban. 2) Cap., State of Rio Grande do Norte, Brazil, on estuary Rio Grande; seapt.; pop., 35,000.



Native Woman of Natal

**Natchez**, tribe of N. Amer. Indians, formerly inhabiting State of Mississippi, with distinctive culture; sun- and serpent-worshippers; war with French settlers, 1731; some survive among Cherokees (*q.v.*).

**Nathan**, (O.T.) prophet and adviser of David (II Sam. xii).

**Nathanael** (N.T.), disciple of Jesus, gen. identified with Bartholomew.

**National anthem**, song recognised as symbolic of a nation. *Argentine Republic*: "Oid, mortales, el grito sagrado libertad" ("Hear, men, the sacred voice of liberty"). 1813. *Australia*: "There is a land where summer skies." *Austria*: "Deutschösterreich, du herrliches Land" ("German Austria, thou lovely land"). *Belgium*: "La Brabançonne" ("O Belgium, my beloved"); words by Dechet, music by Campenhut, 1830. *Brazil*: "May a flood of glory spread." *Bulgaria*: "Sumi Marica okrvavena" ("Waves of Maritza, red with blood"), 1883. *Canada*: "The maple leaf for ever." *Colombia*: "O gloria inmarcesible" ("O changeless glory"), 1810. *Costa Rica*: "Noble patria, tu hermosa bandera" ("Holy land, thy noble flag"). *Cuba*: "Al combate corred

Bayameses" ("Men of Bayamo, to the fight!"), words and music by P. Figueredo. *Czechoslovakia*: "Kde domov můj?" ("Where is my home?"), 1834. *Denmark*: "Kong Christian stod ved Højen mast" ("King Christian stood beside the mast"), 1778. *Danzig*: "Das ist die Stadt am Bernsteinstrand" ("This is the town on Bernsteinstrand"), words by P. Enderling, music by Dr. G. Göhler, 1923. *Estonia*: "Mu Isamaa, mu onn ja rõõm" ("My native land, my joy and happiness"). *Finland*: "Maamme" ("Our native land"), 1843. *France*: "The Marseillaise" words and music by Rouget de Lisle, 1792. *Germany*: "Deutschland, Deutschland über Alles" ("Germany, o'er all supreme"), 1841. *Great Britain*: "God save the King," attributed, among others, to Henry Carey, c. 1743. *Greece*: "Se gnorizo apō tin kōpsi" ("I know Thee, Liberty, from the sharpness of thy sword"), by Dionysios Solomos. *Holland*: "Wilhelmus van Nassouwe ben ick van diesshen bloet" ("William of Nassau, of Dutch blood am I"), 1570; also, "O ye within whose burning veins," 1830. *Hungary*: "Isten áldd meg a magyart jó kedvvel, bőséggel" ("God bless Hungary"), words by Fr. Kölcsey. *Irish Free State*: "Soldiers' Song" ("Soldiers are we whose lives are pledged to Ireland"). *Italy*: "Marcia reale" (Royal march), 1834. *Japan*: "Kimiga-yo" ("Flourish the Dynasty!"), music by Eckert, 1880. *Latvia*: "Dievs sveti Latviju" ("God bless Latvia"), 1889. *Liberia*: "All hail, Liberia, hail." *Liechtenstein*: "Oben am deutschen Rhein" ("High above the German Rhine"), 1850. *Lithuania*: "Lietuva, tevyne musu, tu didvyriu zeme" ("O Lithuania, my ancestral land"). *Luxembourg*: "Ons Hemecht" ("Our fatherland"). *New Zealand*: "God girt her about." *Norway*: "Ja, vi elsker dette landet" ("Yes, we love our country"), words by B. Björnson, music by R. Nordraak, 1865. *Poland*: "Jeszcze Polska nie zginela" ("Poland is not lost"), words by I. Wybicki, 1797. *Portugal*: "As Armas!" ("To arms!"), 1910. *Rumania*: "Traiască Regele in pace si onor" ("Live our King in peace and honour"), 1862. *Russia*: "The International" ("Workers of the world, unite!"). *San Marino*: "Giubilanti d'amore fraterno" ("Joyful in fraternal love"), music by F. Consolo, 1894. *Sweden*: "Du gamla, du fria, du fjällhöga Nord" ("Thou ancient, free and rocky North"), words by R. Dybeck. *Switzerland* (Ger.): "Rufst du, mein Vaterland" ("Call'st thou, my fatherland"), words by T. R. Wyss, tune of "God save the King." *Turkey*: "March of Mustapha Kemal." *United States of America*: "The Star-Spangled Banner," 1814; also "America" ("My Country, 'tis of Thee"), tune of "God Save the King." *Venezuela*: "Gloria al bravo pueblo" ("Glory to a dauntless people"),

1814. *Yugoslavia*: "Bože pravde, ti što spase" ("God of Justice our protector"), 1872.

**National Assembly**, meeting of a nation, esp. in order to frame new constitution; usu. denotes larger body than Constituent Assembly (*q.v.*). In Fr. hist., the first of the Revolut. Assemblies, existing from 1789-91. The States-General were opened 5 May, 1789, but in June the third estate (*q.v.*) ESTATES took this name and absorbed the two remaining estates. The legislatures of 1848 and 1871 are also known as National Assemblies. **N. Banks**, issue banks, in U.S.A. (law, 1863) private banking insts. subject to nat. (as opposed to separate State) banking law; they must be members of the Federal Reserve System (*q.v.*). **N. Central Library**, Brit. organisation fndd., 1916, as *Centr. Library for Students*, chfly. to provide books for adult classes; devlpd. into *N. Centr. Library* (Royal Charter, 1931), to supplement munic. and county librs. in Eng. and Wales (Scotl. and Irel., supplied from Dunfermline and Dublin); issues Union Catalogue, periodical book lists, etc.; works in co-op. with *Outlier Librs.* (public librs. and research librs.) with whom system of interloan has been arranged. **N. City Bank of New York**, fndd. as City Bank, 1812; adopted present title in 1865; at 31 Dec. 1932, deposits, \$1,299,377,710, liabilities, \$1,615,260,569. **N. Convention**, repres. assembly during the Fr. Rev., 1792-95; procl. the Republic. Succeeded by the Directory.

**National Debt**, debt incurred by a govt. on behalf of the nation; consists of *internal* d. (incurred by issuance of loans, treasury bills, etc., within the country) and *external* d., i.e. amounts owing to foreign govts. or debts in respect of loans issued in foreign countries and taken up by nationals of those countries. N.D. of U.K. on March 31, 1932, as compared with 1914, was:

	1914	1932
Internal Debt	£649,770,091	£6,466,569,175
External Debt		1,090,836,656
Total Debt	£649,770,091	£7,557,405,831

The National Debts of certn. other countries, as at end of 1932 (exc. where otherwise stated) were, approx., as follows—national currency being expressed in millions of £'s at par value: Australia, £1,188; Canada, £430; New Zealand, £282; Un. of S. Africa, £264; I.F.S., £29; U.S.A., £3,960; Argentine, £455; Austria, £673; Belgium, £1,595; Denmark, £71.3; France, £3,870; Germany, £5,940; Greece (Dec. 1931), £168; Italy, £106; Japan, £705; Netherlands, £205;

Poland, £116; Spain (Jan., 1930), £831; Turkey, £187.

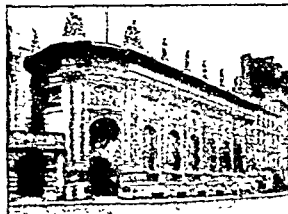
**National Gallery**, Trafalgar Square, London, Brit. picture gallery. Opened in 1838, to house art collection of J. J. Angerstein. Collection progressively augmented and improved, now finest of its kind; contains famous paintings of Ital. (Botticelli, Leonardo, Michelangelo, Titian, Tintoretto), Dut. (Rubens, Rembrandt, de Hooch), Fr. (Claude, Poussin), Span. (Velásquez, Goya), Brit. (Reynolds, Constable, Turner) schools.

**National Guard**, Fr. armed citizens of 1789 and 1830, abol. 1872. **N. insurance**: see HEALTH INSURANCE. **N. mark**, mark regis-



tered by Brit. Ministry of Agric., 1928, consisting of a silhouette map of Eng. and Wales within a border, inscribed "Produce of England and Wales"; stamped on home-grown goods (meat, eggs, cases of fruit, vegetables, etc.), to enable buyers to select Brit. goods and thus to promote sale of home-grown produce; now extended to incl. canned fruit and vegetables. **N. Museum of Wales**, Cardiff; institution designed to illustrate and perpetuate history of Wales and the Welsh. Granted Royal Charter, 1907; opened by George V, 1927. Contains collections of paintings, sculpture, ceramics, etc., mainly Welsh in origin; also exhibits relating to archaeology, geology, botany, etc., of Wales. **N. Old Trails Road** (Nat. Pike; Cumberland Road; Santa Fé Trail), from Washington, D.C., to Los Angeles; 3,096 m.; traverses Grand Canyon; first conceived by George Washington. **N. Physical Laboratory**, Brit. institution at Bushey Park, Teddington; fndd. 1901, now under admin. of Dept. for Scientif. and Indus. Research (q.v.). Tests and standardises scientif. instruments, materials, etc. Composed of 8 sections, incldg. Physics, Electricity, Meteorology, Engineering, Aerodynamics, Metallurgy, etc. **N. Provincial Bank**, estabd. 1833; has absorbed London and Smith's Bk. (1917), and a number of local bnks.; see BANKS, BIG FIVE.

**National Rifle Association**, body fndd. 1860 for encouragement and control of rifle-shooting in U. Kingdom. **N. Saving Certificates**, British Govt. securities originated



National Provincial Bank, London

during World War; designed to tap savings of less well-to-do for use by govt. First issued, 1916, at 15/6 (raised to 16/-, 1923) for each £1 certificate, repayable after 5 yrs. or at 26s. (reduced in 1923 to 24s.) after 10 yrs. New issue, 1932, at price of 16/-, repayable after 11 yrs. at 23/-. For amt. outstanding, see SAVINGS BANKS. **N. Socialist (Nazi) party**, Ger. Fascist Party, headed by Adolf Hitler (q.v.). Unsuccessful in Munich coup, 1923; secured power 1933 with appointment of Hitler as Chancellor. Policy: anti-semitism, suppression by force of socialism and communism, extreme nationalism.

**National Trust**, for places of historic interest or natural beauty; Brit. organisation, fndd. 1895, and estabd. by National Trust Act, 1907. Aims at preservation of nat. treasures, incl. buildings and viewpoints. Owns property (through donation, bequest, or purchase) in Eng., Wales, and Ireland. **N. Union of Teachers**, princ. representative assoc. of teaching profession, esp. elementary school teachers; fndd. 1870; opened to all teachers, 1889.

**Nationalisation**, ownership by State, esp. of pub. services. Advocated by Socialists, resisted in theory by Conservatives and individualists. Increased tendency in all countries, but often modified by delegation to auton. body. See PATRIMONIAL SYSTEM.

**Nations, Battle of the**, the Battle of Leipzig (q.v.), 1813.

**Nativity**, (astrol.) position of stars at a person's birth; supposed to determine his character and destiny; cf. HOROSCOPE.

**Natterjack toad**, Europ. var. of toad, with yellow or whitish line on back; less sluggish than common toad; distinctive rattling cry.

**Nattier**, Jean Marc (1685-1766), Fr. portrait painter; *Maréchal de Saxe*; *Duc de Richelieu*.

**Natural**, (mus.) ♮, sign cancelling previous accidental (q.v.).

**Natural gas**, inflammable gas consisting mainly of methane (q.v.); contained in the earth along with mineral oil deposits; comes to surface spontaneously, or when oil is tapped; often contains helium; now sent by pipe-line to towns for domestic and industrial consumption.

**Natural History Museum**, section of British Museum (q.v.) removed to S. Kensington, London, 1881. Comprises all branches of natural history, incldg. reconstructed skeletons of extinct animals, Piltdown and Rhodesian skulls, extant birds, and animals displayed in their natural surroundings.

**Naturalia non sunt turpia** (Lat.), that wh. is natural is not vile.

**Naturalism**, philos. doctrine interpreting universe in terms of matter and energy,



and employing only those conceptions used in physical science; akin to *materialism* (q.v.).

**Natural theology**, accepts only such evidences of God's existence as may be derived from study of nature.

**Nature reserves**, land set aside for care and preservation of characteristic countryside (forest, mountain) and animals (beaver, etc.). Usually called national parks in U.S.A. (most famous: Yellowstone Park).

**Naucratis**, anc. Gk. colony, Lower Egy., nr. Rosetta branch of the Nile; excavated by Flinders Petrie, 1884-86.

**Nauen**, tn. prov. Brandenburg, Prussia; pop., 10,000; important radio station.

**Nauehm, Bad N.**, spa in Hesse, centr. Germany, on E. slope of *Taunus Mts.* (Welterau); 540 ft. abv. sea-lvl.; pop., 1,000; mineral springs, salt-baths; Korkshoff Inst. for treatment of heart diseases.

**Naupactus**: see LEPANTO.

**Nauplia**, seapt. in the Peloponnese, Greece, on Gulf of N.; pop., 7,163. Anc. *Nauplion*; in crusading and mediaeval times, *Napoli di Romania*; now cap. of dept. of Argolis and Corinth.

**Nauru**, former Ger. isl., Pacific Ocean, 25 m. S. of the Equator; now admin. by Gt. Brit., Australia, and N. Zealand jointly; 9 sq.m.; pop., 2,700 (147 Europeans); phosphates.

**Nausicaa**, in Homer's *Odyssey* dau. of Alcinous, Kg. of the Phaeacians, who led Ulysses to her father's court.

**Nautch girl**, native performer of Indian ballet dance, consisting esp. of movements of body and arms; gen. attached to Hindu temples.

**Nautical mile**: see MILE.

**Nautilus**, (zool.) last surviving species of a genus (*Tetrabranchiates*) of the marine order of *Cephalopods*. Large, handsome, creamy-white coiled shell, interior divided by shelly partitions into a series of chambers, the animal occupying the last-formed exterior cell. Four species, including the *pearly N.* and *paper N.*, are found in Persian Gulf, Indian Ocean, China Sea, and Pacific. In past geological epochs many forms existed, with coiled, curved, and straight shells.

**Naval Division, Royal**, corps of volunteers raised in World War by Brit. Govt.; fought, Antwerp, 1914; Gallipoli, 1915; Ancre, 1916; later disbanded and transferred to other units. **Royal N. Reserve**, Brit. organisation of officers and men of mercantile marine, estab. 1853; patrol duty and mine-sweeping in World War; now enrolled for five-year term.



Nautch Girl



Nautilus

**Navarino**, coast tn. in S.W. of the Peloponnese, Greece, on Bay of N.; pop., 6,500; destructn. of Turco-Egypt. fleet by Eng., Fr., and Russ. allies in Gk. War of Independence, 1827. Anc. name *Pylos*, now revived.

**Navarre**, 1) anc. kgdm. (from c. 900) on both sides of Pyrenees (mod. N., Spain, and part of Basses-Pyrénées, Fr.); Span. portion united to Castile, 1573, and French, under Henry IV ("Henry of Navarre") to France, 1607. 2) Prov., N. Spain, 4,060 sq.m.; pop., 334,300; cap., *Pamplona*; mountainous; grain, fruit, wine.

**Nave**, 1) the part of a church west of the chancel and septd. from the aisles by pillars; reserved for the laity. 2) Centr. portion of wheel from which spokes radiate.

**Navel** (*umbilicus*), depression in abdomen, formed by remains of the umbilical cord (q.v.), wh. is severed at birth.

**Navigation**, science of controlling speed, position, manoeuvring, stability, and loading of a ship at sea, upon wh. the whole operation of shipping in the long run depends. It is governed by various mechan. and mathemat. means. **N. Acts**, (Gt. Brit.) for protection of national mercantile marine and expansion of trade; first measures attributed to Richard I, revised by Richard II, 1381; first Act passed 1651, forbidding importation of goods into Eng. except in Eng. ships or ships of the producing nation; this extended in 1660, 1663, and 1672; largely repealed, 1826; finally abolished, 1849.

**Navy**, armed sea forces of a nation. **Royal N.**, (Brit.) admin. by the Admiralty (q.v.). Commands: The Nore, Portsmouth, Plymouth, Coast of Scotland; Reserve Fleet,



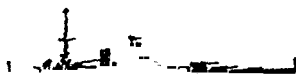
Aircraft Carrier



Submarine



Destroyer



Cruiser

Types of Ships (Royal Navy)

Atlantic Fleet; America and W. Indies, Mediterranean, China, E. Indies, India, Africa; further, Australian Sqn., New Zealand Station and R. Canadian Navy. Personnel about 99,000. Capital ships, 1931: 14 battleships and 4 battle-cruisers, compared with 58 b.-ships and 9 b.-cruisers in 1914. **U. S. N.** has the same number of capital ships and otherwise roughly the same strength (more destroyers and fewer cruisers).

than Gt. Brit.); personnel, however, abt. 114,000. See WASHINGTON AGREEMENT.

**Nawab:** see NABOB.

**Naxos (Naxia)**, Greek isl., largest of Cyclades, 174 sq.m.; pop., c. 17,000; fertile; olives, vineyards; exports: corn, wine, oil, emery.

**Nazarene**, 1) name given to Jesus Christ, because His early life was spent in Nazareth; 2) term used by Jews, and later by Moslems, for Christians.

**Nazareth**, tn. in Palestine, 126 m. N. of Jerusalem; pop., 7,425; agriculture, cattle rearing. Scene of Christ's childhood and early manhood.

**Nazarite**, Heb. devotee who took vows of abstinence from wine, hair-cutting, and touching of the dead (Num. vi), either for a period or for life.

**Naze, The**, 1) headland, Essex, 3 m. N. of Walton-on-the-Naze. 2) Southernmost point of Norway.

**Nazi:** see NATIONAL SOCIALIST PARTY.

**Nb**, (chem.) symbol of niobium.

**N.B.**, abbr., 1) North Britain; 2) New Brunswick; 3) *nota bene* (Lat.), note well.

**N.C.**, abbr. North Carolina.

**N.C.O.**, abbrev. non-commissioned officer, (q.v.).

**Nd**, (chem.) symbol of neodymium.

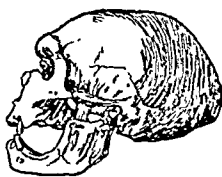
**N. Dak.**, abbr. North Dakota.

**Ne**, (chem.) symbol of neon.

**N.E.**, abbr. northeast.

**Neagh, Lough**, fresh-water lake, Co. Antrim, N. Ire.; largest in Brit. Isles; 18 m. by 11 (153 sq.m.); outlet Riv. Bann.

**Neanderthal**, vall. near Düsseldorf, Ger., where is the *N. cave*, site of discovery of skulls of **N. man** (*homo primi-genius*), 1857. **N. race**, indigenous in last Ice Age in W. centr. Eur.



Neanderthal Skull

Characteristics: low, receding forehead, prominent eyebrows, receding chin. See PRE-HISTORY.

**Neap tides:** see TIDES.

**Near East**, general name for that part of Asia nearest Europe; includes Asia Minor, Syria, Palestine, Arabia, Mesopotamia, and Persia.

**Neath**, mun. bor., Glam., S. Wales; centre coal and iron dist.; abbey; pop., 33,300.

**Ne bis in idem** (Lat.), not twice in the same; legal maxim that no one may be prosecuted twice for the same offence.

**Nebo**, (O.T.) 1) a mtn. in Moab (also called *Pisgah*), from wh. Moses viewed Promised Land (Deut. xxxiv); 2) **N.** or **Nabu**, Assy. and Babyl. god of learning.

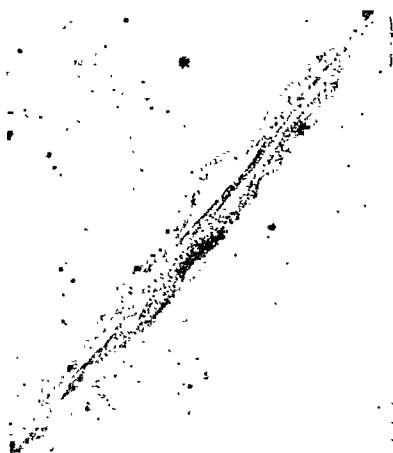
**Nebr.**, abbr. Nebraska.

**Nebraska** ("The Tree-Planters' State," "Cornhusker," "Antelope," "Black Water"),

State, U.S.A.; 77,515 sq.m.; pop., c. 1,400,000; mainly prairie, sand-hills, and fertile plains; forests in W.; *Pine Ridge* and *Cat Mtns.*; rivers: Platte, Missouri; dry, Continental climate; good roads. Chf. occupation is agric. (by machinery, irrigation in W.); maize, wheat, oats, sugar-beet; dairy-farming; sheep- and cattle-rearing; indust.: meat-canning, flour-milling; rlyway. repair shops; chf. tns.: Lincoln (cap.), Omaha.

**Nebuchadnezzar**, *Nebuchadrezzar* (605-562 B.C.), Kg. of Babylon; fndd. new Babyl. Emp.; destroyed Jerusalem, 586, and led Jews into exile (Babyl. Captivity). Restored Babylon (Hanging Gardens). Besieged Tyre for 13 years. Invaded Egypt.

**Nebulae**, masses of glowing gas in heavens, thought to be process of formation into stars and systems as they cool and condense;



Nebula

classified as: *planetary N.*, small and regular, mostly in Milky Way; *irregular N.*, of various shapes, e.g., Great N. in Orion; *spiral N.* (e.g., Great N. in Andromeda) with rotational movement; numerous, never in Milky Way, distant from Earth up to 150 mill. light years.

**Necessitas non habet legem** (Lat.), necessity knows no law.

**Necho** (609-595 B.C.), Kg. of Egy., deft. by Nebuchadnezzar, 605 B.C., after having invaded Syria. Sent Phoenicians to circumnavigate Africa, c. 600 B.C.

**Neckar**, trib. of the Rhine (230 m.); rises in the Black Forest, flows through Heidelberg, and joins Rhine at Mannheim; navigable from Kannstadt to port of Stuttgart.

**Necker**, Jacques (1732-1804), Fr. statesm.

and banker; finan. min. of Louis XVI; summoned States-General, 1789; resigned, 1790. Father of Mme de Staël.

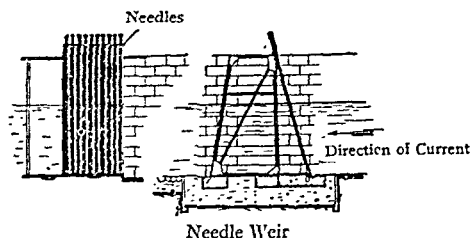
**Necrology**, register of deaths in a partic. place or period; formly. list of those for whose souls prayers were to be offered. **Necromancy**, divinatin. by pretended communic. with the dead; practice of black magic. **Necropolis**, city of the dead; anc. outlyg. pt. of Alexandria set apart for burial purposes; hence mod. cemetery, esp. at Glasgow and Woking. **Necrosis**, mortification; death and decay of piece of tissue, esp. of bone, while surrounding pts. are healthy; see GANGRENE.

**Nectar**, (Gr. myth.) drink of the gods, with property of conferring immortality; generally coupled with *Ambrosia* (q.v.).

**Nectarine**, smooth-skinned variety of peach. Has an especially delicate flavour and is esteemed by some as the best of stone fruit. Cultivated in hot-houses in England.

**N.E.D.**, abbr. New English Dictionary.

**Needle-fish, pipe-fish**, marine fish of the family *Syngnathidae*, having extremely long, slender body; frequents the beds of zosteræ off shore. Male is provided with long pouch on under-surface of body, in which the eggs are inserted and carried until the young hatch and make their escape. **N.-gun**, *Dreyse rifle*, Pruss. breech-loader 1842-71; paper cartridges. Long striker (needle) ignited fulminate primer at base of bullet. **N.-valve**, (phys.) form of valve used for high-pressure fluids, consisting of spindle with conical point which can be moved forward by screw into seating. **N. weir**, weir (q.v.)



for obstructing flow of water in river esp. the **Poirée n.w.**, wh. consists of iron frames, end-on to current, resting on concrete bed in river, and supporting sloping *needles* which can be raised or lowered.

**Needles**, group of three masses of white chalk (100 ft.), at W. end of Isle of Wight; lighthouse.

**Neef, Pieter the Elder** (c. 1577-1655), **N., Pieter the Younger** (1620-75), Flem. painters; church interiors.

**Ne exeat regno** (Lat.), let him not depart from this kingdom; writ issued to prevent a debtor, who owes £50 or more,

from escaping his liability by quitting the country.

**Nefertiti**, Qn. of Egy., c. 1370 B.C.; contempor. portrait head (painted limestone) in Berlin.



Nefertiti

**Negative**, (photog.) a picture having light and shade reversed; produced in camera, since plate is most blackened where brightest light strikes it. **Positive** print produced by sending light through negative on to sensitive printing-out paper or film in contact with it; the blackest parts of negative shield paper most, hence are whitest in positive image. **N. numbers**, recognised by sign - (minus), arise when a larger number is subtracted from a positive number, e.g.,  $7 - 9 = -2$ . When a n. number is added to its corresponding positive number, the result is 0.

**Négligée** (Fr.), easy, uncereemonious dress.

**Negotiable instruments**, (finan.) documents wh., by endorsement (q.v.) and delivery, transfer full title to transferee irrespec. of defects in transferor's title. Cheques, bills of exch., and promissory notes are N.I.; also bearer bonds, bank notes, treasury bills, etc.

**Negri Sembilan** (Malay: black nine), one of the Federated Malay States (q.v.), W. coast Malay Penins.; 2,500 sq.m.; pop., 234,000; cap., *Seremban* (pop., 21,650). Consisted formerly of nine separate states under Johore.

**Negrito**, negroid, primitive, pygmy race of Philippines.

**Negro**, generic term for black races of Africa and parts of Pacific. Frizzly hair, broad noses, tall; pygmy negroids also known; mainly sedentary agriculturists; ancestor worshippers.

**Negus**, title of the ruler of Abyssinia.

**Nehemiah**, (O.T.) cup-bearer to Artaxerxes (c. 465-425 B.C.); rebuilt walls of Jerusalem (Neh. ii-vi); polit. and relig. reformer. **Bk. of N.** (*Vulgate*, II Esdras), continues hist. from Bk. of *Ezra* over period of 445-433 B.C.

**Nehru**, Pandit Motilal (1861-1931), Hindu politician; pres. Indian Nat. Congress, 1919; leader of Swaraj party in Ind. Legisl. Assembly, 1923; pub. *N. report*, demanding Dominion status for India, 1927.

**Nehushtan** (piece of brass), (O.T.) name given, temp. Hezekiah, to Brazen Serpent made by Moses (Num. xxi, 9); destroyed as object of idolatry (II Kg. xviii, 4).

**Neisser**, Albert (1855-1916), Ger. bacteriologist; 1st. to identify gonococci (q.v.).

**Nejd**, elevated plateau, centr. Arabia, forming (since 1926) part of the Kgd. of *Hejaz and Nejd* (now Saudi Arabia); area (mainly desert), c. 350,000 sq.m.; pop., c. 3,000,000; cap., *Riyadh*.

**Nejoi**, highest point of Transylvanian Alps, Rumania, 8,320 ft. high.

**Nekrassov**, Nicholas (1821-78), Russ. lyric poet; epic, *Who can be Happy or Free in Russia?*

**Nelson**, Horatio, 1st visct., Duke of Bronte (1758-1805), Brit. adm.; midshipman, 1770; post-captain, 1779; served under Adml. Jervis at battle of Cape St. Vincent, (14 Feb., 1797); lost his arm during unsuccessful attack on Santa Cruz de Tenerife (July, 1797); defeated French at battle of the Nile (1 Aug., 1798); lived at Naples, 1799-1800, where he met Lady Hamilton and became involved in pol. intrigue; defeated Northern Confed. at battle of Copenhagen (2 April, 1801); killed at Trafalgar (q.v.).

**Nelson**, 1) munic. bor., Lancs, 3 m. N.E. Burnley; manuf. cotton, woollens, silk; pop., 38,300. 2) Cap., prov. same name, South Isl., N.Z.; pop., 12,300. 3) Tn., Brit. Columbia, on Kootenay Riv.; pop., 7,000; silver mines. 4) Riv. (400 m.), Manitoba, Canada; from L. Winnipeg to Hudson Bay; navig. 80 miles.

**Nemea**, vall. in Argolis, N.E. Peloponnesus, Greece, where Hercules slew the Nemean Lion. Contained Temple of Zeus, in which *Nemean Games* were held biennially.

**Nemesis**, (Gr. myth.) goddess of retributive justice.

**Nemi**, lake in a volcanic crater in the Alban Hills, Italy, 25 m. S.E. of Rome; 3 m. circumf. (420 acres); 1,060 ft. abv. sea-level. Fountain of Egeria to N.; galley of Emp. Tiberius partially salvaged, 1930.

**Nemine contradicente** (Lat.), abbr. *nem. con.*, with no dissentient voice.

**Nemo me Impune lacessit** (Lat.): no one attacks me with impunity; motto of Order of the Thistle, (q.v.).

**Nene, Nen**, riv. E. Eng.; rises Northants, flows past Northampton, Peterborough, and Wisbech into Wash; length 90 miles.

**Nenuphar**: see WATER LILY.

**Neo-**, Gr. prefix, meaning new, as Neo-Greek art, i.e., revived art of anc. Greece.

**Neodymium**, very rare chemical element, symbol Nd; at. wt. 144.27; m.p. 840°; silver-white substance belonging to cerium group.

**Neogrammarian**, one of more recent school in study of Europ. gram. and philol.,

laying stress upon importance of phonetic change and laws governing it.

**Neolithic Period**, (archaeol.) New Stone Age, divn. of Stone Age (q.v.) following Palaeolithic Period; differentiated by agric. (ploughs, stone sickles, hand-mills), fishing, domestic animals, pottery, and ground and polished weapons. Flint-quarries, as at Grime's Graves (q.v.). Megalithic tombs (dolmens, passage graves, stone kists, menhirs, stone-circles or cromlechs; all of which see). Fortified hill-top villages, pit dwellings, lake villages. Implements: celts, bone awls, needles, harpoons, battle-axes.

**Neon**, chem. element, Ne; at. wt., 20.183; gas used in elect. gas discharge tubes and lamps producing a characteristic reddish light; used for advert. and navig. purposes; penetrates fog well. **N. lamp**, (elec.) glow lamp used for display purposes (pink colour); for television recept.; for "variable density" method of sound-film recording; as low intensity lamp in lighting, as "pilot," etc. See DISCHARGE TUBE.

**Neophyte**, (Gr.) 1) one newly baptised into primitive Christian Ch.; proselyte. 2) Newly ordained priest of R.C. Church. 3) Novice in relig. order. 4) Beginner in an art, profession, trade, etc.

**Neo-Platonists**, Alexandrian philosophic school of 2nd and 3rd cents. A.D., wh. combined oriental ideas with teachings of Plato; mystics who sought by meditation and ascetic practices, not only to know God, but to rise to direct and continuous communion with Him; explained the universe by theory of *Emanation* (q.v.).

**Neosalvarsan**, an organic arsenical compound, soluble in water, used in treatment of syphilis.

**Nep**, the "New Economic Policy" introd. in Russia by Lenin in 1921, to counteract crisis produced by failure of crops and decrease in agricultural output. It permitted, under govt. control, a considerable measure of private initiative, which resulted in revival of private trade and of money currency within the Soviet Union. Abandoned in 1924.

**Nepal**, independent State (54,000 sq.m.), betw. Brit. India and Tibet; includes part of centr. Himalayas; fertile valls. (rice, wheat, maize, oil seeds); wild animals in S. jungles; pop. (largely Gurkhas), 5,725,800; 25 m. of rlys.; closed to Europeans (exc. Brit. representative); cap., *Katmandu*.

**Nepenthes**, 1) Egypt. drug referred to in *Odyssey*, with property of taking away grief. 2) See PITCHER-PLANT.

**Nepheline**, a silicate of sodium, potassium and aluminium, found in crystallised form in volcanic rocks; becomes cloudy when treated with acids.

**Nephrite**, scientific name for one of the



Lord Nelson

two varieties of jade (*q.v.*); formerly used as an amulet against kidney disease.

**Nephritis**, (med.) inflammation of kidney.

**Nephrolithiasis**, the formation of kidney stones. **Nephrosis**, name applied to any renal disease; *see* KIDNEY.

**Ne plus ultra** (Lat.), nothing more beyond; nothing better; perfection.

**Nepomuk**, St. John of (1348-93), patron saint of Bohemia; drowned in Vltava, by order of Kg. Wenceslaus, for preserving secret of confessional.

**Nepos**, Cornelius (c. 99-24 B.C.), Rom. historian: *Lives*.

**Nepotism**, undue favouritism, as of nephews and other relations, esp. in regd. to givg. of honours and offic. positions.

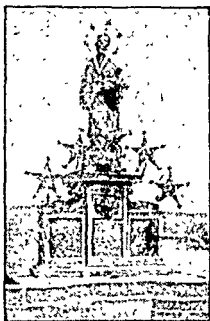
**Neptune**, 1) Rom. sea-god; Gr., *Poseidon*. 2) (Astron.) 4th of 5 outer planets; sign ♆; discovered 1846 by Galle (Berlin) after Leverrier (Paris) had, in 1845, calculated its size and position from disturbances in orbit of Uranus. (For statistics, *see* Table, PLANETS).

**Nereids**, (Gr. myth.) the 50 daughters of **Nereus**, sea-god ruling the Aegean, and Doris; best known are Amphitrite, Thetis, and Galatea. *See* NYMPHS.

**Neri**, St. Philip (1515-95), Ital. eccles.; canonised, 1622; fndd. Congregation of the Oratory; 1st performances of *Oratorios* (musical setting to relig. theme adapted from Scriptural words or paraphrase).

**Nernst**, Walther (1864- ), Ger. phys. chem.; discvd. law of electrode potential (electro-chemistry), Third Law of thermodynamics. Invtd. **N. lamp**.

**Nero**, Lucius Domitius (A.D. 37-68), Rom. Emp., 54-68; last of the Caesars; poisoned his rival, Britannicus, 55, and his mother, Agrippina, 59; divorced and murdered his wife, Octavia, and m. Poppaea; reign disturbed by revolt of Boadicea in Britain, 61; persec. Christians on charge of setting fire to Rome, 64. Killed his former tutor, Seneca, 65; visited Greece, 66, and won sevr. athletic and mus.



St. John of Nepomuk  
Statue on Bridge  
at Prague



Neptune



Nero

contests in Olympic and other games; recalled by revolt of Vindex in Gaul and of Galla in Spain; committed suicide, 68.

**Nerva**, Marcus Cocceius (A.D. 32-98), Rom. Emp., 96-98; appointed Trajan (*q.v.*) as his successor.

**Nerval**, Gérard de, adopted name of Gérard Labrunie (1808-55), Fr. author; poems, travels, translations.

**Nerves**, (anat.) 1) fine fibres, continuations of nerve-cells, conducting impulses a) from brain to muscles and organs (*motor N.*); b) from skin, eyes, ears, etc., to brain (*sensory N.*). *See* NERVOUS SYSTEM. 2) (Bot. and zool.) Rib or vein in a leaf; vein in wing of insect.

**Nervous shock**, when caused by sudden fright, results in a discharge of impulses throughout sympathetic nervous system producing palpitation, pallor, sweat, etc.; also induced by *concussion*, in wh. skull is damaged, e.g., by a blow, so that there is temporary pressure upon the brain. **N. system**, system of nerves and nerve-centres of body. In man, divided into: 1) **Central n.s.** (*q.v.*), consisting of brain and spinal cord; 2) **autonomic n.s.**, governing process in body over wh. man has no voluntary control, and nerves of wh. supply organs and blood-vessels; these are divided into: a) sympathetic; b) para-sympathetic. *See* MAN: Plate III.

**Ness**, Loch, lake, Inverness-sh., Scot., forming part of Caledonian Canal (*q.v.*); 23 m. by 1 m.; outlet (at N.E. end), *Riv. Ness* (8½ m.), flowing into Firth of Inverness (Moray Firth) beyond tn. of Inverness; paralleled by section of Caledonian Canal.

**Nessus**, (Gr. myth.) centaur killed by Hercules (*q.v.*). **Shirt of N.**, tunic steeped in blood of N., which caused agony to Hercules when he put it on.

**Nest**, structure built by a bird in wh. to lay eggs and hatch out and rear young; also, breeding-place constructed by other egg-laying animals, e.g., wasps, ants, spiders, turtles, and some fish.

**Nestor**, in Homer's *Iliad*, old and wise Kg. of Pylos. Hence one qualified by age and experience to give sage advice.

**Nestorius** (d. 451), patriarch of Constantinople, condemned as heretic at Council of Ephesus, 431, for holding that there were two persons as well as two natures in Jesus Christ—the divine and the human. **Nestorians**, followers of N., led at first by bps. of Edessa and Nisibis (435); propagated doctrines in Iraq, Persia, India (Malabar), and China (legend of Prester John); almost extirpated by Mongols c. 1400. Mod. Nestorians inhab. N. Persia and E. Turkey (betw. L. Urumia and L. Van).

**Ne sutor ultra crepidam** (Lat.), let the cobbler stick to his last.

**Net**, (finan.) the final amt. after deduction of cost, etc. **N. profit**, diff. betw. total expenditure and selling price (gross profit). **N. weight**, without incl. wt. of packing, *see* TARE. **N. price**, amt. charged for cash pymt. less cash discount. **N. tonnage**, tonnage upon wh. harbour dues, etc., are based, *i.e.*, G.R.T. (*see* GROSS REGISTERED TONNAGE), less tonnage of crew- and machinery-space, with certain other deductions.

**Net-ball**, game played, on ground sim. to hockey-field (*q.v.*), with football (*assoc.*) wh. opposing teams try to throw into "goal," consisting of iron ring, with net attached, fixed on post at height of 10 ft.

**Netherlands, The**, name orig. given to territory known as Low Countries and incldg. most of Belgium and Holland; became part of Empire by Treaty of Verdun (843); rise of great cities, in 12th and 13th cent., chartered under feudal lords (Ghent, Bruges, Ypres), centres of weaving and other industries.

Under House of Burgundy, 15th cent., revolted by Prince of Orange resulting in division of territory (1572). *See* BELGIUM; HOLLAND.

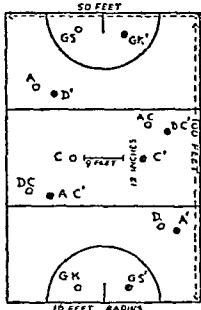
**Nethinim**, (O.T.) slaves employed in service of Temple; prob. war captives.

**Netley**, vill., S. Hants, nr. Southampton Water; ruins of Cistercian 13th-cent. Netley Abbey; Royal Victoria Mil. Hospital.

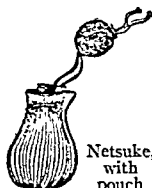
**Netsuke**, small Jap. carved ornament worn attached to belt, for suspension of pouches, pipe-boxes, medicine cases, etc.

**Nettle**, *Urtica*; *U. dioica* is the common stinging nettle; leaves carry poison-bearing hairs wh. break off and penetrate the skin when touched; young leaves are occas. boiled and eaten as a vegetable; also used to make a herb beer and as a tonic in folk medicine. **N. fibres**, fibres from nettle plant prepared like flax; much used before introduction of cotton; now unbleached, coarse, cotton tissue is called *nettle cloth*.

**N.-rash**, *Urticaria*; also known as *hives*; skin disease characterised by eruption similar to that produced by sting of a nettle;



Netball or Basket-Ball A) Attack; C) Centre; AC) Attacking Centre; D) Defence; DC) Defending Centre; GK) Goal-keeper; GS) Goal-Shooter



Netsuke, with pouch



Nettle

very irritating. Often caused by certain foods, *e.g.*, strawberries, shell-fish, and by disorders of digestion. *See also* DEAD-NETTLE.

**Network**, fabric formed by looping threads into meshes; used as background in many kinds of bobbin and machine-made lace.

**Neuchatel**, 1) canton, N.W. Switzerland (309 sq.m.; pop., 131,350), on Fr. frontier, traversed by *Jura Mtns.* Orig. part of kgdm. of Burgundy; indep., 1034; allied with Berne, 1406; awarded to Prussia by Treaty of Utrecht, 1713, and to Switzerland, 1814. Agric., wine. 2) Cap. of canton, pop., 22,700; watch-making, wine trade; univ. fndd. 1909. 3) Largest lake wholly in Switzerland (85 sq.m.), 1,425 ft. abv. sea-level.

**Neuilly-sur-Seine**, tn. in dépt. Seine, N.W. of Paris, Fr.; pop., 52,450. Peace betw. Allies and Bulgaria signed 27 Nov., 1919.

**Neumann, Karl** (1832-1926), Ger. mathematician. **Potential Theory**. **N., Karl Eugen** (1865-1915), Ger. orientalist.

**Neunkirchen**, tn., Saar Territory (*q.v.*), 38 m. S.E. Treves; pop., 40,000; coal and iron; seriously damaged by gas explosion, 10 Feb., 1933.

**Neuralgia**, nerve pains; freqtly. occur in head and face. Often caused by a chill; nerve pains in other parts of body, *e.g.*, arm, often incorrectly called neuritis. **Neuras-thenia**, condition of exhaustion of vitality of nervous system, characterised by lack of energy, restlessness, headache, and insomnia. **Neuritis**, inflammation of the nerves. **Neurologist**, medical practitioner who specialises in diseases of the nervous system. **Neurology**, science of the nervous system. **Neuroma**, a tumour of a nerve. **Neuron**, a nerve-cell with its nerve-fibres wh. together form a unit of the nervous system.

**Neuroptera**, order of insects with biting mouthparts and two pairs of wings with intricate venation; life-history varied; metamorphosis complete.

**Neurosis**, functional disorder of nervous system (*q.v.*) unaccompanied by organic change. 1) *Psycho-N.*, disturbance of mental equilibrium, not affecting sanity, *e.g.*, *compulsion neurosis*, morbid compulsion to perform certain actions. 2) *Organic N.*, disturbance of mental equilibrium may cause disorders of individual organs: heart, stomach, intestines, etc. 3) *Occupational N.*, disorder affecting certain groups of muscles (*e.g.*, the hand and arm in writer's cramp), preventing patient from following his occupation. **Neurotic**, a person emotionally unstable.

**Neutra Mountains**, range in Czechoslovakia (part of the W. Beskids), betw. valls. of the Waag and Gran; max. alt., 4,400 ft.; *see also* NITRA.

**Neutral**, non-party. **N. conductor**, (elec.) in three-wire direct current distrib., the "middle" conductor of 3, the other 2 being positive and negative to it respectively. Usually earthed. **N. corner**, (pugil.) either of 2 corners of "ring" to wh. boxer has to retire after a successful hit until his opponent rises again. **N. zone**, (war) area within wh. no enemy encounters take place: since Treaty of Versailles (*q.v.*) an area E. of the Rhine fortification of wh. is prohibited.

**Neutrality**, non-intervention by a third party in a warlike conflict; *armed neutrality*, when a State protects itself agst. belligerents entering its territory by being armed for war, or when it places a time limit for joining the war.

**Neutralisation**, 1) (chem) elimination of acidity or alkalinity of a substance by addition of an alkali or an acid until an indicator (*q.v.*) shows neither acid nor basic reaction, *e.g.*, until litmus paper is not affected. 2) (Polit.) Declar. of a certain area as non-fighting area, neutrality (*q.v.*) of wh. is placed under protec. of other Powers; also protec. of a pers. or group of pers. from action of war.

**Neutralised areas**, areas which, acc. to internat. agreemt., must not be turned into theatres of war, and immunity of wh. has internat. guarantee, govt. of N.A. being under obligtn. not to take part in milit. or polit. unions of a 3rd party. In 1815 neutrality of Switz. was decreed by Great Powers.

**Neutron**, (phys.) combination of a proton (*q.v.*) with an electron (*q.v.*) to form an electrically neutral particle wh., though of same composition as hydrogen atom, is no larger than nucleus, and hence passes almost freely thr. all solid bodies. First postulated by J. Chadwick, 1932.

**Neuve Chapelle**, vill., Pas-de-Calais, N. France, 10 m. W. of Lille; scene of unsuccessful Brit. attack on Ger. trenches in World War (March 10-12th, 1915). Indian memorial to 4,847 missing.

**Nev.**, abbr. Nevada.

**Neva**, riv. of N. Russia, flowing from Lake Ladoga to Gulf of Finland (46 m.); Leningrad is situated on its delta.

**Nevada**, ("Silver," "Sage Bush") W. State, U.S.A.; 110,690 sq.m.; pop., 95,000; largely desert; agric. by artif. irrig.; gold, silver, mercury, lead, sulphur; cattle-breeding; cap., Carson City.

**Nevada, Sierra**, 1) mtn. range, Granada, S. Spain, betw. Guadalquivir vall. and Mediterranean; highest peak *Mulhacen* (11,421 ft.). 2) Mt. range, U.S.A., part of the *Rocky Mtns.*, betw. California and the Great Basin; highest peak *Mt. Whitney* (14,500 feet).

**Nevers**, cap. dépt. Nièvre, on the Nièvre and Loire, Fr.; pop., 29,300; bpric. since c. 506; porcelain manufacture (faïence).

**Neville's Cross**, battle of, defeat of Scots under David II (taken prisoner) by English in 1346; named after parish 1 m. S.W. Durham, England.

**Nevin**, Ethelbert (1862-1901), Amer. composer: *Narcissus*; *The Rosary*.

**Nevinson, Christopher Richd. Wynne** (1889- ), Brit. artist; official artist, W. Front, 1917; son of N., Hy. Woodd (1857- ), journalist and author; repr. *Manchester Guardian* at Washington Con., 1921-22; works incl. *Books and Personalities*, 1905; *England's Voice of Freedom*, 1920.

**Nevis**, one of the Leeward Isls. (Brit.); 50 sq.m.; pop., 11,600; cap., *Charlestown*. See ST. KITTS. **N., Ben:** see BEN NEVIS.

**Newark**, 1) largest tn., New Jersey, U.S.A., on Passaic Riv.; pop., 445,000; cathed., R.C. and Prot. Episc. bprics.; electrical machinery; paint, jewellery, leather. 2) **N.-upon-Trent**, munic. bor., Notts, Eng.; pop., 18,100; manuf. machinery, malt, flour; famous in Civil War.

**New Bedford**, tn., Massachusetts, U.S.A., at mouth of Acushnet Riv.; pop., 113,000; cotton and rubber industry.

**Newbolt**, Sir Henry (1862- ), Brit. poet and author; *Admirals All*; *Naval History of the Great War*.

**New Brighton**, 1) tn. and watering-pl., Cheshire, on Wirral penins., included in Wallasey (*q.v.*). 2) Divn. of Richmond, New York City, at N.E. end Staten Island.

**New Britain**, formerly *Neu Pommern*, largest island Bismarck Archipelago (*q.v.*), Pacific Ocean; Ger. colony 1884-1918; mandated to Australia by League of Nations; cap., *Rabaul*.

**New Brunswick**, prov., E. Canada, on Gulf of St. Lawrence, joined by isthmus to Nova Scotia; 28,000 sq.m.; pop., 423,500; well-wooded fertile arable soil; deposits of peat, salt, and gypsum; cap., *Fredericton* (pop., 8,100); port and largest tn., St. John (*q.v.*)

**Newbury**, 1) munic. bor., Berks, Eng., on Riv. Kennet; pop., 13,300; race-course (meetgs., end Mar., June, Sept., Oct.; stplchs., Jan., Feb., Nov., Dec.); once centre cloth trade; scene two indecisive battles Civil War (1643, 1644). 2) **Newburyport**, seapt., Mass., U.S.A., manuf. cotton, shoes, combs; pop., 15,000.

**New Caledonia**, Fr. isl. and convict settlement in Pacific, 700 m. E. of Australia; 6,450 sq.m. (with dependencies—Isle of Pines, Loyalty, Wallis, Huon Is.—7,140); pop., 57,630, incl. 27,490 natives (Kanakas) and 3,281 convicts; cap., *Nouméa*.

**Newcastle**, 1) seapt., Co. Down, N. Ire.; pop., 2,000; holiday resort. 2) Seapt. on E.



Newbolt

coast of New South Wales, Australia, 75 m. N.E. of Sydney; coal export trade; pop., 104,600. 3) **Tn., Pa.**; manuf.: iron, steel, flour; pop., 48,700. 4) **N.-under-Lyme**, munic. bor. in Staffs, Eng., on fringe of the Potteries (q.v.); pop., 23,200; manuf. paper, pottery. 5) **N.-upon-Tyne**, city, co. bor., and seapt. on N.E. coast of Eng., co. tn. of Northumb., on left bank of the *Tyne*; pop., 283,100; extensive shipb.; great manuf. of iron and steel, guns, rly. material, chemicals; great coal mkt.; castle (13th cent.); cathed.; colleges (part of Durham Univ.); several bridges across Tyne to Gateshead. Port of N., *Tynemouth*, 8 m. E. N. East. **Newcastle United**, Eng. assoc. football club fndd. 1890 by amalgmn. of two N.-upon-T. clubs; between 1905-11 were in final for Eng. cup 5 times; have won cup 3 times (1910, '24, '32); four times league champions (1905, '07, '09, '27).



Tyne Bridge.  
Newcastle-upon-Tyne

**Newchwang**, treaty port, S. Manchuria, China, on Liaoho; pop., (with Yingkow), 165,700.

**New College**, Oxford; fndd. 1379, by William of Wykeham; pastoral staff of founder preserved in chapel.

**Newcomb**, Simon (1835-1909), Amer. astronomer and economist; director of Amer. Nautical Almanac, 1877-97; researches into theory of lunar and planetary motion.

**Newcomen**, Thomas (1663-1729), Eng. engineer; inv. steam pumping-engine.

**Newdigate Prize**, annual competition (since 1806) for Eng. verse, open to Oxford undergraduates; fndd. by Sir Roger Newdigate (1719-1806), M.P. for Oxford Univ., 1751-80.

**Newel**, (bldg.) centr. post at the turn of a stair.

**New England**, N.E. portion of U.S.A., incldg. States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

**New Forest**, forest, S.W. Hants, Eng., 145 sq.m.; estab. as royal hunting-ground by William the Conqueror, 1079; oaks, beeches, yews. William Rufus killed here, 1100. Admin. centre, *Lyndhurst*.

**Newfoundland**, isl. off N.E. coast N. America (42,750 sq.m.); oldest Brit. colony, at mouth Gulf of St. Lawrence; pop., 271,700; separated from Labrador by Strait of Belle Isle and from Cape Breton I. by Cabot Strait. Climate healthy; much fog. Coastline indented, with good harbours; interior undulating, innumerable lakes, some fertile valls. and spruce forests;



coal, iron, copper. Important fisheries on *Newfoundland Banks* (cod 70% of exports); cap. St. John's. *Labrador Coast* (see LABRADOR) belongs to N. Discovered by Cabot, 1497; annexed by England, 1583, whole island Brit. since 1713. **N. dog**, large Newfoundland Dog breed of dog with long, mostly black hair; noted for its swimming powers.



**Newgate**, one of the earliest gates in City wall of London; rebuilt (1672) after Great Fire, finally removed 1767. **N. Gaol**, orig. a prison over the gate; later, building on site of present Old Bailey (q.v.), demolished 1902. **N. Calendar**, a biography of the "most notorious criminals . . . and violators of the laws of their country . . . in Eng., Scot. and Ireld. from the year 1700," confined in Newgate.

**New Guinea**, second largest isl. in the world, W. Pacific, separated from Australia by Torres Strait; c. 303,000 sq.m.; Beran Penins. in N. almost severed by McCluer Inlet; coasts indented, flat, and marshy; interior mountainous (*Mt. Wilhelmina*, c. 15,680 ft.), partly unexplored; climate tropical and unhealthy; high rainfall. Natives: Papuans, Melanesians, Malays, Negritoes. Politically divided into three territories. 1)

**Papua**, or *Brit. New Guinea*, in S.E.; area, 90,540 sq.m.; pop., 360,000; includes



New Guinea Landscape

d'Entrecasteaux and Louisiade Isls. off S.W. coast; exports rubber, sisal, copra, gold; cap., Port Moresby. 2) **Mandated Territory** (former *Ger. New Guinea* or Kaiser Wilhelms Land), in N.E.; area, 90,800 sq.m.; pop., 375,000 Papuans and c. 1,800 Europeans; cap., *Madang*; exports copra. Former Ger. South Sea possessions included also Bismarck Archipelago, Admiralty Isls., Solomon Isls., admin. by Australia; total area, 90,710 sq.m.; pop., 491,200 (2,660 Europeans); cap., *Rabaul*; also Caroline, Ladrões, or Marianas (exc. Guam, q.v.), Palau, and Marshall Isls., admin. by Japan. 3) **Dutch New Guinea**, in W.; area, 170,000 sq.m.; pop., c. 200,000; settlement at *Mcrauke*.

**New Hampshire**, ("Granite") N.E. State, U.S.A.; highlands; cotton indus.; colonised 1623; pop., 455,000; 9,341 sq.m., cap., *Concord*.

**Newhaven**, 1) seapt. tn. at mouth Riv. Ouse, Sussex, Eng.; cross-Channel steamers (*Dieppe*); pop., 6,800. 2) Fishing port, Mid-



lothian, Scot., W. of Leith, on Firth of Forth (part of Edinburgh).

**New Haven**, largest tn. Connecticut, U.S.A., on Long Isl. Sound; pop., 162,700; seat of Yale Univ. (1701); firearms, tools, clocks, meat-packing, paper.

**New Hebrides**, group volcanic and coral isls. in the Pacific Ocean; 5,800 sq.m.; pop., 64,570 (Papuan, Asiatic, and 1,024 whites); exports: cocoa, copra, cotton; jointly admin. by Fr. and Brit. since 1906; cap., *Port Vila* on Efate Island.

**New Holland**, former name for Australia.

**New Issues**, *new capital issues*, (Stk. Exch.) term covering stocks, shares, bonds, debentures of cos., govts., etc., on first being floated, i.e., issued for public subscription.

**New Jersey**, ("Mosquito," "Jersey Blue," "Garden") N.E. State, U.S.A. (since 1787); 8,224 sq.m.; pop., 4,028,000; hilly, marshy nr. coast; extensive forest (timber), agric., cattle-breeding; fisheries; mining; silk, wool, leather, tobacco; machinery; cap., *Trenton*.

**New Jerusalem Church**, formed in 1788, by followers of *Emanuel Swedenborg* (q.v.).

**New Lisbon**, *Nova Lisboa*, cap. of Angola, 280 m. from coast, on Benguella Railway (q.v.).

**Newlyn**, vill. Cornwall, 1 m. S.W. Penzance; frequented by artists.

**Newman**, John Henry (1801-90), Eng. divine; leader of *Oxford movement* (q.v.) joined Ch. of Rome, 1845; estab. London Oratory; cardinal, 1879; hymn, *Lead, Kindly Light*; *Apologia pro Vita Sua*.

**Newmarket**, mkt. tn., Suffolk, Eng.; pop., 10,000; several race-courses on *Newmarket Heath* (mtgs., 2 in Apr., May, June, July, Sept., 2 in Oct.); headquarters of the Jockey Club.

**New Mexico**, ("Spanish," "Sunshine") S.W. State, U.S.A., bordering on Mexico; 122,634 sq.m.; pop., 427,000; watered by Rio Grande, deep canyons; agric., coal, gold, silver; cap., *Sante Fe*. Conquered by U.S., 1846; organised as Territory, 1850; State, 1912.

**Newnes**, Sir George (1851-1910), Brit. publisher; fndr. of *Til-Bits*, 1881, and *Westminster Gazette*, 1893; M.P., 1885-95, 1900-10.

**Newnham College**, Cambridge Univ.; fndd. 1871 by Henry Sidgwick and others for women students. Anne Jemima Clough (1820-92) first principal; incorp., 1880; Royal charter granted, 1917.

**New Orleans**, tn., Louisiana, U.S.A., on lower Mississippi; pop., 456,000; exports cotton. Fndd. by French, 1718.

**Newport**, 1) co. bor. and seapt. in Monmouthsh., on Bristol Channel, 12 m. N.E.

of Cardiff; pop., 89,200; manuf. iron, rly. carriages. 2) Cap., Isle of Wight, on Riv. Medina; pop., 11,300; *Carisbrooke Castle* 1 m. S.W. 3) Mkt. tn., Staffs, Eng.; pop., 3,400; *Aqualate Merc*, 1 m. N.W.; ruins of *Lilleshall Abbey* (1145) 3 m. S. 4) Small seapt. on coast of Pembroke. 6 m. N.E. of Fishguard; pop., 1,300. 5) Suburb of Dundee, Scot., on Firth of Tay (ferry); pop., 3,300. 6) City, Kentucky, U.S.A.; manuf. iron, steel; pop., 29,700. 7) Tn., Rhode Is., U.S.A.; pop., 27,600; fine harbour, summer resort, manuf. cotton, brass-work, lead.

**Newquay**, seaside resort, N. Cornwall, Eng.; fisheries; pop., 6,000.

**New River**, canal (40 m.), Herts and Middx.; from springs nr. Ware (Herts) to New River Head reservoir at Finsbury, built, 1613, by Sir Hugh Myddelton; still a source of London's water supply.

**Newry**, urb. dist., seapt., and mkt. tn., Co. Down, N. Ire., at head Carlingford Lough; pop., 12,000; flax-spinning.

**News agency**, organisation for supplying information to newspapers, institutions, or private persons; some (e.g., Protestant Press Bureau) are propagandist; others concerned with some single activity, such as sport; others, in Eng. espec. Reuters (foreign news only), Press Assoc. (home news only), Centr. News, Exchange Telegraph Co., and Brit. United Press, cover all forms of news. Other important agencies are: in U.S.A., the International News Service, Universal News Service, and Associated Press; Fr., the Agence Havas; Ger., the Woolf Bureau; It., Agenzia Stefani.

**New Scotland Yard**, London, headquarters of Metropolitan Police force; on Thames Embankment, Westminster. Built 1891 (archit., Norman Shaw). Police records and catalogue of finger-prints (see FINGER) are kept there. In the *Black Museum* (not open to the public) relics of murders, forgeries, and other crimes are preserved and tabulated.

**New South Wales**, State, Australia; bounded N. by Queensland, W. by S. Australia, S. by Victoria, E. by Pacific; 310,400 sq.m.; pop., 2,596,100. Coastal region watered by several short rivs., flowing from *Great Dividing Range*; contains N. portion *Australian Alps* (q.v.); on W. are Rivs Darling, Lachlan, and Murrumbidgee, tribs. of Riv. Murray (q.v.). Climate temperate and healthy. Great sheep-farming dist. (50 million sheep and 430 million lb. of wool in 1930); cattle- and horse-breeding; dairying; wheat, maize, oats, fruit, vegetables, wine; gold, silver, lead, tin; growing manufactures; rlys, 6,000 m.; cap., *Sydney*. Contains federal cap., *Canberra* (q.v.).

**Newspaper**, periodical (gen. daily or weekly) publication reporting or commenting



on current events; at least one (*Acta Diurna*) as pub. in anc. Rome, and in China the official *Peking Gazette* has been issued regularly since c. 7th cent.; modern printed N. first found in Germany at end of 16th cent.; in Eng., numerous news-sheets in early 17th cent.: *London Gazette*, 1665; first London daily (*Daily Courant*), 1703; graduated stamp tax on N. in force, 1712-1855; earliest existing London daily (*Morning Post*), 1722; *Times* began as *Daily Universal Register*, 1785; modern popular N. began with publi. of *Star*, 1888, and halfpenny *Daily Mail*, 1896. Illustrated N. developed fr. broadsides of 16th cent.; first regular illus. N., *Illustrated London News*, 1842. In Eng. a few N., with enormous circulations, published in capital, dominate provinces; in U.S.A., France, and Ger., more local dailies covering smaller area; some Amer. newspapers reached great size before the slump of 1929 especially on Sundays, 72 to 100 pp. edns. of the *Chic. Tribune* and N.Y. *Times* being common. Modern N., esp. since World War, build circulation by insurance schemes, competitions, "gifts," etc., and are mainly supported by advertisements of which they are principal media. Eng. daily N.—apart from *The Times* (q.v.)—now largely organised in trusts owning one or more London and a group of allied provincial Ns.; esp. Rothermere group (incl. *Daily Mail*, *Evening News*, *Sunday Dispatch*, *Daily Mirror*, *Sunday Pictorial*); Beaverbrook group (*Daily Express*, *Sunday Express*, *Evening Standard*); Berry group (*Daily Telegraph*, *Daily Sketch*, *Sunday Graphic*, *Sunday Times*). Other London dailies are: *Morning Post* (Conservative and imperialist), *News-Chronicle* and *Star* (Liberal), *Daily Herald* (Labour) and several financial and sporting N. Most influential provincial Eng. N. is *Manchester Guardian* (esp. in fields of literary criticism and foreign news), followed by *Yorkshire Post* and *Birmingham Daily Post*. Several Sunday N. have enormous circulations, esp. *News of the World* (over 3½ millions), while others (*Observer*, *Sunday Times*) have a special appeal to the cultured. In Canada and Australia, N. generally confined to one province. French N. generally show strong political element; principal Paris papers: *Petit Parisien* (circ. nearly 2 millions), *Le Matin*, *Le Temps*, *L'Intransigeant* (evening), *L'Œuvre*, *Le Quotidien*; French provincial press: *Dépeche de Toulouse*, *Progrès* (Lyons). Among outstanding German Ns., prior to Nazi revoln. of 1933 wh. suppressed all non-Nazi press, were: *Frankfurter Zeitung*, *Kölnische Zeitung*, *Berliner Tageblatt*, *Lokalanzeiger*, *Vorwärts* (Socialist). In Italy and Russia, as in Germany, polit. conditions have much restricted freedom of press and reduced number of Ns.; best-known Ital. papers: *Corriere della Sera*

(Milan), *Stampa* (Turin); in Russia: *Izvestia* and *Pravda*, both Communist. In U.S.A., several large groups, esp. Hearst and Scripps-Howard groups, control local papers throughout country; most influential papers: N.Y. *Times*, N.Y. *Herald-Tribune*, Philad. *Public Ledger*, *Christ. Science Monitor* (Boston), *Kansas City Star*, *Chicago Tribune*.

**Newstead Abbey**, seat, Lincs, Eng., 12th-cent. Augustinian priory, rebuilt 1540; ancestral home of Lord Byron.

**New Style and Old Style**, terms used in chronology to distinguish dates as reckoned by the Gregorian and Julian calendars (qq.v.) respectively.

**New Testament**: see BIBLE.

**Newt**, tailed amphibian living in ponds in Gt. Brit. and most temperate regions. During breeding season the males are resplendent in black and orange and fully developed dor-



Newts, Male and Female

sal crest. Eggs are attached to leaves of water-plants, and tadpoles on hatching have external gills. At close of breeding season, N. often quit the ponds for a varying period, creeping into moist places.

**Newton**, Sir Isaac (1643-1727), Eng. natural philos.; pioneer of new mathematics, physics, and astron. by inv. of differential and integral calculus. Disc. law of gravity (q.v.), spectrum (q.v.); explanation of the tides (q.v.); motions of planets.

**Newton Abbot**, mkt. tn. on Teign estuary, S. Devon.; pop., 15,000; William of Orange said to have been proclaimed Kg. of Eng. here, 1688. **N.-in-Makerfield**, **Newton-le-Willows**, urb. dist., S. Lancs, betw. Liverpool and Manchester; pop., 20,200; locomotive and eng. works.

**Newtownards**, mkt. tn. and seapt., Co. Down, N. Ire., at head Strangford Lough; pop., 9,600; linen, muslin. Mount Stewart, a seat of Marq. of Londonderry.

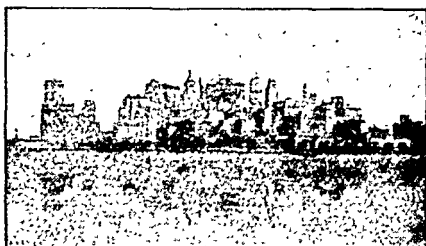


Sir Isaac Newton

**New Westminster**, city and seaport, Brit. Columbia (former cap.) on Fraser Riv., 16 m. from its mouth; pop., 15,450; manuf. centre, lumber trade.

**New Year's Day**, first day of year; in Julian and Gregorian calendars, January 1st; from 1155-1751 Eng. legal year began Mar. 25th; present date adopted 1600 in Scot., where N.Y.D. is a bank holiday; Jewish civil year begins Tishri 1st (Sept. or Oct.); Mohammedan new year on Muharram 1st, wh. may fall at any season. In Eng., official finan. year begins April 1st. See MOHAMMEDAN CALENDAR; CIRCUMCISION..

**New York, 1** ("Empire") State, U.S.A., seaboard on Atlantic, bounded on N.W. by lakes Erie and Ontario, 49,209 sq.m.; pop.,



New York, River Front

12,620,000; mountainous in E. (*Adirondacks* and *Catskills*); chf. riv., Hudson; gypsum, talc, salt, cement, petroleum, natural gas; manuf.: motorcars, chemicals, clothing, furs, jewellery; cap. *Albany*; chf. tns., **N.Y. City**,



Buffalo. 2) **N.Y. City**, on Hudson estuary, on both sides of East Riv.; pop., 6,930,446 (comprising bors. of Bronx, 1,265,250; Brooklyn, 2,560,400; Manhattan, 1,867,300; Queens, 1,079,150; Richmond, 158,346); *Greater N.Y.* (pop., incl. suburbs, c. 9,250,000) area 1,235 sq.m.; larger than Greater London; seat of Columbia Univ. (q.v.) and N.Y. Univ.

(1831); chf. port of N. Amer.; chf. trade and financial centre; chf. business district: Broadway; Stock Exchange and financial houses in Wall Street; many skyscrapers (*Empire State Bldg.*, 102 floors; 1,248 ft. high); city planning with restrictions; chf. port of Atlantic ss. lines; Statue of Liberty, 305 ft. 6 in., on Bedloe's Is., in harbour. Fndd. by Dut., as New Amsterdam, 1624; captured by English and renamed N.Y., 1664; reoccupied by Dut., 1673, until retaken by Sir E. Andros, Nov., 1674; scene of revolts against England prior to and during War of Independence.

**New York Central Lines**, U.S.A., railroad operating in N.E. States, and to Montreal and Ottawa in Canada; 11,422 miles. **N.Y., New Haven and Hartford Railroad**, U.S.A., connects Southern New England and New York; 2,128 miles.

**New Zealand**, Brit. dominion, S. hemisphere, 1,200 m. S.E. of Australia and 4,000 m. W. of S. Amer.; two main isls., some smaller islands, and several outlying groups; total area, 105,200 sq.m.; pop., 1,490,400 incl. 67,300 Maoris (the only aboriginal race that has accepted civilisation). Surface generally mountainous; climate mild, rainfall abundant. **North Island**, area, 44,300 sq.m.; pop., 831,800; several volcanoes (*Mt. Ruapehu*, 9,175 ft.), geysers, hot



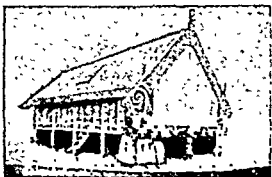
By Courtesy of the High Commissioner for New Zealand

Milford Sound, New Zealand

(13 m.); area, 58,100 sq.m.; pop., 512,000; contains *Southern Alps*, with *Mt. Cook*, highest peak in N.Z. (12,349 ft.), Tasman Glacier (18 m. long), and many lakes (*Wakatipu*, *Rotorua*); chief tns.: Christchurch, Dunedin. Rivs. in both N. and S. Isls. are short and rapid (*Clutha*, 260 m.; *Waikato*, 220 m.). *Foveaux Strait* (q.v.) separates S. Isl. from *Stewart Isl.* (area 670 sq.m.; pop., 450).

N.Z. is a great pasture country, grazing and sheepfarming being most important (over 30 million sheep in 1930; Canterbury Plain, in S. Isl., celebrated); also cattle, pigs, horses. Wheat, oats, turnips, N.Z. flax, and many kinds of fruit are grown; forest productions include Kauri pine (in N.; up to 150 ft.), valuable for its resin (*Kauri gum*). The kiwi is a native bird. Minerals: coal, iron

ore, gold. Rlys., 3,300 m. Dependencies include Chatham, Auckland, Cook Isls., mandated terr. of W. Samoa, Ross Dependency in Antarctic; N.Z. shares admin. of Isl. of Nauru with Britain and Australia. Discovered by Tasman in 1642; visited by Capt. Cook, 1769-77; Europn. settlement, 1814; colony, 1841; dominion, 1907.



Maori House, New Zealand

**Ney**, Michel (1769-1815), Pr. of the Moskva; Marshal of France under Napoleon; battles of Elchingen, Jena, Eylau, Friedland; Peninsular War; Borodino; retreat from Moscow; battle of Leipzig; commanded Old Guard at Waterloo; executed as traitor to the Bourbons.

**N.H.**, abbr. New Hampshire.

**Ni**, (chem.) symbol of nickel.

**Niagara Falls**, on Niag. riv., betw. lakes Erie and Ontario, N. Amer., divided by Goat Isl. into *Canadian (Horseshoe) F.*, 158 ft., width 2,600 ft.; and *American F.*, 167 ft., width 1,400 ft.; brink of Can. F. recedes at annually diminishing rate; recession of American F. negligible until gap 65 ft. deep by 300 ft. wide was torn, 1931; volume of water diverted for power limited by agreement to 36,000 cu. ft. per sec. on Canadian side, and 20,000 cu. ft. on American side; Welland Canal (*q.v.*) "bypasses" the Falls; on north side is tn. of Niag. Falls, N.Y. State; pop., 68,300; manuf. aluminium.



By Courtesy of the  
High Commissioner for Canada  
Niagara Falls

**Niam-Niam**, or *Azandi*, light-coloured mixed race, a hybrid of Negroes and Hamites; in Centr. Afr.; agriculturists.

**Nibelungenlied**, M.H.G. epic, 12th cent., based on earlier legends; *pt. I.*, story of Siegfried, his marriage to Kriemhild, her jealousy of Brünhild, Hagen's murder of S.; *pt. 2.*, K.'s marriage to Etzel (Attila), King of Huns, her revenge on H. and Burgundians, her death. Wagner treated parts of story in *The Ring of the Nibelungs (q.v.)*.



Death of Siegfried; from a  
medieval MS. of the  
*Nibelungenlied*

**Nibelungs**, dwarf race of Ger. myth., guardians of *Nibelung hoard*; name transferred to Siegfried of Niderland when he had gained possession of hoard, and later to Burgundians after murder of S. by Hagen.

**Niblick**, iron golf-club with short head much laid back; for getting ball out of bunkers, etc.

**Nicaea**, anc. cap. of former kgdm. of Bithynia, N.W. Asia Minor: seat of Byzantine emprs., 1205-61 (when dispossessed of Constantinople by Crusaders); taken by Turks, 1330. **Council of N.**, 1st Ecumenical Council, 325; condemned Arianism and issued the Nicene Creed; *see* CREED.

**Nicaragua**, 1) republic of Centr. Amer., c. 50,000 sq.m.; pop., 638,119 (150,000 white); mountainous, wooded; coffee and bananas; cattle-breeding; gold and silver mines; rubber and precious woods; cap., *Managua*. Settled by Spain, 1522; revolted, and joined Mexico, 1821; independent since 1839. 2) Lake in N., 160 ft. abv. sea-lvl.; 2,975 sq.m.; max. depth, 260 feet.



**Nice** (anc. *Nikaia*), cap. of dépt. Alpes-Maritimes, on Riviera, Fr.; pop., 185,000; health and pleasure resort (av. ann. temp. 60.8°F.). Colonised c. 300 B.C. by Massilians; belonged at var. times to cts. of Arles, House of Anjou, and cts. of Savoy; annexed by France, 1792; restored to Sardinia, 1814, and to France (Treaty of Paris), 1860.

**Nicephorus**, three Byzant. emps.: 1) **N. I**, emp., A.D. 802-11; defeated by Haroun-al-Raschid; killed in war with Bulgarians. 2) **N. II**, Phocas (913-69), Byzant. gen.; emp., 963; took Crete and Cyprus, conqd. Cilicia, Mesopotamia, and Syria. 3) **N. III**, emp. 1078-81, defeated his rivals with help of Alexius Comnenus; but quarrelled with A., and was banished.

**Niche**, (archit.) small recess formed in a wall.

**Nicholas**, 1) St., of Bari (c. 350), Bp. of Myra, Asia Minor; festival, Dec. 6th; patron saint of Russia; protector of travellers, sailors, children (as Santa Claus). His timely and surreptitious presents to three girls who were contemplating a life of shame said to be origin of custom of placing Christmas gifts in children's stockings. *See* BOY-BISHOP. 2) Name of 5 popes and 1 antipope, of whom the most important, historically, are: **N. I**, the Great (858-67); supported claims of Ignatius, patriarch of Constantinople; struggle with Lothair, Kg. of Lorraine. **N. IV** (1288-92); sent Franciscan missionary Jn. of Monte Corvino to Tatars and Chinese. **N. V** (1328-30), antipope. **N. V** (1447-55), humanist and scholar; crowned Fred. III., last emp. crowned at Rome. 3) Two Russian Tsars: **N. I**, Pavlovich (1796-1825-55); suppressed

Decembrist rising, 1825, and Polish insurrection, 1830; involved in Crimean War, 1854; **N. II**, Alexandrovich (1868-94-1918); initiated Hague Peace Conference, 1899; granted Russ. constitution, 1905; abdicated, 1917; shot at Ekaterinburg with his family, 1918. 4) **N. I** (1841-1921) Kg. of Montenegro; succeeded (as prince) 1860; kg., 1910; deposed, 1918. 5) **N. of Cusa** (*Nicolaus Cusanus*; 1401-64), Ger. philos. and cardinal (1448); b. at Cusa or Kues, nr. Treves; *De Docta Ignorantia*.

**Nicias**, Athenian gen. (d. 413 B.C.). *Peace of N.* (421 B.C.), ended first phase of Peloponnesian War. Led Sicilian expedition, 415.

**Nickel**, (chem.) element, Ni; at. wt. 58.69; occurs in combin. with arsenic as *kupfer-nickel* and *nickel-glance*; heavy, bright metal or black powder, m.p. 1,500°C. Used for plating iron and steel, and as constituent of alloys, e.g. German silver, N. steel, Monel metal.

**Nicobars**, Brit. isls. in Bay of Bengal; see ANDAMAN ISLANDS.

**Nicodemus**, (N.T.) scribe, Pharisee and member of Sanhedrin (*q.v.*); secret disciple of Jesus (John iii).

**Nicolai**, Otto (1810-49), Ger. operatic composer: *The Merry Wives of Windsor*.

**Nicoll**, Sir Wm. Robertson (1851-1923), Scot. Free Church minister and journalist; fndd. Nonconformist journal, *British Weekly*, 1886; also the *Bookman*, 1891; edited *Expositor's Greek Testament*, 1897; wrote much under pseud. "Claudius Clear."

**Nicol's prism**, (optics) double prism for polarisation (*q.v.*) made of two doubly refracting prisms of Iceland spar.

**Nicomedes I**, enlarged kgdm. of Bithynia, c. 250 B.C. **N. II**, Epiphanes, 149-91 B.C. **N. III**, Philopator, 91-74; bequeathed kgdm. to Rome.

**Nicomedia**, anc. cap. of Bithynia (mod. Ismid), on Sea of Marmora, Asia Minor; ruins of palaces of Diocletian, Constantine, etc.

**Nicotine**,  $C_{10}H_{14}N_2$ ; colourless liquid alkaloid of tobacco, (4%–5%), very poisonous, but most is burnt when smoking. Mixed with soap and paraffin is used as an insecticide for rose and fruit trees.

**Nictitating membrane**, the third, or inner, eyelid possessed by birds and some other vertebrates.

**Nidaros Trondhjem**, seapt., Norway, on fjord same name, cap. dist. of *Sogn og Fjordane* (7,130 sq.m.; pop., 92,000); cathed.; coronation tn. of Norweg. kgs.; shipb.; exports timber; pop., 54,550.

**Niebuhr**, Barthold Georg (1776-1831), Ger. histor.: *Roman History*.

**Niello**, ornamentation of metal by incised designs filled in with black enamel.

**Niemen**, riv., E. Europe (500 m.); rises

White Russia, flows through Grodno (Poland) and Kovno (Lithuania) into East Prussia; empties by delta into Kurisches Haff (*q.v.*); navigable to Grodno; connected by canals with rivs. Dnieper, Pregel, and Vistula. Known in lower course as Riv. *Memel* (*q.v.*).

**Niersteiner**, white wine of Rhine district; named after Nierstein, vill. near Mainz.

**Nietzsche**, Friedrich (1844-1900), Ger. philos. and poet; developed theory of Will to Power and new ruling caste of supermen; *Thus Spake Zarathustra*; *The Will to Power*.



Nietzsche

**Nieuport**, port, prov. of W. Flanders, Belgium; pop., 4,500. Victory of Holland under Maurice of Nassau over Spain, 1600. Canal locks opened during World War as defence agst. Germans.

**Nièvre**, inland. dépt. France; 2,600 sq.m.; pop., 270,200; coal and iron works; agriculture; cap., *Nevers*.

**Niger**, 1) riv., Upper Guinea, W. Afr.; rises Fonta Jalon Plateau (*q.v.*); flows N.E. through Fr. W. Afr., then S.E. and S. through Nigeria; discharges through wide delta into Gulf of Guinea; chf. trib., R. Benue; length 2,580 m. (1,000 m. navigable). 2) **N. Colony**, Fr. W. Africa, N. of Nigeria; area, 460,000 sq.m.; pop., 1,220,000 (300 Europeans); cap., *Niamey*.

**Nigeria**, Brit. crown colony and protectorate, on Gulf of Guinea, W. Afr.; bounded W. by Dahomey, N. by Fr. Niger terr., and E. by Cameroons; divided into *N. Provs.* (with Brit. mandated section of Cameroons and part of Bornu) (*qq.v.*) and *S. Provs.*; 372,800 sq.m.; pop., 18,766,000 (Haussas, Mohammedan Fulahs). Rivs., Niger and Benue. Climate unhealthy on coast, better in N. (mnts. to 7,000 ft.); important forests. Exports: cotton, palm-kernels, palm oil, cocoa, ground nuts, skins, and hides; coal, tin; rlys., 2,000 miles; cap., *Lagos*.

**Night**, period from sunset till sunrise; in legal phraseology, betw. 6 P.M. and 6 A.M., when housebreaking constitutes burglary.

At the Equator, night and day are of equal length; at the poles a 6 months' "night" alternates with a 6 months' "day." **N-blindness**, inability to see in dull light, due to the insensibility of a certain group of cells in the retina of the eye known as the rods. **N-letter**, message telegraphed at special rate, delivered as letter.



Florence Nightingale

**Nightingale**, Florence (1820-1910), Eng.

nurse, "The Lady with the Lamp"; pioneer of war nursing in Crimean War; fndd. system of trained hospital nurses and reformed Brit. mil. hospitals.

**Nightingale**, small passerine bird, famous for the liquid tones of its song, wh. may be heard both day and night in mating season; found over greater part of Eur. and in cent. and S. of Gt. Brit. Migrates in winter to Africa.

**Nightjar**, goatsucker, insect-feeding bird of crepuscular habit. *Eurosp. N.* arrives in England about May for the breeding season and leaves for Africa in Sept. Makes no nest, but lays 2 eggs in a slight depression in ground sheltered by undergrowth. *Rednecked N.*, a larger bird, visits S.W. Eur. and N. Africa. *Pennant-winged* and *standard-winged N.*, distribtd. over Africa, are characterised by long primary quills. *Fork-tailed*, *na-cunda*, *wood N.* are species peculiar to S. America.



Nightingale



Nightjar

**Nightshade**, black, *solanum nigrum*, has white flowers and black berries; *woody nightshade* or bitter sweet, *S. dulcamara*, has purple flowers. See DEADLY NIGHTSHADE.

**Nihilism**, doctrine of negation, denial of all reality in phenomena; complete scepticism as to the real ground of truth or belief in religion, morals, etc. **Nihilists**, in Tsarist Russ., name given to earliest anarchists; first used by Turgenev in *Fathers and Sons*.

**Nihil (or nil) ad rem** (Lat., "nothing to the point," irrelevant.

**Niigata**, seapt. on W. coast of Hondo (Jap. mainland) in prov. Echigo; pop., 123,200.

**Nijni-Novgorod**, cap. of prov. N.-N., R.S.F.S.R. (c.

104,100 sq.m.; pop., 735,725) port at junction of rivs. Oka and Volga; pop., 220,820. Noted for fairs, with ann. turnover of over £20,000,000. Airport; shipb.; manuf.; motorcars, telephones, wireless, chemicals, watches.



Nijni-Novgorod

**Nijni-Tajlsk**, tn. in Ural Mtns., Russia; pop., 38,820; copper ore deposits estimated at 100 million tons; platinum.

**Nike**, (Gr. myth.; Rom., Victoria) goddess of Victory; Temple of Victory on Acropolis

(Athens); statue, Victory of Paeonius (Olympia), of Samothrace (Paris).

**Nikisch**, Arthur (1855-1922), Hung. musician, violinist, and conductor.

**Nikolayev**, seapt., Ukrainian S.S.R., at confluence of rivs. Ingul and Bug; pop., 102,107; exp.: grain, oil-seeds, sugar, wool, iron ore; manuf.: ploughs, glass, boots, macaroni, tobacco; important shipyards. Suffered during Civil War, 1918.

**Nil admirari** (Lat.), to marvel at nothing. **N. desperandum** (Lat. nothing to be despaired of), never despair.

**Nile**, longest and most important riv. in Africa (3,970 m.). Source Riv. Kagera, flowing into Lake Victoria (Tanganyika



Nike of Paeonius (Reconstruction)



River Nile

Terr.); leaves Lake Victoria as *Victoria* or *Somerset Nile*, and flows N.W. and W. over rapids through L. Kioga (Uganda) to L. Albert; thence as *Bahr-el-Jebel N.* into Anglo-Egyptian Sudan, leaving the desert plateau at Lado. Abt. lat. 10° N. joined by Gazelle Riv. (Bahr-el-Gazel), turns E. and becomes the *White Nile* (Bahr-el-Abiad). Joined by Sobat Riv. before Kodok (Fashoda), and resumes N. course. At Khartoum joined by *Blue Nile* (Bahr-el-Azrak) and, 200 m. lower down, by *Black Nile* (Atbara) from Abyssinia; hence bends N.W., S.W., and again North. Floating vegetable debris (sudd) in S. and six *calaracts* betw. Khartoum and Aswan impede navigation. From Aswan to Cairo and Nile Delta; see EGYPT. Annual flooding June-Oct.; floods regulated for purposes of irrigation by Aswan and Senner dams and other barrages. *Battle of the N.*, 1798; defeat of the French by the Brit. fleet under Nelson off Aboukir (q.v.).

**Nilgai**, Ind. antelope, characterised by its steeply inclined back, due to hind limbs being much shorter than front; horns short, ridged, nearly straight; frequents both jungle and open country, usu. in small herds.

**mpareil** (print.): see TYPE.

**noon**, midday, the end of the twelfth hour from midnight; the *true N.* at any given time is the point of time in any day when the sun in its apparent course crosses the meridian (*q.v.*) of that locality; this will differ from noon as shown by the clock if local time is standardised by that of another meridian, e.g., Greenwich. Cf. ZONE STANDARD

**Robert**, St. (c. 1085-1134), fndr. of the Order of the Monstrousians (*q.v.*).

**Robert**, dépt. N. France, on Belg. frontier; 1,500 sq.m.; pop., 1,970,000; indust.: iron, coal, sugar manuf.; agriculture. Noted in World War.

**Robert**, Max (1849-1923), Jewish critic, writer, and Zionist; *Degeneration*.

**Robert**, *deutsche Lloyd Steamship Company*; see NORTH GERMAN LLOYD STEAMSHIP COMPANY.

**Robert**, *denkskiöld*, 1) **Nils Adolf Erik Br.** (1801-1891), Swed. Arctic explorer; disc. of the Passage, 1878-79. His s.: 2) **Erland** (1858-1928), explored S. America. **N. Otto**, (1858-1928), leader of Swed. Antarct. exped., 1903.

**Robert**, *denkskiöld Sea*, in N. Arctic Ocean, between Taimir Penins. and New Siberian Isls., named after the explorer.

**Robert**, 1) riv. Munster, I.F.S.; trib. River; length 70 miles. 2) Sandbank at mouth of Riv. Thames, 3 m. N. Sheerness; important naval command (Chatham).

**Robert**, *ela*, cap. of Rom. prov. Noricum; scene of the victory of Cimbri over Romans (113 B.C.).

**Robert**, Earls and Dukes of, anc. titles of the peerage. 1) Earldom: **Ralph de Robert**, 1st E., follower of William I, for his rebellion, 1075; **Hugh Bigod** (d. 1141) became E., 1141; his s., **Hugh** (d. 1170), m. dau. of Wm. Marshall, E. of Pembroke; his s., **Roger** (d. 1270), inherited, but his mother, office of marshal; **Roger**, 1st (d. 1306) left no heir. **Thomas of Robert** (1300-38), son of Edw. I, made Earl and E. of N., 1312; no male heir. Earldom: **Thomas Mowbray** (1366-99), m. Margaret, dau. of last Earl, became Earl, 1385, and Duke of Norfolk, 1397; 1) with Duke of Hereford (afterwards IV) led to banishment of both; his s., **Thomas** (1390-1432), fought for Henry V in 1415; became 2nd Duke, 1425; his s., **Thomas**, 3rd Duke (1415-61), varied his allegiance in Wars of Roses; finally fought as traitor at Barnet and Towton, 1461; his s., **Thomas**, 4th Duke (1444-76), left no male heir; m. of York (1472-83), younger s. of Richard IV, m. Anne, dau. of 4th Duke, and became E. Marshal and Duke of Norfolk; 1) left in Tower; title then passed to **Howard**, (1430-85), s. of Margaret,

dau. of Thomas Mowbray, 1st Duke; cr. 1st (Howard) Duke, 1483; killed, fighting for Richard III, at Bosworth; title attained; his s., **Thomas** (1443-1524), deftd. Scots at Flodden, 1513, became 2nd Duke, 1514; **Thomas**, 3rd Duke (1473-1554), quelled Pilgrimage of Grace, 1536; charged with treason, 1547, and sentenced to death; but released, 1553; his s., **Thomas**, 4th Duke (1536-72), aimed to marry Mary Qn. of Scots; headed conspiracy for Span. invasion of Eng.; beheaded for treason. By Act of Parl., 1660, **Thomas Howard** (1627-77) became 5th Duke (see ARUNDEL, EARLS OF); his bro., **Henry**, 6th Duke (1628-84) made E. Marshal, office to be hereditary; **Edward**, 9th Duke (1686-1777); succd. by 2nd cousin, **Charles** (1720-86); wrote *Historical Anecdotes of Howard Family*, 1769; his s., **Charles** (Jockey of Norfolk), 11th Duke (1746-1815), was succd. by **Bernard Edward** (1765-1842), a descendant of 4th Duke; his s., **Henry**, 13th Duke (1791-1856); his s., **Henry Fitzalan Howard**, 14th Duke (1815-60), edited *Lives of Philip Howard, E. of Arundel and of Anne Dacres, His Wife*, 1857; his s., **Henry** (1847-1917), P.M.G., 1895-1900; leader of Eng. R. Caths.; his s., **Bernard Marmaduke**, 16th Duke (1908-1971), is hereditary E. Marshal, Marshal, chief Butler, premier Duke and E. of England, and head of Eng. R. Cath. nobility.

**Norfolk**, 1) marit. co., E. coast of Eng., part of *East Anglia*; area, 2,044 sq.m.; pop., 504,800. Surface flat or undulating, the sea encroaching on the coast. Fenland in W., the Broads (*q.v.*) in E. Principal riv., Great Ouse. Many fine churches in characteristic flint-and-stone. Fertile agric. land, cattle-rearing, poultry-farming, brewing, important fisheries (Yarmouth), game preserves. Co. tn., *Norwich*. 2) Tn. and seapt., on Elizabeth Riv., Chesapeake Bay, Virginia, U.S.A., naval station; pop., 129,700; railway and canal centre; lumber, tobacco, cotton, coal.

**Norfolk and Western Railway, U.S.A.**, operates in Virginia, W. Virginia, N. Carolina, Maryland, Ohio, and Kentucky; 2,240 miles.

**Norfolk Island**, 13 sq.m., S. Pacific Ocean, 930 m. E.N.E. Sydney, Australia; pop., 1,000 (incl. descendants of mutineers of the "Bounty", *q.v.*); admin. by Australia.

**Normal school**: see TRAINING COLLEGE. **N. temperature**: see TEMPERATURE. **N. working day**, usu. 8 hrs.; see HOURS OF LABOUR.

**Norman**, Montagu Collet (1871-1941), Brit. financier; served in S. Afr. War (D.S.O.), 1900-01; lieut. City of London, 1907; Gov. of Bk. of England, 1920; Privy Councillor, 1923. Has conducted internat. financial negotiations, esp. with U.S.A.

**Nilgiri** (or **Nellgherry**) **Hills**, tableland S. Deccan, India; meeting-point E. and W. Ghats; *Mt. Dodabetta*, 8,760 ft.; hill-stations include Ootacamund.

**Nilometer**, orig. gauge for measuring level of water in Riv. Nile; now, any river-gauge.

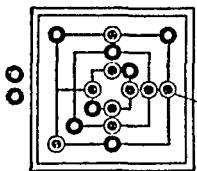
**Nimbus**, 1) dense rain-cloud (*see* CLOUD). 2) Circle or disk of rays of light round heads of divinities, saints, etc.; halo.

**Nimes**, cap. of dépt. Gard, Fr., on Riv. Vistre; pop., 84,700; Rom. amphitheatre; silk manuf.; wine. Orig. Celtic settlement; conquered by Rome, 121 B.C.; united to Fr., 1268; in 16th cent. cap. of Huguenots.

**Nimrod**, (O.T.). g.s. of Ham; ruler of early Babylonian Kgdm.; a "mighty hunter" (Gen. x).

**Nine Men's Morris**, or **Morelles**, game

for 2 players with 9 counters each on board with 4 squares, 1 within the other (*Shakespeare: Midsummer Night's Dream*).



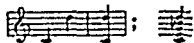
Nine Men's Morris

**Worthies**, nine heroes of mediaeval romance and chivalry, *i.e.*, Joshua, David, Judas Maccabaeus, Hector, Alexander the Great, Julius Caesar, Kg. Arthur, Charlemagne, and Godfrey of Bouillon.

**"Nineteenth Hole,"** (golf slang) the Club House, the bar therein, or a round of drinks after a round of golf.

**Nineveh**, on Riv. Tigris, nr. mod. Mosul, Mesopotamia. Anc. cap. of Assyrian Empire from c. 9th cent. B.C. to its destruction by Medes and Babylonians, c. 607 B.C.

**Ningpo**, treaty port, prov. of Chekiang, China; pop., 212,400; wood and lacquer; silk



Ninths

**Ninth**, (mus.) interval of nine degrees of the scale. **Major n.**, **minor n.**, chord composed of 4 thirds.

**Ninus**, myth. fndr. of Assyrian empire of Nineveh; husband of Semiramis.

**Niobe**, (Gr. myth.) wife of Amphion, Kg. of Thebes, boasted of her 12 children before Leto. Apollo and Diana killed Niobe's sons and daughters before the eyes of their mother, whom Zeus changed into a stone which shed tears in summer.



Niobe

**N. Group**, marble copies of statues by Scopas or Praxiteles, discovd. at Rome, 1583, now in the Uffizi, Florence.

**Niobium**, element, Nb; at. wt. 93.3, sp. gr. 7.0, m.p. 1950°C.; rare, greyish metal.

**Niort**, cap. dépt. Deux-Sèvres, France; pop., 25,721; gloves, leather-dressing.

**Nipigon**, **Lake**, S: Ontario, Canada; 70 X 50 m.; over 1,000 isls.; outlet *Nipigon Riv.* (40 m.) into N. Bay of L. Superior.

**Nipissing**, **Lake**, S. Ontario, Canada; 50 X 20 m.; outlet French Riv. (60 m.) into Georgian Bay of L. Huron.

**Nipkow disk**, part of television apparatus that, on being rotated, causes light rays to "scan" an object or surface. It is arranged in a spiral pattern. *See* TELEVISION.

**Nipple**, **papilla**, 1) (anat.) teat; in females is outlet of the mammary gland (*q.v.*) and is erectile; rudimentary in males. 2) (tech.) Short screwed sleeve for joining pipes end to end.

**Nippon**, name ("Origin of the Sun") for Empire of Japan; also (incorr.) for Hondo, the main island.

**Nippur**, (anc. geogr.) sacred city, Sumeria, Mesopotamia, on old course of Riv. Euphrates; seat of worship of En-lil (Bel); fl. c. 3000 B.C.; place of pilgrimage. Excavated 1888-1900.

**Nirvana**, in Ind. philos. (esp. Buddhism), the highest ambition of man, "eternal freedom from the pain of existence"; extinction of the person as an individual, and its absorption into and union with divine infinity.

**Nish** (Serb. *Niš*), cap. of Morava, Jugoslavia, on Riv. Nishava, trib. of Riv. Morava; pop., 25,110; Gr. Orthod. bishopric. Anc. *Naissus*, reputed b.-place of Constantine the Great, c. 272.

**Nith**, riv. (80 m.), S. Scot.; rises E. Ayrsh.; flows through Nithsdale into Solway Firth.

**Nitra**, **Neutria**, tn. in Czechoslovakia, on Riv. Nitra, a left trib. of the Waag; pop., 21,260; R.C. bishopric.

**Nitrates**, salts of nitric acid (*q.v.*). **Nitration**, introd. of nitro group (-NO<sub>2</sub>) into an organic substance, *e.g.*, in prod. of nitrobenzene (C<sub>6</sub>H<sub>5</sub>NO<sub>2</sub>). **Nitre**: *see* SALTPETRE.

**Sweet spirits of N.**: *see* NITROUS ETHER.

**Nitride**, compound of a metal, or cert. non-metals, with nitrogen, usu. cntg. one atom of nitrogen, often explosive. **Nitrification**, conversion of ammonia and other nitrogen cntg. substances in soil into *nitrates* by means of (nitrifying) bacteria.

**Nitric acid** (chem.), HNO<sub>3</sub>; inorganic acid, forms salts (*nitrates*), from wh. it is prod. by distillation with sulphuric acid; heavy fuming liquid, formerly known as *Aqua fortis* owing to its corrosive action; dissolves silver, but not gold; used in many indus. processes, *e.g.*, manuf. of nitro-glycerine (*q.v.*). Stains skin bright yellow; used to eradicate corns and warts.

**Nitrifying bacteria**, organisms which are able to fix chemically the nitrogen of the air, thus making it available first for plant food, and so for animal food. Leguminous plants (peas, beans, clover) have



nodules on roots in which these bacteria live.

**Nitrobenzene**, (chem.) sym.  $C_6H_5NO_2$  ("oil of mirbane"); yellowish liquid with smell of bitter almonds, made by treating benzol with sulphuric and nitric acids; used to scent cheap soaps; aniline is made by reducing it.

**Nitrogen**, (chem.) element, N; at. wt., 14.01; b.p., -196°C; wt. of 1 litre = 1.2506 grammes; density as compared with air, 0.9674. Colourless, odourless, tasteless gas, forming about 4/5ths of atmosphere; essential constituent of protoplasm (*q.v.*) and hence of living creatures; found as nitrate in minerals (*see* CHILE SALTPETRE); chemically very inactive, hence used in many cases where inactive gas is needed, as in elec. glowlamps. Combines with oxygen only in elec. arc (also lightning flash). Forms several oxides,  $N_2O$  (nitrous oxide, laughing gas),  $NO$  (nitric oxide),  $NO_2$ ,  $N_2O_3$ ,  $N_2O_5$ .  $N_2O_5$  with water forms nitrous acid (*q.v.*). **Fixation of N.**: intensive agric. requires soil to be suppl. with nitrogen compounds (nitrates, ammonia). N. of air "fixed" (*i.e.*, combined) by a few bacteria, and by elec. discharge. *Haber-Bosch* process combines N. of air with hydrogen to form ammonia, in strong steel towers 40 ft. high, at 200 atmos. pressure and 550°C; catalyser (*q.v.*) iron. Resultant ammonia is combined with sulphuric acid to form amm. sulphate, or oxidised to nitric acid, converted to ammonium nitrate (explosive), calcium nitrate; all fertilisers. **Nitrogen trichloride**,  $NCl_3$ ; very dangerous explosive; pale yellow, pungent-smelling liquid, formed by action of chlorine gas on ammonia, or electrolysis of ammonium chloride solution.

**Nitrogenous food**, contains nitrogen in available form for body-building and replacement of wear and tear. Meat, milk, eggs, cheese, etc., are mainly nitrogenous; peas, beans, lentils, etc., contain large amounts of available nitrogen.

**Nitro-glycerine**, sym.,  $CH_2ONO_2.CH_2ONO_2$ ; explosive oil made from glycerine and nitrosulphuric acid; mixed with kieselguhr forms dynamite (*q.v.*). Used in med. for heart affections.

**Nitrous acid**,  $HNO_2$ , very unstable substance; sodium nitrate largely used in manufacture of coal-tar dyes;  $N_2O_5$  with water forms *Nitric acid* (*q.v.*). **N. ether**, or sweet spirit of nitre, a B.P. drug containing 2-4% of ethyl nitrite, ether, and aldehyde in alcohol. Ethyl nitrite reduces blood pressure.

**Nitti**, Francesco (1868- ), Ital. statesman and economist; Pr. Min., 1919-20.

**Nivelle**, Robert George (1856-1924), Fr. gen.; held Verdun, 1916; suc. Joffre as c.-in-c., 1916-17.

**Nivôse**, Dec. 21st-Jan. 19th in Fr. Repub. Calendar (*q.v.*).

**Nizam**, title of ruler of Indian native State of Hyderabad (*q.v.*); first used by Asaf

Jah, *N.-ul-Mulk*, general and minister of Aurangzeb, who fndd. the State in early 18th century.

**Nizami**, 12th cent. Pers. poet; *Divan*.

**N.J.**, abbr. New Jersey.

**N. Mex.**, abbr. New Mexico.

**N.N.**, abbr. *nonien nescio* (Lat.), I do not know the name; or *nomen nomenclandum* (Lat.), name to be mentioned.

**Nô**, Jap. ceremonial drama in wh. stately dance is adapted to incidents of drama, embracing legends, quaint fancies, and relig. sentiments; 335 N. dramas in collection *Tôkyô Tsuge*.

**N. masks**, worn by actors from 15th century.

**Noah**, (O.T.) father of Shem, Ham, Japheth. **N.'s Ark**, a vessel in wh., by God's command, N. saved himself, his family, and pairs of all living things from the flood (Gen. vii).

**Nobel**, Alfred Bernhard (1833-96), Swed. chemist; inv. dynamite, 1862, blasting gelatine, 1876; by his will created N. Foundation, a fund for payment of N. Prizes in physics, chemistry, physiology and medicine, literature, promotion of peace, and for fndatn. of N. institutes. 1st. N. Prize awarded 1901; ann. val. c. £9,560 each.

**Nobile**, Umberto (1885- ), Ital. explorer; flew to N. Pole with Amundsen in airship "Norge," 1926; wrecked with airship "Italia" on polar expedition, 1928.

**Noble**, Eng. gold coin and money of account dating from reign of Edw. III; nominal value abt. 6s. 8d., equiv. in present currency to £1 1s. 10d.

**Noblesse oblige** (Fr.), rank imposes obligations.

**Nocturne**, (mus.) comp. for several instr., or for piano only (Chopin); generally of a dreamy character.

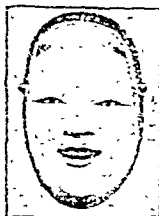
**Node**, point at wh. orbit of a planet intersects the ecliptic (*q.v.*); *Ascending and Descending N.*, such intersections from S. to N., and from N. to S. respectively.

**Nodes and loops**, (phys.) stationary waves, *e.g.*, along rope shaken at one end; do not travel; certain parts of medium (nodes) remain undisturbed, others vibrate with max. amplitude (loops).

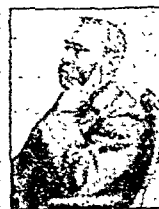
**Noggin**, 1) small cup or mug. 2) Meas. of spirits equal to one gill.

**Nogi**, Maresuke, Ct. (1859-1912), Jap. gen.; took Port Arthur from Russ., 1905.

**Noguchi**, Yoné (1875- ), Jap. poet; prof. of Eng. Lit., Keio Univ., Tokyo, Japan;



Nô Mask



Nobel

lectured at Magdalen Coll., Oxford, 1913; in America, 1919-20; *The Spirit of Japanese Poetry*, 1914; *London of Mists*, 1923; *Essays of a Man who Sits Down*, 1925.

**Noil**, waste from wool-combing.

**Nolens volens** (Lat.), willy-nilly.

**Noli me tangere** (Lat. Touch me not); see John xx 17; name given to yellow balsam (see TOUCH-ME-NOT), and to certain ulcerous skin diseases, as lupus.

**Nollekens**, Joseph (1737-1823), Brit. sculptor; R.A., 1772. Busts of George IV and of leading Brit. statesmen.

**Nolle prosequi**, announcement by the attorney-general that he "declines to proceed" with a suit; given effect to by offering no evidence.

**Nollet**, 1) **Jean Antoine** (1700-70), Fr. physicist. 2) **N., Charles** (1865- ), Fr. gen.; chief of Inter-allied Commission of Control in Germany, 1919; Min. of War, 1924-25.

**No-load loss**, (elec.) power consumed by apparatus (dynamo, motor, transformer) when running unloaded.

**Nolo episcopari** (Lat. I do not wish to be a bishop), formal reply to royal offer of a bpric.; proverbial for mock modesty.

been made; saying of Vespasian on receiving revenue from public conveniences. **N. placet** (Lat., it does not please), formula for a negative vote. **N. possumus** (Lat., we cannot), formerly applied to papal rejections of doctrinal innovations; based on Acts iv. 20; hence, any absolute refusal. **N. sequitur** (Lat., it does not follow), designation of fallacy in which the conclusion cannot logically be deduced from the premises.

**Non-combatants**, unarmed civilians and medical personnel in a theatre of war.

**Non-commissioned officers** (abbr. N.C.O.s) in the army: corporals, sergeants, staff and company quartermaster-sergts.; master-gunners 3rd class; also Lance ranks (*q.v.*), promoted from the ranks by the officer commdg. their unit.

**Non-conductors**, (elec.) substances that do not conduct electricity (insulators). Tested by voltage reqd. to break them down and cause discharge; 1) solids, such as porcelain, marble, special enamel, vulcanite, ebonite, mica; and compounds, bakelite, glass, etc.; 2) fibrous substances, such as paper in all its forms, presspan, vulcanised fibre, paper treated with bakelite, etc.; 3) liquids, such as oil, etc.



Sleeve Badges and Chevrons of Non-commissioned Officers in British Army

- 1) Regimental Sergeant-Major
- 2) " Quartermaster-Sergeant
- 3) Company Sergeant-Major
- 4) " Quartermaster-Sergeant

- 5) Sergeant
- 6) Corporal
- 7) Lance-Corporal

**Nomads**, wandering pastoralists, found thr. world, belonging to all races. Often warlike. See GYPSY.

**Nom de guerre** (Fr.), assumed name, pseudonym.

**Nominalism** and **realism**, (*q.v.*) comprise the two main tendencies of mediaeval philosophy. **N.** holds that general ideas are merely words or names expressing the qualities of partic. things; **R.**, that general ideas have substantial reality, and that their names are a subsequent incident.

**Nominal value**, (finan.) face V. of securities or metal or paper money, as compared with exchange or market value.

**Nomina sunt odiosa** (Lat., names create annoyance), it is better not to mention them.

**Nominative**, case of subj. of finite verb, ans. to ques. "who?"

**Non compos mentis** (Lat.), of unsound mind. **N. constat** (Lat. it is not clear), it does not follow. **N. olet pecunia** (Lat., money does not stink), no matter how it has

**Nonconformists**, (relig.) those who refuse to take part in worship of Established Ch., esp. Ch. of Eng.; name first applied to clergy who refused to accept Act of Uniformity (1662); now generally covers practically all Eng. Christian bodies outside Ch. of Eng. and R.C. Church.

**Nonjurors**, the clergy (headed by San-croft, Abp. of Canterbury) who refused to take the oaths of allegiance and supremacy to William and Mary (1689) and were consequently suspended and deprived.

**Non-specific therapy**, treatment of disease by injection of protein under the skin, e.g., milk may be used; stimulation produced by injected protein sometimes beneficial.

**None**: see HOURS, CANONICAL. **Nones**: see ROMAN CALENDAR.

**Nonius**, device for graduation of mathm. instruments; frequently confused with vernier, which is an improvement on nonius.

**Nonnus**, of Panopolis, Gr. epic poet, 5th cent. A.D.; *Dionysiaca*.

**Nonpareil** (print.): *see* TYPE.

**Noon**, midday, the end of the twelfth hour from midnight; the *true N.* at any given locality is the point of time in any day when the sun in its apparent course crosses the meridian (*q.v.*) of that locality; this will differ from noon as shown by the clock if local time is standardised by that of another meridian, e.g., Greenwich. *Cf.* ZONE STANDARD TIME.

**Norbert**, St. (c. 1085-1134), fndr. of Premonstratensians (*q.v.*).

**Nord**, dépt. N. France, on Belg. frontier; 2,230 sq.m.; pop., 1,970,000; indust.: iron, pottery, coal; sugar manuf.; agriculture. Devastated in World War.

**Nordau**, Max (1849-1923), Jewish critic, author, and Zionist; *Degeneration*.

**Norddeutsche Lloyd Steamship Company**: *see* NORTH GERMAN LLOYD STEAMSHIP COMPANY.

**Nordenskiöld**, 1) **Nils Adolf Erik Br.** (1832-1901), Swed. Arctic explorer; disc. N.E. Passage, 1878-79. His s.: 2) **Erland** (1877- ), explored S. America. **N. Otto**, (1869-1928), leader of Swed. Antarct. exped., 1901-03.

**Nordenskiöld Sea**, in N. Arctic Ocean, betw. Taimir Penins. and New Siberian Isls., named after the explorer.

**Nore**, 1) riv. Munster, I.F.S.; trib. Riv. Barrow; length 70 miles. 2) Sandbank at estuary Riv. Thames, 3 m. N. Sheerness; lightship; naval command (Chatham).

**Noreia**, cap. of Rom. prov. Noricum; scene of first victory of Cimbri over Romans (113 B.C.).

**Norfolk**, Earls and Dukes of, anc. titles in Eng. peerage. 1) Earldom: **Ralph de Guader**, 1st E., follower of William I, forfeited for rebellion, 1075; **Hugh Bigod** (d. 1177) became E., 1141; his s., **Hugh** (d. 1225) m. dau. of Wm. Marshall, E. of Pembroke; his s., **Roger** (d. 1270), inherited, through his mother, office of marshal; **Roger**, 5th E. (d. 1306) left no heir. **Thomas of Brotherton** (1300-38), son of Edw. I, made Marshal and E. of N., 1312; no male heir. 2) Dukedom: **Thomas Mowbray** (1366-99), g.s. of Margaret, dau. of last Earl, became Marshal, 1385, and Duke of Norfolk, 1397; quarrel with Duke of Hereford (afterwds. Henry IV) led to banishment of both; his s., **John** (1390-1432), fought for Henry V in France; became 2nd Duke, 1425; his s., **John**, 3rd Duke (1415-61), varied his allegiance in Wars of Roses; finally fought as Yorkist at Barnet and Towton, 1461; his s., **John**, 4th Duke (1444-76), left no male heir; Richard of York (1472-83), younger s. of Edw. IV, m. Anne, dau. of 4th Duke, and was cr. E. Marshal and Duke of Norfolk; murdered in Tower; title then passed to **John Howard**, (1430-85), s. of Margaret,

dau. of Thomas Mowbray, 1st Duke; cr. 1st (Howard) Duke, 1483; killed, fighting for Richard III, at Bosworth; title attainted; his s., **Thomas** (1443-1524), destd. Scots at Flodden, 1513, became 2nd Duke, 1514; **Thomas**, 3rd Duke (1473-1554), quelled Pilgrimage of Grace, 1536; charged with treason, 1547, and sentenced to death; but released, 1553; his s., **Thomas**, 4th Duke (1536-72), aimed to marry Mary Qn. of Scots; headed conspiracy for Span. invasion of Eng.; beheaded for treason. By Act of Parl., 1660, **Thomas Howard** (1627-77) became 5th Duke (*see* ARUNDEL, EARLS OF); his bro., **Henry**, 6th Duke (1628-84) made E. Marshal, office to be hereditary; **Edward**, 9th Duke (1686-1777); succd. by 2nd cousin, **Charles** (1720-86); wrote *Historical Anecdotes of Howard Family*, 1769; his s., **Charles** (Jockey of Norfolk), 11th Duke (1746-1815), was succd. by **Bernard Edward** (1765-1842), a descendant of 4th Duke; his s., **Henry**, 13th Duke (1791-1856); his s., **Henry Fitzalan Howard**, 14th Duke (1815-60), edited *Lives of Philip Howard, E. of Arundel and of Anne Dacres, His Wife*, 1857; his s., **Henry** (1847-1917), P.M.G., 1895-1900; leader of Eng. R. Caths.; his s., **Bernard Marmaduke**, 16th Duke (1908- ), is hereditary E. Marshal, Marshal, chief Butler, premier Duke and E. of England, and head of Eng. R. Cath. nobility.

**Norfolk**, 1) marit. co., E. coast of Eng., part of *East Anglia*; area, 2,044 sq.m.; pop., 504,800. Surface flat or undulating, the sea encroaching on the coast. Fenland in W., the Broads (*q.v.*) in E. Principal riv., Great Ouse. Many fine churches in characteristic flint-and-stone. Fertile agric. land, cattle-rearing, poultry-farming, brewing, important fisheries (Yarmouth), game preserves. Co. tn., *Norwich*. 2) Tn. and seapt., on Elizabeth Riv., Chesapeake Bay, Virginia, U.S.A., naval station; pop., 129,700; railway and canal centre; lumber, tobacco, cotton, coal.

**Norfolk and Western Railway, U.S.A.**, operates in Virginia, W. Virginia, N. Carolina, Maryland, Ohio, and Kentucky: 2,240 miles.

**Norfolk Island**, 13 sq.m., S. Pacific Ocean, 930 m. E.N.E. Sydney, Australia; pop., 1,000 (incl. descendants of mutineers of the "Bounty", *q.v.*); admin. by Australia.

**Normal school**: *see* TRAINING COLLEGE.  
**N. temperature**: *see* TEMPERATURE.  
**N. working day**, usu. 8 hrs.; *see* HOURS OF LABOUR.

**Norman**, Montagu Collet (1871- ), Brit. financier; served in S. Afr. War (D.S.O.), 1900-01; lieut. City of London, 1907; Gov. of Bk. of England, 1920; Privy Councillor, 1923. Has conducted internat. financial negotiations, esp. with U.S.A.

**Normandy**, former territory of N. France, comprising dépts. Seine-Inférieure, Eure, Orne, Calvados, and Manche; ch. tn., Rouen; ports: Le Havre and Cherbourg. Rom. Prov. 1st cent. B.C.; granted to raiding Northmen (Normans), early 10th cent.; became Eng. crown-land, 1066 (Norman Conquest); finally annexed to France, 1450.

**Normans, Northmen, Vikings**, people of Scand. who invaded coast of the Frank kgdm. at time of Charlemagne, plundered Aix-la-Chapelle, Cologne, Metz, Mayence, Paris; in 911 acquired *Normandy*, settled firmly in Eng. (B. of Hastings, 1066), occupied Iceland and Greenland, discovered N. Amer. c. A.D. 1000, invaded Russia 862. After 859 in Medit.; Norman states in lower It. (Robert Guiscard) and Sicily until 1189.

**Norns**, (Norse myth.) three goddesses of Fate: *Urd*, *Verdandi*, and *Skuld*. **Yarn of the N.**, thread of Fate.

**Norrköping**, Baltic coast tn. on Bay of Bråvik, Sweden; pop., 61,270; shipping; textile industry.

**Norrländ**, northernmost terr. divn. of Sweden; 100,783 sq. miles.

**Norroy**, (heraldry) title of Kg. of Arms having jurisdiction north of the Trent, and Registrar of Heralds' College; corruption of *Nord Roi*. See HERALD.

**North, Christopher**: see WILSON, JOHN. **N., Fred.**, 2nd Earl of Guilford known by courtesy title of Ld. N. (1732-92); Pr. Min. of Eng., 1770; resigned, 1782, during Amer. War of Independence.

**North**, one of the 4 cardinal points of the compass, lying to the right of a person facing the setting sun at the Equinox (*q.v.*); the Northern Hemisphere; Arctic regions; part of country district, etc., twds. the N. or N. of a specified point. Angle betw. *true N.* and *magnetic N.*; see DECLINATION. **N.-East Passage**, navigable passage from N. Atlantic to Pacific, lying N. of Europe and Asia; first negotiated by Nordenskiöld, 1878-79. **N. Pole**: see ARCTIC REGIONS; NORTH POLAR REGIONS; POLE. **N.-West Passage**, navigable passage round N. Amer. coast from Atlantic to Pacific, first traversed by Amundsen, 1903-06; frequent objective of 15th- and 16th-cent. explorers.

**Northallerton**, mkt. tn., N. Riding, Yorks, Eng.; pop., 4,800. Near N. was fought in 1138 *Battle of the Standard* (defeat of Scottish Kg. David I by Abp. of York).

**North America**: see AMERICA, NORTH.

**Northampton**, 1) co. bor., cap. of Northants, on Riv. Nene; pop., 92,300; boots and shoes, iron foundries. 2) tn., Massachusetts, U.S.A., on Connecticut Riv.; pop., 24,400; seat of Smith College (1875) and Clarke School for the Deaf (1867); indus.: silk goods, cutlery, brushes.

**Northamptonshire** or **Northants**, S.

midland co., Eng.; area, 1,003 sq.m.; pop. (incl. *Soke of Peterborough*, in N.E., separate admin. co.), 309,400; chief industry, shoe-making; agric., stock-raising, large grazing farms. Fine churches. Contains *Sulgrave* and *Brington*, homes of the Washington family.

**Northants**, abbr. Northamptonshire. **North Australia**, former division of Australia, now included in Northern Territory (*q.v.*).

**North Berwick**, royal burgh and seaside resort, Haddingtonsh., Scot.; golf courses; *North Berwick Law* (612 ft.),  $\frac{1}{2}$  m. S.; *Ten-tallon Castle*, 3 m. E.; *Bass Rock* off the coast; pop., 3,500.

**North Brabant**, prov. Holland, S. of Riv. Maas; 1,970 sq.m.; pop., 882,000; cattle breeding; agriculture; cap., *'s Hertogenbosch* (pop., 42,000).

**North Cape**, promontory on isl. of Magerö, off coast Norway,  $71^{\circ} 11' N.$ , commonly taken as northernmost land in Europe (but see KNIVSKJÆRODEN.).

**North Carolina**, ("Old North") S. State, U.S.A., betw. the Atlantic and the Appalachian region; 52,426 sq.m.; pop., 3,200,000; mountainous in W. and S.E.; marshy nr. coast; forest, agric., fisheries; cap., *Raleigh*.

**North Caucasian Area**, territory E. of Riv. Don, Russia; c. 113,200 sq.m.; pop., 8,364,000; partly lowland (grain cultivation), partly mountainous (cattle breeding); cap., *Rostov-on-Don*.

**North Channel**, strait betw. Scot. and Ireland.

**Northcliffe**, Alfred Charles, Wm. Harmsworth, 1st visct. (1865-1922), Brit. journalist and newsp. propr.; fndd. *Daily Mail*, 1896; acquired great chain of newspapers includ. at one time *The Times*.

**North Dakota**, ("Sioux," "Flickertail"), N. centr. State, U.S.A., on Canadian frontier; 70,837 sq.m.; pop., 682,000 (with Indian reservations); prairie, few trees; watered by Red and Missouri rivs.; agric. and cattle breeding; cap., *Bismarck*.

**North Dwina Province**, N.E. Russia, bounded W. and N. by Archangel, E. and N.



North Cape



Lord Northcliffe

by Komi, S. by Kostroma; c. 37,200 sq.m.; mostly forest; pop. 689,255 (80% Russ.); pig-breeding; linen, considerable peat reserves; chf. tn., Ustyug-Velikiy.

**Northern Crown:** see CORONA BOREALIS.

**N. Lights:** see AURORA (POLARIS).

**Northern Pacific Railway, U.S.A.,** operates betw. Wisconsin and Pacific coast: 6,789 miles.

**Northern Rhodesia:** see RHODESIA.

**Northern Territory, N. and centr. division of Australia;** area, 523,620 sq.m.; pop., 4,193 (excluding aborigines). Admin. by S. Australia till 1911, when taken over by federal government. In 1927 divided into N. and Centr. Australia (distinction abolished in 1931). Sparsely populated; much desert and steppe; trop. climate in N.; centr. area very dry. Some pasture and agriculture; minerals (undeveloped) include gold, silver, tin, lead, mica. N-S. Transcontinental Rly. in construction. Cap., *Darwin*; cap. of former Centr. Australia, Alice Springs.

**Northern War, 1700-21,** betw. Swed. (Charles XII) on the one side, and Den., Pol., and Saxony (Augustus II), Russ. (Peter the Great), Prussia, and Hanover on the other. Swed. defeated; *Prussia* received Stettin, Upper Pomerania, Usedom and Wollin; *Russia* a large part of the Swed. Baltic provinces.

**Northfleet,** urb. dist., N. Kent, adjoining Gravesend; pop., 16,500; Portland cement, paper mills.

**North Friesland,** W. coast of Schleswig betw. Husum and the Dan. frontier, 36 miles.

**N. Frisian Islands,** incldg. Nordstrand, Halligen, Föhr, and Sylt, lie off the coast.

**North German Confederation, 1866-70,** federal union of the 22 States (except Limburg and Luxemburg) N. of the Riv. Main under presid. of Prussia; merged in Ger. Empire at conclusion of Franco-Pruss. War.

**North German Lloyd Steamship Company,** Ger. Transatlantic ss. co. with world-wide connections; "Bremen" (51,656 tons)



North German Lloyd S.S. "Bremen."

and "Europa" (49,746 tons), held Blue Riband of Atlantic (see Italia). Fnnd. by H.

H. Meier, 1857. Fleet comprises over 150 steam- and motor-ships.

**North Holland,** prov. Holland; 1,080 sq.m.; pop., 1,500,000; cap., *Haarlem*.

**North Land,** marit. dist. of N. Norway; 1,470 sq.m.; pop., 173,825; forestry, wood indust., fisheries; cap., *Molde*.

**North Polar (or Arctic) Regions,** the area (c. 1,550,000 sq.m., of wh. nearly 1,000,000 is unexplored) bounded by the N. Polar circle and having the N. Pole as its centre, with adjacent parts of similar climate and conditions; mostly uninhabited. Pop., c. 150,000, incldg. Eskimos, Lapps, Chukchees, Tunguses, and N. Amer. Indians; largely fishermen, reindeer-breeders, and hunters of seal, whale, walrus, and bears and other furred animals. Average temperature of warmest months does not exceed 50° F. See ARCTIC REGIONS.

**North Sea,** betw. Gt. Brit. and N.W. Europe; connected with Atlantic through Eng. Channel and with Baltic through Kattegat; average depth, 300 ft. (on Doggerbank 65-80 ft.; on the Norw. coast up to 2,650 ft.); high tide varies betw. 8 and 12 feet. **N. S. Canal,** ship-canal from Amsterdam to the North Sea (nr. Ymuiden), constructed 1865-76; 15 m. in length, 25-30 ft. deep; 66-330 yds. tn.

**North Shields,** tn., Northumberland, nr. mouth Riv. Tyne; pop. included in that of Tynemouth (*q.v.*).

**North Star:** see under POLE.

**Northumberland,** Earls and Dukes of, peerages of Eng. and Gt. Brit.: **William de Percy** (c. 1183-1245), descended from Agnes, g. dau. of William de P., follower of William I; one of bns. who forced John to sign *Magna Carta*, 1215; his g.s., **Henry** (c. 1272-1315), purch. Alnwick, beginning Percy connxn. with Northumberland; captured Kg. David of Scot. at Neville's Cross, 1345; his g.s., **Henry** (d. 1408), cr. 1st Earl of N., 1377; his s., Henry Hotspur (1364-1403), was killed at Shrewsbury, and he, himself, at Bramham Moor, and titles and estates forfeited; restored, 1414, to his s., **Henry**, 2nd E. (1394-1455), killed at St. Albans; his s., **Henry**, 3rd E. (1421-61), killed at Towton; **Henry**, 4th E. (1446-89), slain, nr. Thirsk, when putting down Yorkshire rebellion against Henry VII; on death of **Henry**, 6th E. (1502-37), whose bros. had taken part in Pilgrimage of Grace (*q.v.*), titles and estates again forfeited; restored by Qn. Mary to **Thomas**, 7th E. (1528-72), beheaded for supporting plot to release Mary, Qn. of Scots; his bro., **Henry**, 8th E. (1532-85) sent to Tower in connxn. with Throgmorton's Plot; said to have died by suicide; **Algernon**, 10th E. (1602-68), led opp. to trial of Charles I; given charge of kg.'s children, 1646; his s., **Joceline**, 11th E.

(d. 1670), no male issue; his dau., Elizabeth, m. 6th **Duke of Somerset** (d. 1750) cr. E. of Northumberland, 1749; their dau. m. **Sir Hugh Smithson**, Bt. (1714-86), to whom earldom passed; he assumed name of **Percy**, and was cr. Duke of N. and Earl Percy, 1766; his s., **Hugh**, 2nd Duke (1742-1817), commd. 5th Fusiliers in Amer. War of Indep.; regmt. since called Northumberland F.; his s., **Hugh**, 3rd Duke (1785-1847), Lord-Lieut. of Ireland, 1829-30; **George**, 5th Duke (1778-1867) was s. of Algenon, 2nd s. of 1st Duke; his g.s., 7th Duke (1846-1910), Under-Sec. for India, 1902-03, and for Foreign Affairs, 1903-05; his s., **Alan Ian**, 8th Duke (1880-1930), a leading witness before Sankey Coal Comm., 1919; chanc. of Durham Univ.; his s., **Henry G. A.** (1912- ), 9th Duke.

**Northumberland**, northernmost co. in Eng.; area, 2,015 sq.m.; pop., 756,700. Low-lying coast (Holy Isle, Farne Islands); interior mountainous moorland, culminating in *Cheviot Hills* (2,676 ft.). Fertile, well wooded and well watered country; extensive coal-mining; important factories on *Tyne*, the principal riv.; sheep-breeding, cattle-raising (Chillingham cattle), agric., fisheries. The *Roman Wall* crosses the S. part of the county. Co. tn., *Newcastle-upon-Tyne*.

**Northumberland Fusiliers**, Brit. infantry regt.; old 5th Foot ("Fighting Fifth"); raised 1674; depot, Newcastle-upon-Tyne; record office, York; 52 battalions in World War; see NORTHUMBERLAND, HUGH, 2ND DUKE.

**Northumbria**, Anglo-Saxon kgdm., N. Eng., formed 7th cent., by union of Bernicia and Deira; extended from the Humber to the Forth; conquered by Kg. of Wessex, 954; N. portion lost to Scotland c. 1000; governed by Dan. earls till Norman conquest.

**North-West Frontier Province** (N.W.F.P.), prov. N.W. frontier, India, formed out of N.W. Punjab dists. in 1901; divided into dists. of Hazara, Peshawar, Kohat, Bannu, and Dera Ismail Khan; with five polit. agencies (Khaibar or Khyber, Kurram, Malakand, Tochi or N. Waziristan, Wana or S. Waziristan) attached; 38,700 sq.m. (Brit. terr. 13,400 sq.m.); pop. (Brit. terr.), c. 2,425,000, mainly Mohammedans; country mountainous (*Hindu Kush* in N.), watered by Upper Indus; cap., *Peshawar*.

**North-West Passage**: see NORTH.

**North-West Territories**, prov., Canada, N. of Lat. 60°, betw. Yukon and Hudson Bay (1,309,682 sq.m., incl. 51,465 water); divided into provisional districts of *MacKenzie* (527,490 sq.m.), *Keewatin* (228,160 sq.m.) and *Franklin* (554,032 sq.m.); pop., 12,000 (incl. 7,100 Eskimos and 2,800 Indians); Mackenzie Riv., Gt. Bear L., Gt. Slave L.; partly explored forests and tundras;

uninhabtd. archipelago in the N. Seat of govt., *Ottawa*.

**Northwich**, mkt. tn. in Cheshire, Eng., on Riv. Weaver; pop., 20,000; rock-salt mines.

**Norway, Norge**, kgdm. on W. coast Scandinavian Penins., bounded N. by Arctic Ocean, W. by Atlantic, S. by Skagerak, E. by Sweden, N.E. by Finland. Penetrates over 350 m. into Arctic Circle and contains part of Lapland and northernmost point of Europe (Knivskjaerodden, *qv.*). Extreme length, 1,100 m.; av. width, 60 m.; area, 125,000 sq. m.; pop., 2,809,600 (mainly Lutheran; incl. c. 20,000 Lapps and c. 10,000 Finns or *Kroener*); 22.4 to the sq.m. (lowest density in Europe). Off the cliff-bound coast are over 100,000 isls. (largest, Lofoten, in N.), forming a protective fringe (*Skjærgård*); indented by numerous deep fjords extending up to 85 m. inland (Oslo, Bokn, Hardanger, Sogne, Trondheim, Vest Fjord, etc.). Mtns. rise abruptly from the coast; av. alt. of country 1,500 ft.; many peaks over 6,000 ft. (*Galdhøpiggen* in *Jotunheim* range, 8,398 ft.). Extensive ice-fields (Jostedalstraen, largest in Continental Europe); many lakes (water area, 5,360 sq.m.) and short swift rivers (Riv. Glommen the longest), with countless waterfalls. Enormous water-power only partially exploited. Greater part of surface desolate moorland (*fjeld*; 65% of total area); extensive pine forests; coastal regions and valls. contain bulk of population and the only regions fit for agriculture (oats, barley, wheat); cattle-breeding (in S.); forestry; fisheries (seals, whales, etc.); copper, silver, iron ore. Exports: timber, wood pulp, paper, metals, textiles, cod-liver oil. Coastwise and ocean shipping trade important; large mercantile marine. Rlys., 2,390 miles. Climate remarkable; warm currents from Atlantic keep coasts practically ice-free, and regions within Arctic Circle are often warmer than many places 20° farther south. Interior far colder than the coasts. Much cloud; considerable snowfall; severe storms. Midnight sun shines for 2½ months in summer at N. Cape. Divided into 18 *Fylker* or counties (incl. Oslo city); chf. tns., Oslo (cap.), Bergen, Nidaros (Trondheim), Stavanger, Drammen. Dependencies: Spitsbergen, Jan Mayen Isl., Bouvet Isl.



Constitution of 1814, revised 1929. Hereditary constitutional monarchy. Parliament (*Storting*) consists of 100 country and 50 tn. members; appoints one-quarter of its Members to *Upper House* (Lagting), whilst remainder form *Lower House* (Odelsting). Financ. and govt. control by Lower House. HISTORY: Orig. a Germanic settlement; Christianity introduced c. 1000. Disputed

successions in 12th. cent. ended with victory of Haakon IV in 1240. Union with Denmark, 1380, and Sweden, 1397; separation from Sweden in 1523, from Denmark in 1814, followed by a personal union again with Sweden, but with separate constitutions; union dissolved in 1905 and Prince Karl of Denmark chosen to be Kg. of Norway as Haakon VII. Neutral in the World War.

**Norwegian Language:** see LANGUAGE SURVEY, *Scandinavian*.

**Norwich,** 1) city and co. bor., co. tn. of Norfolk, on Riv. Wensum; pop., 126,200; fine 11th-12th cent. cathed. and other churches; manuf. mustard, starch, textiles, iron; large cattle market. 2) City, Connecticut, U.S.A.; manuf. paper, cotton, woollens; pop., 23,000.

**Norwich School,** group of landscape painters working at Norwich in early 19th cent., of which John Crome was the founder and greatest, and John Sell Cotman the next most distinguished member.

**Nosce teipsum** (Lat.), know thyself, cf. GNOTHI SEAUTON.

**Nose,** (anat.) princ. organ of olfactory system in man; provides sense of smell, and warms, moistens, and filters air drawn into respiratory passages. Consists of *nasal bone* and *nasal cartilage*. Each half or *nostril*, separated by the bony bridge, has 3 muscles covered with mucous membrane. Olfactory nerves terminate in upper part of nose. **N.-bleeding:** see EPISTAXIS. **N.-dive:** see DIVE.

**Nostradamus** (Michel de Notre Dame) (1503-66), Fr. astrologer; *Centuries* (book of rhymed prophecies).

**Nota bene** (Lat.), note well, abbr.: N.B.!

**Notary Public,** official authorised to record statements and attest documents in solemn form, particularly for use in legal transactions abroad.

**Note,** 1) in dipl. relations: memorandum, document. **Exchange of ns.,** exchange of written inform. betw. 2 govts. usually to confirm or interpret existing agreements, or to settle a cause of dispute. **Verbal n.,** informal, simple communication of dipl. character to a foreign government. **Collective ns.,** signed by sev. govts. acting together. **Identical ns.,** signed sep. by representatives. 2) (Mus.) Sound characteristic. 3) (Finan.) **N. issue:** see ISSUING BANKS; CURRENCY NOTES. **N. reserve,** diff. betw. amt. of bank-notes actually issued and highest legal limit permissible. **N. circulation,** no. of bank-notes issued by banks and in circulation at given time. Bk. of Eng.

notes in circulation are total notes issued, less notes held in Banking Department.

**Notifiable diseases,** cert. infectious diseases, cases of which must be rep. to health auth., so that appropriate measures may be taken to prevent epidemic. In Gt. Brit. the following diseases are N.: Acute influenzal pneumonia, acute polioccephalitis, acute anterior poliomyelitis, acute primary pneumonia, cholera, cerebrospinal fever, continued fever, diphtheria, dysentery, encephalitis lethargica, erysipelas, malaria, membranous croup, ophthalmia neonatorum, plague, puerperal fever and puerperal pyrexia, relapsing fever, scarlet fever, small-pox, tuberculosis (all forms), typhoid fevers, and typhus. The following are also N. in certain boroughs: Chicken-pox, measles and German measles, rheumatic fever, whooping cough and zymotic enteritis.

**Notker,** Balbulus, the *Stammerer*, monk of St. Gall; d. 912; introduced "sequences" in church music.

**Not negotiable,** (finan.) words sometimes appearing on cheques or bills of exch., indicating that no endorsement other than that of drawee is acceptable.

**Notornis,** practically extinct New Zealand flightless bird, of rail tribe; plumage, green and purple.

**Notre Dame** (Fr.)

Our Lady the Blessed Virgin Mary, esp. in dedication of churches.

**N.-D., Cathedral of,** chief ch. in Paris, fndd. 1163, finished c. 1240; centr. spire added during restoration, 1846-79; three doors noted for fine early Gothic carving; choir screen and stained glass of rose windows remain of mediaeval interior decoration.

**Nottinghamshire,** abbr., **Notts,** N.

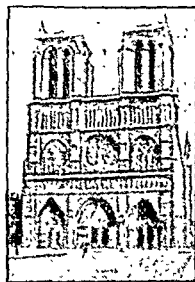
midland co., Eng.; area, 843 sq.m.; pop., 712,700; flat or undulating country watered by Riv. Trent; contains *Sherwood Forest* (haunt of Robin Hood), once covering co. and now shrunk to region round the *Dukeries*. Agric., cattle-breeding, dairy-farming; coal-mining; lace-making. **Nottingham,** co. tn. and co. bor. of co., on Riv. Trent; pop., 268,800; manuf. lace, hosiery, silk; castle (now museum and art gallery); largest market place in Eng.; univ. college (branch of E. Midlands Univ.). *Newstead Abbey*, ancestral home of Byron, is 10 m. north.

**Notts,** abbr. Nottinghamshire.

**Notts Forest,** Eng. assoc. football club, fndd. 1865. Won Eng. cup once (1898); introd. referee's whistle and use of shin guards.



Norwich Cathedral



Notre Dame, Paris

**Nougat**, sweetmeat of sugar and honey, mixed with almonds or other nuts.

**Nouméa** (*Port of France*), cap. of New Caledonia, dependency (and convict settlement) of France, in S.W. Pacific; pop., 27,000.

**Noun**, or *substantive*, name of person, thing, state, or idea.

**Nous** (Gr.), sense, intelligence.

**Nous avons changé tout cela** (Fr.) We have changed all that, based on the reply given by Sganarelle in Molière's *Le Médecin malgré lui*, when challenged with regard to his preposterous diagnosis of disease, to the effect that, although the heart admittedly used to be on the left side, "we have changed," etc.

**Nouveau riche** (Fr.), newly rich, upstart.

**Nouvelle Héloïse, Julie, ou la**, novel by J. J. Rousseau (q.v.) 1761; origin of the novel of sentiment and description.

**Nova**, (astron.) new star wh. appears suddenly, increases in brilliance, and then gradually disappears again; designated by name of constell. and year of appearance, e.g., Nova Persei, 1901.

**Novalis**, pseud. of Bn. Friedrich von Hardenberg (1772-1801), Ger. author; a pioneer of the Romantic movement; *Hymn to the Night*; novel, *Heinrich von Ofterdingen*.



Novalis

**Novara**, 1) prov. of Piedmont, N. Italy (1,387 sq.m.; pop., 385,000). 2) Cap. of prov.; pop., 58,000; silk, cotton, machinery.

**Nova Scotia**, prov. E. Canada; includes Nova Scotia penins. and Cape Breton Isl.; joined by Isthmus of Chignecto to New Brunswick. Excellent harbours on coast; 21,400 sq.m.; pop., 554,000. Interior undulating; many rivers and lakes; fruit and potatoes cultivated; much forest land; important fisheries. Climate subject to fogs. Cap., *Halifax*. Discovered by Cabot in 1497; Fr. 1667; Brit. since 1713. **Baronets of N.S.:** In 1624 James I created a number of baronets for the purpose of developing the colony; each had to support six settlers for two years, or pay a fine.

**Novaya Zemlya** ("new land"), two Russ. isls. divided by narrow channel, Matchkin Shar, in Arctic Ocean, betw. Barents Sea and Kara Sea; 35,500 sq.m.; pop., c. 100 (in four Samoyede colonies). Observatory, hunting, salmon fishing. Explored by Barents, 1594-97.

**Novel**, fictitious tale in prose, published in book form; founders of Eng. novel gen. held to be Fielding, Richardson, and Smollett.

**Novella**, form of short story v. pop. in It. in 14th to 16th cents.; reached Eng. in various translations, and provided material for

Elizabethan *cameron*, Cir

**Novello, Vincent** (1781-1861), Brit. musical composer; edited many little-known works of great masters; published sacred music and with his bro., **Alfred** (1810-96), fndd. publ. firm of Novello and Co.

**November** (Lat., *novem*: nine), 11th month, of 30 days; the 9th of the Rom. Calendar.

**Novena**, R.C. special devotions repeated on nine consecutive days.

**Novgorod**, (*Velikiy* or Great N.), tn., Leningrad area, Russia, on Riv. Volkhov; pop., 33,160; saw-mills; boots, candles, bricks manufactured; cathed. of St. Sophia (1035); two 11th- and 12th-cent. monasteries. Massacre of 15,000 by Ivan the Terrible.

**Novibazar, Novipazar**, fortress tn., Bosnia, Jugoslavia; fndd. 15th cent. by Turkey. *Sanjak of Novibazar*, narrow stretch of territory betw. Montenegro and Serbia.

**Novice**, one who has entered a relig. order on probation, intending later to take the vows of that order.

**Novi Sad**, tn., Jugoslavia, cap. of dept. of Dunavska (Danube); pop., 64,000.

**Novitiate**, 1) state of being a novice (q.v.) in a relig. order; period during which this lasts. 2) Apprenticeship.

**Novocaine**, synthetically prepd. substitute for cocaine used for local anaesthesia; is less poisonous than cocaine and is not habit-forming.

**Novocherkassk**, tn., N. Caucasian area, Russia, on rivs. Don and Aksai; pop., 62,275. Fndd. 1805, when *Old Cherkassk* was flooded by Don.

**Novorossiysk**, port, N. Caucasian area, Russia, on Black Sea; pop., 69,275; cement indust., naphtha; S. Russian grain harbour.

**Novo-Sibirsk, Novo-Nikolayevsk**, cap. W. Siberian area, Russian S.F.S.R., on Riv. Ob; pop., 120,130; important rly. centre for food supplies to Leningrad and Moscow.

**Noyades**, mass executions by drowning during the Fr. Revolu., esp. at Nantes, in the Loire (15,000 people, estd.).

**Noyeau**, almond-flavoured spirit, sim. to maraschino (q.v.).

**Noyes**, Alfred (1880- ), Brit. poet: *The Loom of Years*; *The Torchbearers*, 1922-25.

**Noyon**, tn., dépt. Oise, on Riv. Oise; pop., 7,300. Inhabited time of Romans; coronation of Charlemagne, 768; birthplace of Calvin, 1509; scene of fighting during World War, esp. 1914 and 1918.

**N.R.**, abbr. North Riding (of Yorkshire).

**N.R.A.**, National Rifle Association.

**N.S.**, abbr.: 1) New Style (accordg. to Gregorian Calendar [q.v.]). 2) Nova Scotia. 3) *Notre Seigneur* (Fr.), Our Lord.



Alfred Noyes



**N.T.**, abbr.: 1) New Testament; 2) Nevada Territory; 3) Northern Territory, Australia.

**Nubia**, region of the Anglo-Egyptian Sudan, on the Nile betw. Wadi-Halfa (N.) and Kordofan (S.); chf. tn., Khartoum. Numerous ruins from anc. Egypt. to Rom. times; formed part of anc. Ethiopian Emp.; was an independent Christian Emp. in 6th cent.; subjugated by Moslems, c. 1300; annexed to Egy. by Mehemet Ali, 1821; overrun by the Mahdi, 1880-83; Anglo-Egypt. expeditns. (Gen. Gordon), 1883-85; conquered by Gt. Brit. (Kitchener of Khartoum), 1898.

**Nubians, Barabra**, group of races in E. Sahara, related to the Fulani (q.v.). Negro in language, Hamitic physically and culturally; agric. and traders.

**Nuclein**, (physiol.) chemical substance present in the body, containing nucleic acid, phosphorus, and protein.

**Nucleus**, core or centre of any compound body. 1) (Biol.) Central body of living cell, cntng. the *chromosomes* (q.v.). 2) (Chem.) Particle round wh. crystal of solid forms from solution or molten solid; particle (dust) or gas *ion* (q.v.) round wh. drops of liquid form from saturated vapour. 3) (Phys.) Central core of the atom, composed of protons and electrons (q.v.). 4) (Astron.) Bright, dense part of comet, forming its head; dark centre of sun-spot.

**Nudum pactum** (Lat.), bare agreement; one legally invalid.

**Nuisance**, any act which, without direct interference, impairs the use and enjoyment by another of his property, or injures his health, comfort, or convenience.

**N.U.J.**, abbr. National Union of Journalists.

**Nullity**, matrimonial suit inst. in order to obtain a decree declaring that an alleged marriage is null and void.

**Numa Pompilius**, in legend, second kg. of anc. Rome.

**Number**, abstract mathematical conception of integers: 1, 2, 3, . . . (natural numbers) and generalisations from such integers; generalisations include: *Nil* and *negative numbers*: 0, -1, -2, -3, . . .; *fractional numbers*:  $\frac{1}{2}$ ,  $\frac{1}{3}$ , . . .; *irrational numbers*: i.e.,  $\sqrt{2}$ ,  $\sqrt{5}$ ; *transcendental numbers*: e.g.,  $\pi$  (see LUDOLPH'S NUMBER).

**Numbers**, (O.T.) 4th Bk. of Pentateuch; story of Israel from dep. from Sinai to close of wanderings in Wilderness; period of 39 years.

**Numerals**, (math.) graphic symbols or characters representing numbers or sets of nos., e.g., *Roman N.*: I, II, III, IV, X, L, C, M, etc.; and *Arabic N.*, 1, 2, 3, . . . 10 . . . *Cardinal N.* merely expresses no. (e.g., three); *Ordinal N.*, the order of item in a

series (third); *Multiplication N.*, the no. of times one is greater than another (threefold or three times) and *Fractional N.*, a part (one-third). *Indeterminate N.* represents quantity having no precise numerical significance, e.g., much, little.

**Numerator**, (math.) in a fraction: the number standing above the line.

**Numidia**, anc. kgdm. in N. Africa (Algeria), Rom. Province, 46 B.C.

**Numismatics**, science and art of coins and medals; an important source of knowledge of the mythology, history, geography and art of those nations, specimens of whose coinage survive. Coins are classified as *ancient* (Gr. and Rom.), *oriental*, *mediaeval*, and *modern*.

**Nummulite**, fossil shell of one of the foraminifera (see RHIZOPODA), shaped rather like a coin. **Nummulitic limestone**, limestone formed of nummulites.

**Nun**, member of a woman's relig. order living in nunnery or convent under vows of chastity, poverty, and obedience. **Nun-buoy**, type of buoy consisting of 2 cones placed base to base. **N.'s veiling**, very light open wool fabric.

**Nunc Dimittis**, (N.T.), song of Simeon (Lu. ii. 29); used as a canticle in Bk. of Common Prayer.

**Nuncio**, permanent diplomatic representative of the Pope at a foreign court; cf., PAPAL LEGATE.

**Nuncaton**, munic. bor., Warwicksh., Eng., manuf. ribbons, woollens, hats; "George Eliot Country"; pop., 46,300.

**Nunquam retrorsum** (Lat.: "Never backwards!"), motto of the Guelphs.

**N.U.R.**, abbr. National Union of Railwaymen.

**Nuraghi**, prehistoric defensive towers in Sardinia; similar towers on Balcaric Isls. (*talayots*) and in Scot. (*brochs*).

**Nur ed-din Mahmud, Nouredin** (1118-74), Sultan of Damascus; frustrated attacks of 2nd Crusade (1147-49); conquered Egypt.

**Nuremberg, Nürnberg**, 2nd largest tn. of Bavaria, Ger.; pop., 415,500; Gothic and baroque buildings (town hall with wall paintings by Dürer; church of St. Aegidius, with altar picture by Van Dyck, etc.); museum; technical college; metal indust.; Nürnberg toys; hops.

**Nurl**, rough protuberance, roughened surface on edge of circular object, similar to



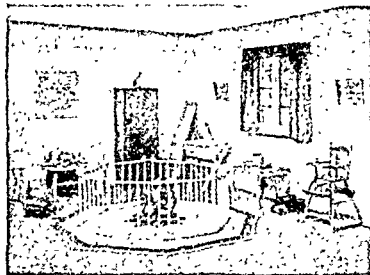
Nun



Nuremberg: Dürer's House

milled edge of coin. **Nurling tool**, wheel of hardened steel with roughened edge, mounted on handle.

**Nursery**, room or rooms set apart for use of children; usu. divided into *day* and *night* N. Equipment should be as simple as poss., furniture and walls washable; shelves, cupboards, etc., easy of access; floors covered with linoleum or similar substance, and rugs. *Day Nurseries*, institutions, usu. in working-class districts, at wh. mothers may leave their children to be cared for whilst they are work-



Modern Nursery

ing. In Grt. Brit., orig. on philanthropic basis (*crèches*); since 1918 under Ministry of Health. See **INFANT WELFARE**. **N. garden**, land devoted to cultivation of trees, shrubs, flowers, etc. for sale. **N. school**, school for children of 2-5 yrs. in Gt. Brit., on Montessorian (*q.v.*) lines; pioneer work by Miss M. McMillan at Deptford (N.S. opened 1911); public provision by Educ. Act, 1918. Cf **INFANTS' SCHOOL: KINDERGARTEN**.

**Nursing**, the organised care of the sick; first traces found in later Rom. Emp. under influence of Christianity; throughout Mid. Ages was in hands of religious orders of women and men; at Reformation secular nurses arose; first training school for male nurses fndd. in Prussia, 1799; for women, 1836; great impetus given by Florence Nightingale's work in Crimean War; nearly all hospitals now provide for training of nurses, and in Eng., legal system of registration and a General Nursing Council were estab. in 1919. **Nursing homes** must also (since 1927) be registered. In Brit. Army, N. organised by *Queen Alexandra's Imperial Nursing Service*, 1902; in Navy by *Roy. Naval Nursing Service*.

**Nut**, a dry fruit consisting of a hard shell containing a seed (kernel). Many edible varieties, e.g., walnut, sweet chestnut, almond, hazel, etc. Others of commercial value: ground N., palm N., etc., for oil; corozo N., as artificial ivory. See **OIL-PALM**.

**Nutation**, oscillatory motion of earth's axis completed in periods of 18.6 yrs., and amounting to 0.21" of a circle; caused by periodic variation of angle of moon's orbit

and earth's Equator to the ecliptic, and consequent result of moon's attraction upon earth; effect of N., see **PRECESSION**; **ZODIAC**.

**Nutcracker**, small group of birds of crow tribe; brown or grey; early breeder; gen. nests in pinewoods.

**Nuthatch**, small, climbing birds related to creepers and titmice, distribtd. over Eur., N. Africa, Asia, N. Amer., and Australia. *European N.* is common in Gt. Brit.; grey-blue, white, and chestnut plumage; derives its name from its method of cracking nuts with its bill. *Syrian N.* inhabits rocky districts of S. Eur. and Asia Minor.

**Nutmeg**, dried seed of *Myristica fragrans*, tree indigenous to the Molucca Isls. and cultivd. in Penang, Sumatra, and elsewhere; contains a volatile oil used in med. as a carminative and outwardly as a stimulating lotion, esp. hair wash; seeds are used as a flavouring in cookery (large doses poisonous), and outer covering (*mace*) as a spice. **N. State**: see **CONNECTICUT**.

**Nutria**, skin of S. Amer. coypu (*q.v.*); commercially valuable.

**Nutrition value**, content of foodstuff in metabolic matter. Largely calculated in calories (*q.v.*). **Nutritive preparations** contain albumen, malt, cocoa, etc., in concentrated, easily digested form. **N. minerals** in veg. food necess. for sustenance of man and beast (iron, phosphorus, magnesia, calcium, potassium, sodium, etc.). **N. matter**, ingredients in food useful for nourishment (albumen, fat, carbohydrates, mineral salts, vitamins).

**Nut-weevil**, small beetle, one of the weevil family; female lays her eggs in hazelnuts, boring a hole while the shell is still soft.

**Nux vomica**, dried ripe seeds of plant widely distrib. over India and Malaya. Active princ. are the alkaloids, strychnine and brucine; a powerful tonic.

**N.W.**, abbr. Northwest; **N.W.P.**, Northwest Provinces (India).

**N.Y.**, abbr. New York, State or City.

**Nyasa**, fresh-water lake, E. Africa, 1,570 ft. abv. sea-lvl., 350 m. long (N. to S.), 40 m. wide; area 10,230 sq.m.; depth 2,575 ft.; discovered by Livingstone in 1859. **Nyasa-land**, Brit. protectorate, E. Africa, W. and S. of Lake Nyasa; 37,900 sq.m.; pop., 1,400,000 (2,000 whites); exports tobacco, cotton, tea; tns.: Zomba (cap.) and Blantyre.



Nutmeg



Nymph

**Nyland, Uusimaa**, district on S. coast of Finland, 4,400 sq.m.; pop., 491,600; metal, machinery, shipbuilding. Cap., *Helsingfors*.

**Nylander**, Claes Wilhelm Gabriel (1835-1907), Swed. chemist, gave his name to a test for glucose in urine; test is positive if the urine, when heated with the test solution, becomes black.

**Nymegen**, tn. on Riv. Waal, in Gelderland, Holland; pop., 80,200; cath. univ.; ruins of Carolingian palace. Peace betw. Fr. and Holland, Spain and Germany signed here, 1678.

**Nymphomania**, morbid exaggeration of sexual desires in women; erotic mania.

**Nymphs**, nature-spirits in Gr. myth.;

of the ocean (oceanides), Mediterranean (nereids), fresh water and springs (naiads), mountains (oreads), and trees (dryads, hama-dryads).

**Nystad, Uusikaupunki**, seapt. tn., Finland, on Gulf of Bothnia; pop., 5,165. **Peace of N.** (30 Sept., 1721) ended Northern war betw. Russia and Sweden; gave Russia Livonia and Esthonia; *see* BALTIC PROVINCES.

**Nystagmus**, slight, rhythmical side-to-side movements of the eyes seen in certain diseases of the nervous system; *frequently* present in albinism. **Miners' n.**, troublesome variety of the disease which sometimes incapacitates miners; caused by working in a dim light and in a stooping position.

**O**, (chem.) symbol of oxygen.

**O.**, abbr. Ohio.

**Oahu**, chf. of Hawaiian Isls.; 598 sq.m.; pop., 202,900; agric.; cap., *Honolulu*.

**Oak**, 1) any tree of genus *Quercus*. British *O.* providing valuable timber is *Q. robur*; Amer. varieties also useful timber trees. Cork comes from *cork oak*.

*O.* also furnishes tanning

materials; the *acorns* (fruit)

are eaten by animals. 2)

Outer door of a set of chambers at a Univ. or Inn of Court. A man who closes

this door is said to "sport his oak," thus signifying that he does not wish

to receive visitors. **O.-apple**, excrescence

on oak-tree caused by an insect; formerly

used in making ink; see GALL. **O.-apple**

**Day**, May 29th, date of Charles II's restoration, on wh. *O.-apples* and *O.-leaves* were

worn to commemorate his hiding in *O.-tree*, after battle of Worcester (*q.v.*).

**Oakham**, co. tn., Rutland, Eng.; pop., 3,300; castle.

**Oakland**, tn., California, U.S.A., on S. Francisco Bay; pop., 285,000; iron foundries; motorcars; shipb., elec. machinery and accessories; lumber; fruit-canning.

**Oaks**, **The** (horse-racing); race for 3-year-old fillies (1½ m.); run at Epsom 2 days after the Derby (*q.v.*).

**Oakum**, long tow from flax and hemp hackling; also old rope unpicked; used in



Oak

of long filaments with broad, flattened tips similar to oar-blade.

**Oasis** (pl. *oases*), fertile place in desert, where presence of water makes cultivation possible; often large and important settlements, e.g., Biskra (*q.v.*).

**Oates**, Lawrence Edw. Grace (1880-1912), Brit. explorer; member of Antarctic exped. under Scott; after having reached S. Pole, lamed by frost-bite, and walked to his death in snowstorm to relieve party of handicap of his company. **O., Titus** (1649-1705), Eng. impostor, forged alleged proofs of conspiracy to murder Charles II and establish Rom. Catholicism in England.

**Oath**, a solemn declaration by which a person renounces mercy and imprecates

vengeance of heaven unless he tells truth. Persons with

relig. obj. to swearing may affirm instead of taking oath.

**O. of allegiance**, taken on entering upon an office promising

loyalty to Kg. or country in carrying out its duties.

**Oats**, cereal cultiv. throughout

Old World for food for man and domestic animals;

prob. derived from "wild *O.*" of S. Europe

and W. Asia; contains larger proportion of

fat, sugar and albuminoids than does wheat;

dried grain, after removal of husk, used to

make porridge or gruel. See Diag., next page.

**Oaxaca**, State, S. Mexico, on the Pacific;

36,365 sq.m.; pop., 1,100,000; surface mountainous (11,000 ft.); cap., *Oaxaca*, on Riv.

*Atoyac*; pop., 30,000.

**Ob**, see OBI. **Ob.**, abbr. See OBIT.

**Obadiah**, (O.T.) prophet at court of Ahab (*q.v.*). **Bk. of O.** foretells destruction

of Edom; date uncertain.

**Oban**, police burgh and seapt. Argyllsh., Scotland; pop., 5,800; summer resort and

tourist centre; yachting. Four m. N.E. is Dunstaffnage Castle (*q.v.*).

**Obbligato**, (It., *obligatory*); necessary; indispensable. In mus., additional accompaniment wh. must be played as written.

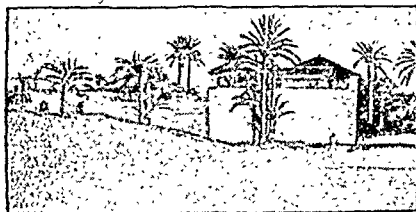
**O.B.E.**, abbr. officer, Order of Brit. Empire.

**Obelisk**, four-sided column with pyramidal point, orig. set up in pairs before

Egypt. temples; often adorned with hieroglyphic inscriptions.



Oats



Oasis

caulking seams of ships' decks. **O.-picking** formerly princ. occupation of convicts in Brit. prisons.

**Oar**, bladed pole worked with both hands by one of the rowers of a boat; ant.: *scull* (*q.v.*).

**O.-fish**, *Regalecus*, large marine fish of genus of ribbon-fish (12 to 20 ft.), living at great depths; ventral fins consist

**Oberrammergau**, vill. in Upper Bavaria; pop., 2,000. Famous for Passion Play (q.v.), performed by villagers every 10 yrs. from Whitsun till end Sept., since passing of plague, 1633. Wood-carving school.

**Oberhausen**, tn., Rhineland, Ger., on Riv. Ruhr; pop., 194,000; coal and iron.

**Oberhessen**, N. prov. Hesse, Ger.; 1,269 sq.m.; pop., 330,000. Cap., Giessen.

**Oberon**, 1) Kg. of the Fairies, in 12th-cent. Fr. poetry; see Shakespeare's *Midsummer Night's Dream*. 2) (Mus.) Opera by Weber (q.v.), 1826.

**Obesity**, excessive fatness, wh. may be present in early years, or may occur in later life. Generally considered to be due to absence of the normal balance betw. the internal secretions of the ductless glands, which may be inherited, or may supervene through ill-health. Thyroid gland, when dried, is often administered to reduce obesity and is the main constituent of certain "slimming" medicines. Its use is attended by danger to the heart.

**Obi**, **Ob**, riv. (2,165 m.), W. Siberia; flows into Arctic Ocean; navig. in mid-summer.

**Obliit** (Lat.), he (she) died; abbr. *ob*.

**Obiter** (Lat.), by the way, in passing.

**O. dicta**, casual observations; title of volume of essays] by Augustine Birrell (q.v.).

**Object**, that wh. is presented to, observed by, the senses; a purpose, aim; (gram.) noun, pronoun or clause wh. is governed by transitive verb or preposition. **O. lesson**, lesson, esp. for very young children in wh. each new word or idea is accompan. by obj. illustratg. what it signifies.

**Objective**, (philos.) having independent existence in itself; ant.: *subjective*; (milit.) point to wh. operations are directed. **O. lens**, outer lens on wh. image of object is received, in optical instrs. See TELESCOPE; MICROSCOPE; CAMERA. **Oil-immersion O.** must be used in oil of suitable refractive index.

**Objectivism**, philos. doctrine that knowledge is based on obj. reality and that perceptions have objective validity.

**Oblates**, (R.C.Ch.) in Benedictine Order, lay-folk who, without taking vows, assume certain obligations of the monastic state, whether living in the world or with a community of monks; also name of certain congregations of regular priests, e.g., Oblates of Mary Immaculate.

**Oblation**, (eccles.) offering to God of consecrated elements in the Mass; known as the Greater O.; Lesser O.; see OFFERTORY.

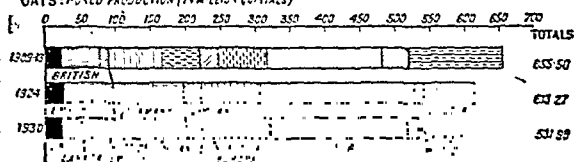
**Obliquity of the ecliptic**: see ECLIP-TIC.

**Oboc**, **hautbois**, (mus.) wood-wind reed instr. with high-pitched nasal tone.

**Obol**, small anc. Gr. silver coin, = 1/6th of a drachma; also a weight of same amount.

**Obrenović**, Serb. dynasty, fndd. by **Milos I** (1780-1860); obtained Serb. self-govt. under suzerainty of Turkey, 1830; abdicated, 1839; restored, 1858. See MILAN IV.; ALEXANDER II. of Serbia.

OATS: WORLD PRODUCTION (IN MILLION QUINTALS)



U.S.A. largest producer, but Russia an important rival.

**O'Brien**, William (1852-1928), Ir. politic. and Home Ruler; led break-away from Nat. party in 1910 electn., forming Indep. Nationalists.

**Observantines**, branch of reformed (and strict) Franciscans (originating 1368), known in France as *Cordeliers* (q.v.) and giving rise to the Discalced Friars (Alcantarines), Recollects, and Capuchins. Except for the latter these were all reunited in 1897; see CONVENTUALS.

**Observatory**, institution for making astron. observations; see ASTRONOMY. O. with largest telescope on Mount Wilson U.S.A.; see ASTRONOMY, Pl. II.

**Obsidian**, (geol.) volcanic glassy, acid, non-crystalline rock, gen. black or grey, occas. brown or yellow, extremely hard and brittle; used as gem-stone by Greeks and Romans, and by ancient Mexicans and others for knives, arrow-heads, mirrors, etc.

**Obstacle race**, foot-race in wh. various barriers, artificial or natural, have to be crossed.

**Obstetrics**, branch of medicine dealing with pregnancy, childbirth, and the puerperium.

**Obverse**, face of coin or medal having princ. image or inscription upon it.

**Ocarina**, (mus.) small wind-instrument of earthenware, egg-shaped, with mouthpiece contained in tube at side, and holes for fingers in front.

**O'Casey**, Sean (1890- ), Irish playwright; *Juno and the Paycock*, 1925; *The Plough and the Stars*, 1926; *The Silver Tassie*, 1928.

**Occam**, William of (c. 1299-1349), Eng. Franciscan and schoolman; revived nominalism; pupil of Duns Scotus.

**Occasionalism**, theory of causation wh.

assumes the existence of a divine interference or intermediary betw. soul and body, correlating their functions.

**Occident**, the West, in contradistinction to Orient (the East).

**Occleve**, Thomas (c. 1368-1450), Eng. poet; *The Regiment of Princes*.

**Oclusioni** 1) (phys.) the retention of gases within the body of a solid. Gases may be driven out by heat, esp. in vacuum; a process most important in modern wireless valves; vacuum tubes, X-ray apparatus. 2) (Med.) Clog. of a passage or cavity.

**Occultation**, (astron.) eclipsing of one celest. body by another; e.g., of fixed stars and planets by the moon. Cf. ECLIPSE.

**Occultism**, philos. basis of all secret sciences (alchemy, astrology, magic, witchcraft, etc.); now, esp. belief in reality of unexplained supernatural psychic forces (psychic projection, telepathy).

**Occupation**, 1) Seizure of unclaimed terr., with or without force; annexation. 2) Military O. and administration of the terr. of foreign State; e.g.: Belg. in the World War; Rhineland after the Armistice.

**Occupational diseases**, ailments caused by conditions of work (e.g., handling lead, phosphorus, etc., or breathing noxious fumes). Working conditions in dangerous or unhealthy industries are now regulated by law.

**Ocean**, unbroken expanse of water, covering about three-quarters of earth's surface; general depth of floor 2 to 3 miles beneath surface; some depressions sink to over 30,000 feet. See SEA. **O. currents**, streams on ocean surface, caused largely by prevailing winds; warm when flowing twds. colder regions than that of origin, cold when moving twds. warmer latitudes; best known is the warm Gulf Stream (q.v.).

**Oceanography**, science of nature, motions, conformation, etc., of seas and seabed.

**Oceania**, collective name for islands and archipelagos in Pacific; divided into Melanesia, Micronesia, and Polynesia (qq.v.). Small coral islands (very numerous) or larger volcanic islands. **Oceanic Languages**: see LANGUAGE SURVEY, Malay-Polyn. Languages.

**Oceanus**, (Gr. myth.) god of the sea encircling the earth; father of 6,000 children (*Occanides*). See NYMPHS.

**Ocelot**, American wild tree-cat; forest-dweller. Variable in colour, ground tint yellow or white, with black spots disposed in long irregular streaks; ringed tail, c. 4 ft. long.

**Ochil Hills**, range, centr. Scotland, in

S.E. Perthsh., Clackmannansh., Kinross-sh., and Fifesh.; *Ben Clench*, 2,363 feet.

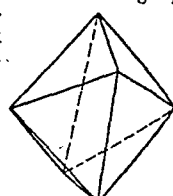
**Ochre**, an earthy, metallic oxide of iron, used for making red-yellow-brown pigments; the colours made from these pigments.

**Ochsenkopf**, mtn. in the Fichtelgebirge, Ger.; 3,356 feet.

**O'Connell**, Daniel (1775-1847), Irish politcn. and agitator; leader in campaigns for abrogation of the Union and Cath. emancipation; his elec. for Clare, 1828, forced admission of R.C.s to Parlt.; Ld. Mayor of Dublin, 1841; frequently arrested; fndr. (1826) "Order of Liberators"; hence called "The Liberator."

**O'Connor**, Thomas Power (1848-1929), Irish politician and journalist; fndd. *The Star*, *T.P.'s Weekly*, and other papers; M.P., 1885-1929 (for many years "Father" of Hse. of Comm.); chmn. Brit. Board of Film Censors, 1917; Privy Councillor, 1924; pub. *Memoirs*, 1928; etc.

**Oct-** (Lat. or Gr.), prefix, eight; **Octagon**, (geom.) regular eight-sided figure. **Octahedron**, (geom.) eight-sided solid figure, one of the 5 regular polyhedra, contained by eight equal equilateral triangles. **Octant**, (geom.) eighth part of a circle; also an astron. instrument similar to the sextant (q.v.), but fitted with a graduated arc of one-eighth of a circle; also a constellation at the Pole of the S. celest. hemisphere. **Octave**, 1) (eccles.) the 8 days next following a festival including the feast-day itself; also, the last of these days. 2) (mus.) 8th degree of the mus. scale and corresponding interval. **Octavo**, 8vo, book, sheets of wh. are divided into 8 leaves (16 pages). **Octet**, (mus.) composition for 8 instr. or voices.

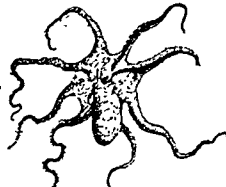


Octahedron

**Octavia**, 1) Sister of Octavianus (Augustus), 2nd wife of Mark Antony, who left her for Cleopatra. 2) Dau. of Claudius and Messallina, 1st wife of Nero.

**Octavianus**, see AUGUSTUS CAESAR.

**October** (Lat., *octo*: eight), 10th month, of 31 days; the 8th of the Rom. Calendar. **O. Revolution**, Bolshevik revol. in Russ., October, 1917; fall of Kerensky. **Octobrists**, constitu. monarchist party in Russ. formed after the Czar's Manifesto in Oct. 1905, recognizing necessity of polit. concessions.



Octopus

**Octopus**, eight-armed cephalopod found on rocky coasts, in deep pools and off shore.

Short, bag-like body; arms long, tapering and furnished with suckers from base to tip; do not attain the great size found in cuttlefish. Feed chiefly on crustacea. Capable of considerable change of colour to harmonise with surroundings.

**Octroi**, tax on consumable commodities, food, etc., levied by towns in certain European countries to meet their expenses.

**Ocular**, (optics) eye-piece; lens system of an optical instr. nearest to eye, e.g.: in telescope and microscope.

**Oculi** (Lat., "eyes"), name for 3rd Sunday in Lent, from the introit (Ps. xxv. 15).

**Odalisque**, female slave in Turkish harem (q.v.).

**Oddfellows**, **Order of**, society formed in Eng. in 18th cent. for social and benevolent purposes, having secret rites and various degrees of status. Reconstituted as Independent Order of O. (1813) at Manchester, whence it was introduced into U.S.A. Now, friendly benevolent society with branch organisations in most European countries and in U.S.A.

**Odds**, (betting) ratio between amounts staked (e.g. 3 to 1).

**Ode**, poem, rhymed or unrhymed, in classical metre, written to celebrate a person or occasion; e.g., Sapphic, Horatian O., and in mod. lit., poems by Shelley, Wordsworth, Francis Thompson, etc.

**Odenburg**: see SOPRON.

**Odense**, anc. city, Denmark, cap. Isl. of Fünen and of dist. (690 sq.m.) of O.; on O. Aa (sea-canal 13½ m. long); connected by O. Canal (5 m.) with O. Fjord and Great Belt; pop., 52,375; seaport; iron foundries; cloth manuf. B.-place Hans Andersen. Trad. founded by Odin.

**Oder**, riv., Ger.; rises Moravia; flows N.W. through Prussian Silesia (Oppeln, Breslau), Brandenburg (Frankfurt an der O.), and Pomerania (Stettin) into Baltic (Stettiner Haff); length 563 m.; navig. from Ratibor (Upper Silesia); connected with Riv. Havel by the Berlin-Stettin waterway, with Riv. Spree, by Oder-Spree Canal (53 m.); internationalised (Treaty of Versailles, 1919) from confluence with Riv. Oppa.

**Oderint dum metuant** (Lat.), "Let them hate, so long as they fear."

**Odessa**, chf. seaport of Ukrainian S.S. Republic on Black Sea; pop., 420,865; import. centre of export for Russ. grain; univ. Sanguinary pogroms, 1905. Fighting betw. Petlura and Bolshew., 1918; occup. in turn by Germ., Austro-Hung., French, Serb., Pol. and Greek troops, 1918. Second Soviet Govt. expelled by Denikin, Aug., 1919. Soviet victory, Feb., 1920.

**Odin**, **Wotan**, chief god of Nordic mythology.

**Odington**, Walter (13th cent.), monk of

Evesham Abbey, Eng. writer on music; his *De Speculatione Musicae* gives most authoritative account of descant (q.v.).

**Odi profanum vulgus** (Lat.), I hate the vulgar herd (Horace, ODES, Bk. iii., i).

**Odium theologicum** (Lat.), theological hatred; bitterness born of religious or doctrinal controversy.

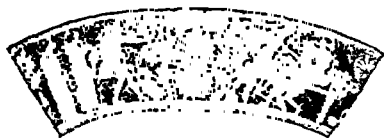
**Odoacer** (c. 434-93), Danubian chftn., first Kg. of Italy after fall of W. Rom. Emp.; overthrew last emp., Romulus Augustulus, and procl. kg., 476; killed by Theodoric.

**Odometer**, instrument for measuring distance by means of a wheel coupled to a revolution-counter. May be large enough for actual roads, etc., or small for map. Cf. OPISOMETER.

**Odontoglossum**, trop. Amer. orchid with leathery, sword-like leaves, tongue-shaped lips, and large flowers.

**Odontology**, study of anatomy and diseases of teeth.

**Odysseus**, **Ulysses**, Kg. of Ithaca; hero of the **Odyssey**, epic poem by Homer, wh. relates the ten years' wanderings of O., Kg.



Odysseus Slays the Suitors  
Greek Vase-Painting

of Ithaca, on return from Trojan War, and his revenge on the suitors of his wife, Penelope.

**Oecumenical Patriarch**, title of P. of Constantinople since 6th century. **Oecumenical Council**: see COUNCIL OF THE CHURCH.

**O.E.D.**, abbr. Oxford English Dictionary.

**Oedema**, dropsy, accumulation of fluid under the skin, usu. due to heart or kidney disease; the fluid causes swelling of the affected part, wh. is most often the ankles. See DROPSY.

**Oedipus**, (Gr. myth.) son of Laius, Kg. of Thebes, and of Jocasta; guessed the riddle of the Sphinx (q.v.); strove in vain agst. his destiny, to kill his father and marry his mother.

**O. Coloneus**, **O. Tyrannus**, tragedies by Sophocles. **O. complex**, (psychoanalysis) term expressing the sexual attachment of a child to its parent of the opposite sex, resulting in jealousy in regard to the other parent.

**Œil-de-boeuf** (Fr., ox-eye), a round window.

**Oertel**, Max Joseph (1835-97) Ger. physician. **O. method**, treatment of heart disease, obesity, etc., by mechanical means and exercise and by regulation of the diet and limitation of fluids.

**Oesel:** see SAARE MAA.

**Oesophagus**, (anat.) muscular tube connecting throat with stomach, to wh. it conveys the food from the mouth; also known as the gullet.

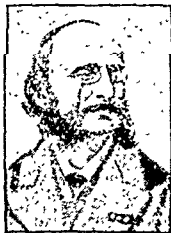
**Oeta, Katavothra**, mtn., Thessaly, Greece; 7,054 feet.

**Offa** (d. 796), Kg. of Mercia; obtnd. throne c. 757; extended Mercian supremacy to Oxfordsh.; subjugated the Welsh kgdm. of Powys, west of the Severn, and, accdg. to Asser, constructed the fortification extending from the mouth of the Wye to the mouth of the Dee, known as *Offa's Dike*.

**Offaly**, inland co., Leinster, I.F.S., formerly *King's County*; 771 sq.m.; pop., 52,300; surface mainly level (Bog of Allen); *Slieve Bloom Mtns.* (1,733 ft.) in S.; rivs. Shannon, Barrow, Boyne; Grand Canal; agric., dairy-farming, stock-raising; co. tn., *Tullamore*.

**Offenbach**, Jacques (1819-80), Fr. operetta composer: *Orphée aux Enfers*, *La Belle Hélène*; opera: *Les Contes d'Hoffmann*.

**Offenbach**, port on Riv. Main, Germany; chf. indus. tn. of Hesse; pop., 81,800. Leather and fancy goods; soda and lithia waters.



Offenbach

**Offertory**, (eccles.) 1) part of the Mass during wh. collection of alms is made, including sentences spoken by priest, sung antiphon, and prayer in wh. alms and unconsecrated elements are offered to God; the *Lesser Oblation* (see OBLATION). 2) Any collection of alms during or at end of ch. service.

**Officers**, hold positions of command and respons. in naval, milit., police, and other formations. **Commissioned o.** appointed by the head of the State; **non-commissnd. o.** (q.v.) (N.C.O.) apptd. by commanders of units; **Warrant o.**, highest rank of N.C.O. See WARRANT.

#### EQUIVALENT RANKS OF THE ROYAL NAVY, ROYAL AIR FORCE, AND ARMY

Royal Navy	Army	Royal Air Force
Admiral of the Fleet	Field-Marshal	Marshal of the Air
Admiral	General	Air Chief-Marshal
Vice-Admiral	Lieut.-General	Air Marshal
Rear-Admiral	Maj.-General	Air Vice-Marshal
Commodore	Brigadier	Air Commodore
Captain	Colonel	Group-Captain
Commander	Lieut.-Colonel	Wing-Commander
Lieut.-Commander	Major	Squadron-Leader

Royal Navy

Lieutenant

Sub-

Lieutenant

Midshipman

Army

Captain

Lieutenant

2nd-Lieut.

Royal Air Force

Flight-

Lieutenant

Flying Officer

(or Observn.

Officer)

Pilot Officer

**Official**, (eccles.) officer appointed to act as judge in an eccles. court, usually styled *Official principal*. **O. List:** see STOCK EXCHANGE LIST. **O. receiver:** see BANKRUPTCY, RECEIVER IN.

**Offset printing:** see LITHOGRAPHY.

**Off set**, 1) (horses, vehicles, etc.) the right side in forward direction (*opp.* "near" side). 2) (Cricket) Side of wicket in front of batsman (*opp.* "on" or "leg" side). 3) (Assoc. ftball.) Position of player who is in front of ball, there being not more than 2 oppons. betw. him and oppon's goal; he is disqualified from taking part in the play unless ball has last been touched by an opponent.

**Ogden Monument**, Fort Riley, Kansas, marks geographical centre of U.S.A.

**Ogee**, (archit.) moulding (q.v.) formed of the concave and convex segments of a circle; of graceful, undulating form.

**Ogham**, ancient alphabet used by Celts of Gt. Brit. and Ireland; consisted of perpendic. strokes placed above or below a horizontal line, and of strokes crossing the line either at rt.-angles or obliquely; inscriptions found mainly in Ireland; key to its composn. fnd. in Book of Ballymote, MS. of 14th century.

**Oglethorpe**, James Edward (1696-1785), Eng. gen.; fndd. prov. of Georgia, U.S.A.

**Ogpu**, the secret bureau, with its police agents, which deals with political offences in Soviet Russia; formerly known as the Cheka (q.v.). Name formed by the initial letters of Russ. phrase, *Obedinnnoe Gosudarstvennoe Politicheskoe Upravlenie* (United State Political Directorate).

**O.H.G.**, abbr. Old High German.

**O'Higgins, Bernardo** (1778-1842), Chilean statesm. of Irish extraction; fought for Chilean independence; dictator, 1818-23. **O'H., Kevin Christopher** (1892-1927), Irish statesm.; M.P., 1918; Min. of Justice and Vice-Pres. of I.F.S. Exec. Council, 1922; estab. Civic Guard; Min. for Foreign Affairs, 1927; assassinated.

**Ohio** ("Buckeye"), 1) State, U.S.A.; 41,040 sq.m.; pop., 6,700,000; bordered on N. by Lake Erie; Indian corn, wheat, oats, potatoes; livestock, dairy produce; coal, petroleum; iron, steel, motor vehicles, and engines; manuf. centres: Cleveland, Cincinnati, Dayton, and (cap.) Columbus; ports on L. Erie and on: 2) **O. Riv.**, left trib. of Mississippi, 1,283 m., formed by confl. of Allegheny and Monongahela rivs. nr. Pittsburgh, Pennsylvania; forms E. and S. boundary to State.



**Ohm**, (elec.) unit of elec. resistance; resistance of a column of mercury 1 mm. in diam. and 106.3 cm. long at a temp. of  $0^{\circ}\text{C}$ .; named after Ger. physicist Georg Ohm (1787-1854). **O.'s Law** gives relation betw. current (C), voltage (electro-motive force, E), and resistance (R) in electric circuits,  $C = \frac{E}{R}$ .

**O.H.M.S.**, abbr. On His (Her) Majesty's Service.

**Oidium**, *albicans*, genus of fungi wh. includes mildew (*q.v.*), and also a human parasite causing thrush (*q.v.*) in children and young animals.

**Oil**, fatty, inflammable substance; insoluble in water, soluble in ether and freely in alcohol; fluid at cert. temps. May be animal, vegetable, or mineral in origin, and accdg. to reaction to heat, fixed or volatile.

**Vegetable o.**, world production c. 6,600,000 metr. tons of wh. 45% fluid O. (cotton-seed, peanut, olive O., etc.); 19% drying O. (linseed, sunflower-seed, rape-seed O.); 26% solid O. (coconut, palm-nut kernel). Used in making margarine, for edible oils, and in the varnish, linoleum, and soap industries.

**Essential o.**, from flowers and fruits, used for perfumery and flavouring. **Animal o.**, chfly. whale-oil, subjected to hardening (*see* FAT-HARDENING); used for indus. purposes. World productn. (1929) abt. 300,000 metr. tons. **Mineral o.**, petroleum (*q.v.*), oil-shale and products of coal-distillation (*see*

produced by oil-fuel; of 2 types: 1) E. similar to internal combustion petrol motor, having elec. spark ignition, with special means for vaporising heavier fuel; 2) *Diesel engine* (*q.v.*), in wh. fuel is sprayed directly into cylinder, where air for its combustion has been compressed so greatly as to rise above ignition temperature. **O.-firing**, feeding of boilers, furnaces, etc., with O. fuel; oil is forced under press. thr. a jet and atomised by a current of air. Advantages: cleanliness, simplicity, high efficiency, space-saving, easy bunkering (for ships). **O.-painting**, the use of dry colours, ground and mixed with oil, the invention of which has been attributed to the Van Eycks, began to supersede tempera (*q.v.*), in the 15th cent. and facilitated the development of the art; the medium, which dries slowly, permitting of over-painting, blending of colours, and transparent glazing. **O.-palm** (*Elaeis guineensis*), African palm, crushed fruit of wh. yields *Palm-kernel Oil*, a valuable commercial commodity used in manuf. of soaps, perfumery, etc., chfly. obtd. from trop. W. Africa. The S. Amer. variety (*E. melanococca*) is a smaller tree wh. also yields oil and a valuable fibre. **O.-shale**, bituminous slate from which oil is distilled. **O.-stone**, fine stone, used with oil, for sharpening tools by hand. **O.-switch** (circuit breaker), for high-tension elec. circuits; the contacts are enclosed in oil which extinguishes the break-spark.

**Oil City**, tn., Pennsylvania, U.S.A., at junct. of Oil Creek with Allegheny Riv.; pop., 25,000; centre of petroleum product. and refining.

**Oils, cracking of**, transformation of heavy into light hydrocarbon by subjection to a very high temperature ( $840^{\circ}\text{F}$ .) under pressure, with subseq. distillation. Petrol is thus mainly prod. from heavy crude oil.

**Oirat Autonomous Area**, admin. div.; Russian S.F.S.R., bounded N. by Siberian Area, S. by Kazakstan; c. 36,250 sq.m.; pop., c. 85,000; mtns. (*Byelukha*, 14,400 ft.); peasant industries (weaving; articles of leather and wood; bee-keeping). Cap., *Ulala*, on Riv. Katun (pop., 6,340).

**Oise**, 1) riv. (190 m.), France, right trib. of the Seine; rises Ardennes; joins Seine at Pontoise. 2) Dépt., France; 2,272 sq.m.; pop., 407,400; cap., *Beauvais*.

**Oka**, 1) riv. (955 m.), trib. of Riv. Volga, wh. it joins at Nijni-Novgorod; 2) trib. (530 m.) of Riv. Angara, in govt. of Irkutsk, Siberia.

**Okapi**, forest-dwelling mammal, closely allied to giraffe; c. size of horse, vertical stripes on front legs, bands of creamy white on flanks. Very rare. Discvd. in Belgian Congo by Sir Harry Johnston, 1900.

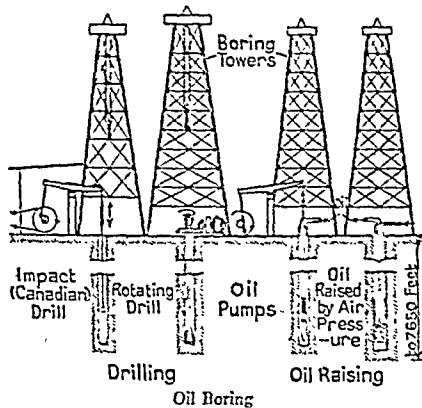


diagram showing productn. of petroleum). **O.-bath**, (mech.) chamber containing oil, surrounding moving parts (e.g., gear-wheel) between which lubrication is necessary. **O.-beetle**, a beetle with short, gaping wing-cases; related to the blister beetle (*q.v.*); metamorphosis complete; larvae for a period parasitic in nests of wild bees. **O.-cake**, valuable cattle-food prepared from waste after process of crushing oil-seeds (linseed, rape, cotton-seed, etc.)

**Oil-engine**, mechanism in wh. power is



Okapi

**Okayama**, tn., S. Hondo, Japan; pop., 140,000; cotton, silk, rice.

**Okeechobee, Lake**, in Florida, U.S.A., 1,250 sq. miles.

**Okhampton**, munic. bor. and mkt. tn., Devon, on Riv. Okement, at N. edge of Dartmoor; pop., 3,350.

**Okhotsk**, 1) sea (*Sea of Okhotsk*), part of W. Pacific Ocean, betw. Kamchatka, Kuril Isls. and Saghalin. 2) Russ. port, E. Siberia, on 1); pop., 600; exports: furs, tinned fish.

**Okhrana**, secret polit. police in the Russian monarchy; fndd. 1881; predecessor of the Cheka (*q.v.*).

**Okl.**, abbr. Oklahoma.

**Oklahoma**, 1) ("Sooner"), S. centr. State, U.S.A.; 70,057 sq.m.; pop., 2,400,000; agric., petroleum. 2) **O. City**, cap. O. State; pop., 185,400; cotton; manuf.: tractors, farm implements, motorcars; meat packing.

**Olaf**, Kgs. of Norway. 1) **O. Tryggvason** (c. 950-1000); kg., 995; introd. Christianity; fndd. Trondhjem. 2) **St. O.** (c. 1000-30), fought Danes in Eng.; kg., 1015, defeated Earl Sveyn and became most powerful Norweg. kg.; canonised, 1164; patron saint of Norway.

**Öland**, Swed. isl. in Baltic Sea; 520 sq.m.; pop., 34,000; cap., *Borgholm*.

**Old age insurance**, system in force in some countries by wh. State gives income at certain age to persons who have contributed premiums. **Old age pensions**, system introduced in Gt. Brit. 1908, by wh. State pays weekly pension at certain age (orig. 5/- at 70) to pers. of small means, without having reqd. contributions from them; payable earlier to the blind. By Act of 1924 pension incr'd. to 10/-, provided pensioner's means do not exceed £26.5.0 p.a.; by Act of 1925, contributors to health and unemployment insur. may claim pension at 65 and are not subject to means test after age of 70.

**Old Bailey**, name pop. applied to Centr. Criminal Court for London and surrounding areas, from street where situate; denotes former fortification; built (1902-05) on site of *Newgate Gaol*, and incorporating part of older building. Mosaics in dome and elsewhere by Sir H. B. Richmond and Gerald Moira.

**Oldbury**, urb. dist., Worcs, Eng., 5 m. W. Birmingham; manuf.: rly. plant, aluminium, steel, iron; pop., 35,900.

**Oldcastle**, Sir John (d. 1417), Eng. Lollard; executed as a traitor. Alleged prototype of Shakespeare's Falstaff.

**Old Catholics**, R.Cs., who, led by Dr. Dollinger of Munich (1871), rejected doctrine of Papal Infallibility and formed themselves into separate body; O.C. congregations founded in Holland, Austria, Switzerland, etc.

**Old Dominion**: see VIRGINIA.

**Oldenbarneveltdt**, Jan van (1547-1619); Dut. statesm.; promoted Union of Utrecht; supported Maurice of Nassau; Land's Advocate of Holland, 1586; exec. for alleged treason.

**Oldenburg**, repub., Ger. (Grand Duchy until 1918); comprises *Prov. of O.* on N. Sea, surrounded by Hanover, and two detached portions, *viz.*, prov. of Lübeck (*q.v.*), on Baltic, and prov. of Birkenfeld, betw. rivs. Moselle and Nahe. Area 2,480 sq.m.; pop., 545,500. Prov. of O., flat and marshy, nr. coast (agric., horse and cattle breeding); high moorlands in S. Cap., *Oldenburg*, on Riv. Hunte (pop., 54,900); castle (17th cent.), museums, school of engineering. County in 11th cent.; duchy, 1770; acquired Lübeck, 1813, and Birkenfeld, 1817.

**Oldham**, co. bor., Lancs; pop., 140,300; cotton-mills, machine factories, and coal-mines.

**Old North State**: see NORTH CAROLINA.

**Old Oregon Trail**, highway from Independence, Missouri, to Pendleton, Oregon; 1,975 miles.

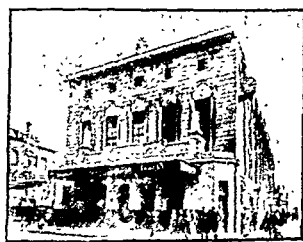
**Old Spanish Trail**, highway betw. St. Augustine, Florida, and San Diego, California, U.S.A.; 2,743 miles.

**Old Style** (chronol.): see NEW STYLE.

**Old Testament**: see BIBLE.

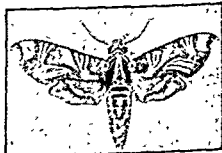
**Old Vic**, name given to *Royal Victoria Hall*, theatre in S.E. London, orig. known as the Coburg Theatre,

later low type of music hall. In 1880, Emma Cons acquired an interest in the theatre and changed its character so that under her management and that of her niece, Lilian Baylis (*q.v.*), it became popular home of Shakespearean drama and for opera. See SADLER'S WELLS.



The "Old Vic"

**Oleander**, *Nerium oleander*, evergreen shrub, E. Indies, but grows elsewhere; fragrant red or white flowers; is very poisonous. **O. hawk-moth**, a handsome species, marbled green and pink; green caterpillar feeds on the oleander plant.



Oleander Hawk-Moth

**Oleaster**, deciduous Mediterranean tree, with edible fruit, hairy leaves, and yellow flowers.

**Olefant gas**: see ETHYLENE.

**Olein**, (chem.) triglyceride of oleic acid,  $C_2H_5(O.C_{18}H_{33}O_2)_3$ ; an oil, constituent of olive

and cotton-seed oils, lard, butter, and human fat.

**Oleum**, fuming sulphuric acid (*q.v.*).

**Olibanum**: see FRANKINCENSE.

**Ollifant**, Roland's magic horn (Charlemagne romances).

**Oligarchy**, acc. to polit. system of Aristotle (*q.v.*), rule of a State by a few selected individuals.

**Oligocene**, second oldest stratum of the Tertiary formation, betw. Eocene and Miocene. See GEOLOGICAL FORMATIONS.

**Oligoclase**, a soda-lime feldspar (*q.v.*), crystallising in the triclinic system: see CRYSTAL.

**Oliva**, Fernán Pérez de (1497-1534), Span. philos. and tutor of Philip II.

**Olive**, *Olea europaea*, evergreen tree cultiv. in Spain, France and other Mediterr. countries, California, and S. Australia. Fruit is rich in oil, wh. is used for culinary purposes; also used in med. and pharm. as a nutrient,



Olive Branch



Olive Wood

demulcent, and laxative and for the prep. of liniments, ointments, etc.; the wood is used in turnery.

**Oliver**, Isaac (1556-c. 1617), Eng. miniature painter; portraits of Qn. Elizabeth, Sir P. Sidney, Ben Jonson, etc.

**Olives**, Mount of, (N.T.) **Olivet**, hill, 1 m. E. of Jerusalem; scene of Christ's Betrayal and Ascension (Acts i).

**Olivetans**, branch of white monks of St. Benedict founded by St. Bernard Ptolomei, 1310; practised total abstinence from wine as well as ordinary fasts.

**Olivine**, (geol.) green mineral found in rocks, comp. of magnesium and ferrous orthosilicate, sometimes in crystal form; a transparent variety known as *chrysolite* is used as gem-stone.

**Olmütz**: see OLOMOUC.

**Olney**, tn., N. Bucks. on Riv. Ouse; pop., 2,700; Wm. Cowper lived here, 1767-86.

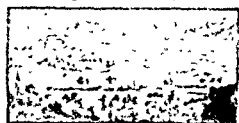
**Olomouc**, **Olmütz**, tn. Moravia, Czechoslovakia. on Riv. Morava; pop., 57,000; R.C.

abp.; univ.; malt, sugar, metals. **Treaty of Olmütz**, betw. Austria and Prussia, 1850.

**Oltenia**, prov. of Rumania; 24,100 sq.m.; pop., 1,500,000.

**Olympia**, 1) vall. in Elis, W. Peloponnesus, Greece, site of Olympic Games; sacred to Zeus. Excavated by German School at Athens 1880 (Temple of Zeus, etc.). 2)

Cap., Washington, U.S.A., on Puget Sound; pop., 11,750; lumber, agric. products, wool.



Valley of Olympia

**Olympiad**, period of 4 yrs. intervening betw. successive celebrations of the Olympic Games (*q.v.*), by wh. the anc. Greeks computed time from 776 B.C. to 304 A.D.; used systematically only from 3rd century B.C.

**Olympic Games**, (ancient) meeting for running, jumping, boxing, wrestling, throwing the javelin and discus, and chariot-racing; held every 4 yrs. at Olympia for competition among all Gr. States; (modern) internat. athletic meeting for running, jumping, weight-putting, throwing the hammer, javelin, and discus, boxing, swimming, fencing, wrestling, cycling, shooting, mod. pentathlon and decathlon, rowing, polo, lawn tennis, association football, gymnastics, and winter sports (held separately). *Modern Olympiads*: 1896, Athens; 1900, Paris; 1904, St. Louis, U.S.A.; 1908, London; 1912, Stockholm; 1920, Antwerp; 1924, Paris; 1928, Amsterdam; 1932, Los Angeles, U.S.A.

**Olympic Mountains**, Washington, U.S.A.; N. part of Coast Range and part of Rocky Mtn. system; wild scenery.

**Olympus**, 1) Mtn. range, Greece, on borders of Macedonia and Thessaly; 9,704 ft.; home of the gods in Gr. mythology. 2)

**Mysian O.**, mtn., N.W. Asia Minor; 8,366 ft.; vineyards. 3) Name of several other (less important) mtns. in Greece and Asia Minor.

**O.M.**, abbr. Order of Merit (Member of).

**Omagh**, cap. Co. Tyrone, N. Ire., on Riv. Strule; pop., 5,100.

**Omaha**, largest tn., Nebraska, U.S.A., on Missouri Riv.; pop., 214,000; Creighton Univ. (1878); meat-packing; grain market; rly. centre.

**Oman**, Sir Chas. W.C. (1860- ), Brit. historian; *Hist. of the Persins. War*, 6 vols., 1902-22; M.P. for Oxford Univ. since 1918.

**Oman**, indep. sultanate in E. Arabia, on Persian Gulf and Gulf of Oman; supervised by govt. of India; 82,000 sq.m.; pop., c. 500,000 (Arabs, Indians, Persians). Arid coast, mountainous interior; camel-breeding; date export. Cap., Muscat.

**Omar** (c. 580-644), Mohammed's adviser; and Khalif, 634-644. Conquered Persia,

Syria, Palestine, and Egypt. Reputed fndr. of *Mosque of O.* at Jerusalem.

**Omar Khayyām**, 11th cent. A.D., Pers. mathemat., astronomer, and poet; *Rubāiyāt*; rendered into Eng. by E. Fitzgerald (*q.v.*), and others.

**Omayyads**, khalifs of Islam, 661-749, driven out by Abbasids; the last Omayyad escaped to Spain and fndd. emirate (756-929), later khalifate (929-1031), of Cordova.

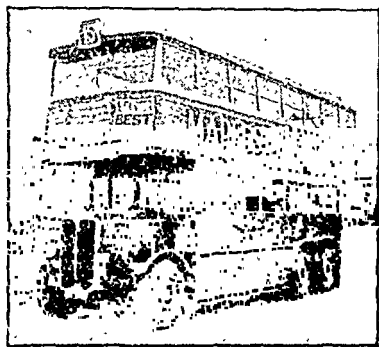
**Ombre**, card-game for 3 players with pack of 40 cards (8, 9, and 10 omitted), pop. in 18th century.

**Omdurman**, tn., Anglo-Egypt. Sudan, on the White Nile, opp. Khartoum (*q.v.*); pop., 103,000. Camel markets. Defeat of the Mahdi's army by Kitchener, Sept., 1898.

**Omega**, Ω ω, Gr. ♂, last letter of Gr. alph.; (elec.) symbol for unit ohm (*q.v.*).

**Omen**, prophetic sign; occurrence or accid. taken as indic. of fut. events, whether good or evil.

**Omnibus** (Lat.: for all), large passenger vehicle (horse or motor), mainly used on



By courtesy of L. P. T. B.

Motor Omnibus—1932 Type (London)

regular routes. **O. Bill**, Parl. term for bill wh. includes clauses dealing with a number of different subjects; in U.S. hist. applied specly. to the Compromise Bill of 1850.

**Omnivora**, animals which consume various kinds of food; distinguished from *Carnivora*, *Herbivora* and *Insectivora* (*qq.v.*).

**Omphalocele**, rupture or hernia of navel.

**Omsk**, tn., Siberian area, Asiatic Russia, at junction of rivs. Om and Irtysh; pop., 115,635; cattle and grain trade. (Former) fortress of Omsk inspired Dostoevsky's *Letters from a Dead House*. Settlements of 83,000 German peasants (Mennonites) in the Steppes.

**Onager**, wild ass of S.W. Asia and W. India, fawn-coloured with whitish patches, c. 3 ft. 6 in. high; several local varieties, incl. Ghorkhar.

**Onanism**, masturbation, sexual self-abuse.

**On dit** (Fr.: "they say"), it is rumoured.

**Onega**, 1) Lake (3,665 sq.m.) Karelia

Repub. N.W. Russia, second largest in Europe; 115 ft. abv. sea-lvl.; max. depth, c. 1,200 ft.; connected with Volga by canal. 2) port, Archangel, Russia, at mouth of Riv. Onega; pop., 6,105; fisheries, boatbldg., timber trade. 3) River (255 m.), N.W. Russia, rises near Lake Latcha and falls into White Sea; salmon fishing.

**Oneida, Lake**, in N.Y. State, U.S.A., 80 sq. miles.

**O'Neill**, Irish family of kgs. and chieftains, esp. **Hugh O'N.** (c. 1540-1616), E. of Tyrone; led insurrection agst. the English, whom he beat at Blackwater, 1598; deftd. in spite of Span. help, 1601; submitted, 1603; d. in Rome. **O'N., Eugene Gladstone** (1888- ), Amer. dramatist; *Emperor Jones*.

**Onesimus**, (N.T.) slave of Philemon (*q.v.*); friend of Paul and occasion of Paul's Epist. to Philemon.

**One-step**, mod. ballroom dance in quick march-time.

**Onion**, liliaceous plant, *Allium cepa*; bulb with its characteristic pungent taste and odour is a most useful vegetable.

**Onnes**, Heike Kamerlingh (1853-1926), Dut. physicist; Nobel Prize (Physics), 1913.

**Onomatopoeic**, (phon.), term used of word assimilating sound to meaning, e.g., *chirp, crack, cuckoo*.

**Ont.**, abbr. Ontario, Upper Canada.

**Ontario**. 1) Lake (7,580 sq.m.; depth, 740 ft.); easternmost and smallest of the Great Lakes of N. Amer., betw. Canada and U.S.A.; connected with Lake Erie by Niagara Riv. and Welland Canal, and by St. Lawrence Riv. with Atlantic; shores well wooded. 2) Prov., Canada (407,300 sq.m.; pop., 3,313,000); bordered W. by Manitoba, N. by Hudson Bay, E. by Quebec, and S. by Great Lakes and St. Lawrence River. Surface undulating, with Laurentian Hills (1,000-3,000 ft.) in south. Climate subject to extremes. Land very fertile; agriculture of great importance; dairy-farming. Coniferous forests in N. (lumber trade). Deposits of gold, silver, nickel, copper; petroleum; chief manufacturing prov. in Canada. Hydro-electric power from Niagara, Ottawa, and St. Lawrence rivs. Chief tns. *Toronto* (cap.), *Ottawa* (federal cap.), *Hamilton*.

**Ontogenesis**, hist. of origin of universe;

**Ontogeny**, hist. of evolution of livg. creature from fertilised cell to complete organism.

**Ontology**, inquiry into nature of being or existence in the abstract; equiv. to metaphysics (*q.v.*). The theory, of knowledge essential to a theory of being, is known as *epistemology*. **Ontological method**, arbitrary deduction of existence of entities from existence of their concept.

**Onus probandi** (Lat.: the burden of proof), duty, usually devolving upon the

plaintiff, of proving the affirmative of an issue in question at a legal action.

**Onyx**, variety of chalcedony, or agate, with black and white streaks, used as a gem and for carving cameos.

**Oolite**, a granular form of limestone, consisting of small grains of carbonate of lime, closely cemented together and resembling in appearance the roe of fish; a series of fossil-bearing, oolitic rocks, lying above the Lias (q.v.) in the Jurassic (q.v.) system.

**Ootacamund, Utakamand**, hill-station (7,200 ft.), and cap. dist. Nilgiri Hills, S. Deccan, India; sanatorium; summer residence, Madras Government.

**Ooze**, (geol.) sediment on sea- or river-bottom, composed of fine earth particles with the remains of foraminifera, etc.; classified acc. to colour and formation as blue, red, green, or coralline ooze; cf. BATHYBIUS.

**O.P.**, abbr. 1) *Ordinis Praedicatorum* (Lat.), [member] of the Order of Preachers (Dominicans); 2) opposite prompt (side of theatre; stage on left as seen from audience); 3) over proof, see PROOF SPIRIT; 4) (bibliog.) out of print.

**Op.**, abbr. *opus* (Lat.), "work." **Op. cit.**, see OPERE CITATO.

**Opal**, a gem-stone, consisting of silica containing a percentage of water; characterized by iridescent colours; **common o.** has pearly or milk-white appearance; **fire o.** is darker and has flame-coloured iridescence.

**Opaline glass**, milk glass: see GLASS.

**Opaque meal**, (surg.) contrast meal; administration of some inert subs., opaque to X-rays, such as barium sulphate, to delineate stomach and intestines during radiology, for purposes of diagnosis.

**Opava, Troppau**, cap. of Czechoslovak-Silesia, on the Oppa; pop., 33,460 (26,270 Germans); metal and textile industry.

**Open-hearth steel**: see SIEMENS-MARTIN PROCESS.

**Opening prices**, (Stk. Exch.) price at wh. dealing in securities was done at beginning of the day. *Ant.: closing prices.*

**Open market operation**, (banking) buying or selling in O.M. of Govt. securities by a centr. bank for the purpose of expanding or contracting funds in the market available for lending to commerce and industry. Important, esp. in U.S.A. and Gt. Brit., partic. since the war, as a method of controlling money-market tendencies.

**Opera**, drama set to vocal music, with instrumental accompaniment, origintd. in It. in early 17th cent. (see MUSIC, HISTORY OF). **Grand o.**, based on heroic subj., elab. produced; large orchestras and choruses. **Romantic o.**, legendary subj., freed by Wagner from tradit. form in wh. each scene was complete in itself (Aria, Duet, Finale, etc.) and

developed into music-drama. **O. bouffe**, cheerful, comic opera. See also OPUS.

**Opere citato** (Lat.), abbr. *op. cit.*, in the work cited; formula used in giving literary references.

**Operette**, "little opera"; songs (solo and chorus) alternating with dialogue; cheerful plot, light music (popular songs).

**Ophir**, (O.T.) son of Joktan (Gen. x. 29); also name of unidentified district in Arabia (? or Africa), whence Solomon obtnd. gold and prec. stones.

**Ophiuchus**, "the Serpent-bearer," constellation; see PL., ASTRONOMY, N.C.II., F.

**Ophthalmia**, inflammation of the eyes.

**O. neonatorum**, or gonorrhoeal ophthalmia; gonorrhoeal infection of the eyes of new-born babies, due to infection of conjunctiva of eye from the vagina of the mother. Treatment: Application of silver nitrate or other preparation of silver. See GONORRHOEA. **Egyptian o.:** see TRACHOMA.

**Ophthalmoscope**, (optics) concave mirror, with a hole pierced in centre, wh., with proper illumination, permits observer to examine retina of the eye of another. (Helmholtz, 1851.)

**Oplate**, any narcotic drug derived from opium.

**Opie**, John (1761-1807), Brit. portrait and historical painter; R.A., 1787; prof. of painting at R.A., 1805; Wm. Godwin; *Trilium*, *Cressida* and *Pandarus*; etc.

**Opsimeter**, wheel with a revolution recorder attached, which, when unwound on a line (e.g., on a map), gives its length. Cf. ODOMETER.

**Opitz**, Martin (1597-1630), Ger. poet and writer, reformed Ger. versification; *Buch von der deutschen Poesie*.

**Opium**, dried juice exuded by unripe heads of the O. poppy (*Papaver somniferum*); is largely cultivated in India, Pers., and Near E.; chf. active princ. is morphine, wh. is present to extent of from 7 to 20 %; other alkaloids are narcotine and codeine, both present in appreciable quant.; also narceine, papaverine, meconidine, codamine, laudamine, and a no. of others in very small proportions. O. (or morphine) is princ. narcotic used in med. and has been known from time immemorial. *Laudanum* is tincture of O. See DRUGS OF ADDICTION.

**Opodeldoc**, liniment of soap; usu. formula is soft soap 8, camphor 4, oil of rosemary 1.5, distilled water 17, alcohol suff. to produce 100; remedy for sprains, contusions, and rheumatism.

**Oporto**, city, Portugal, cap. prov. of Minho, near mouth Riv. Douro; pop., 220,000; univ., polytechnic, acad. of art; textiles; exports port wine from port of Leixões.

**Opossum**, common name for a family of marsupials (*Didelphyidae*) inhabiting N. and

S. America; varying in size from that of a cat to that of a rat. Mainly arboreal, except *Water O.*; omnivorous feeders; robbers of hen-roosts.

**Oppeln**, cap. Upper Silesia, Germany, on Riv. Oder; pop., 42,000; cement, coal.



Opossum

**Oppidan**, member of Eton College, not on the foundation, living in a boarding-house outside college proper. Ant.: *colleger*.

**Opposition**, (astron.) relative situation of 2 heavenly bodies having difference in longitude of  $180^\circ$ ; e.g., of moon and sun at time of full moon; sign  $\odot^\circ$ . **O. party**, polit. party opposed to existing government.

**Oposonic action**, (bacteriol.) effect of serum (*q.v.*) on bacteria, making them more easily assimilated by the leucocytes (*q.v.*).

**Optative**, mood of verb expressing a wish.

**Optic nerve**, the nerve of sight, wh. when stimulated by impressions of light falling on retina at the back of the eye conveys such impressions to the brain.

**Optics**, science of light; **geometrical O.** deals with reflection and refraction of light assuming strictly rectilinear propagation;

**physical O.** deals with diffraction, dispersion, interference, polarisation, etc., etc., all phenomena which require physical theory (electromagnetic waves, quantum theory); **applied O.** deals with optical instruments,

e.g., Microscope: see fig. The objective, a compound lens, would form a *real* image of the object on the other side of eye-piece, which, catching the rays, forms them into a magnified *virtual* image which is seen by the eye when held close to the eye-piece. Astronomical telescope: rays from the distant object are formed by object glass into a real image before they reach eye-piece, which consists of convex lens combination and magnifies real image just as it would real object (in fig. full lines show rays from top of object, dotted from bottom. In reality they are nearly parallel). The A. telescope gives inverted image, as can be seen from fig. Dispersion of light by prism (*Newton's experiment*): ray of sunlight admitted through shutter into dark room falls on prism and is dispersed into its component colours, red light being least bent, violet most. Spectrum appears on white screen. *Huygens' principle*: light passing through hole in screen behaves as if every point at hole (or elsewhere) were source of separate spherical wave; these reinforce one another only along centr. area. Hence amount of light bent by edges of slot unnoticeable except when slot is very narrow; then bands produced by diffraction appear.

Interference of two trains of light waves so that crests of one coincide with

troughs of other, hence extinction. Solar spectrum with *Fraunhofer lines*: in spectrum of sun when perfectly produced by narrow slit, many black lines are seen, due to absorption of white light emitted from sun's body in the atmosphere of glowing gas containing nearly all known chemical elements, which can be identified by wave-length of lines (see SPECTRUM). In fig. wave-lengths are given below in millionths of millimetre ( $\mu\mu$ ).

**Optimates**, aristocratic party in Rom. Republic, in distinction from the *Populares* (*q.v.*), the people's party.

**Optimism**, state of mind in wh. all things appear pleasant and hopeful; theory that the actual world is the best possible. Ant.: *pessimism*.

**Option**, guaranteed right of choice, esp. right to purchase or make offer for an article, e.g. a house or piece of land, before it is offered to another customer. In partic.: 1) right to choose nationality when terr. of one State is ceded to another (e.g., Schleswig, Eupen-and-Malmédy, and Silesia under Treaty of Versailles). 2) In a contract, right conceded to a creditor to choose what he requires, or to demand an extension of orig. contract. 3) (Stk. Exch.) Agreement by wh. holder has right (for which he pays a premium) to purchase or sell a given no. of shares at a specified price within a certain period. *Call O.*, right to buy; *put O.* right to sell; *double O.*, right to buy or sell. In U.S.A. known as *privileges*.

**Opuntia**, genus of Amer. plants of cactus fam., with brilliantly coloured flowers, incl. prickly pear (*q.v.*).

**Opus**, *pl. opera* (Lat.), work of art, esp. music. **O.**

**operatum**, a religious action effective in itself when rightly performed, independently of the performer; e.g., baptism.

**Ör**, Scandin. copper coin, =  $\frac{1}{16}$  krone (*q.v.*), or  $\frac{1}{4}$ d. (\$ $\frac{1}{100}$ ) at par.

**Oracle**, 1) answer given by anc. Gr. priest or priestess, inspired by a god, to enquiries about the future. 2) Place or shrine where the answer was given, e.g., Delphi, Dodona. 3) Person whose opinion is regarded as infallible (often used ironically).

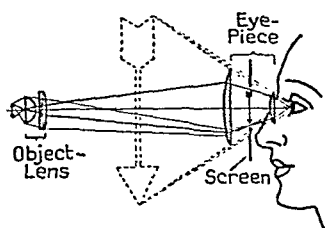
**Oran**, 1) Dept. N. Algeria; 25,990 sq.m.; pop., 1,436,700 (350,000 Europeans). 2) Cap. of dept., on Gulf of O.; pop., 163,700 (125,000 Europeans); Fr. naval and military station; tobacco; shoes; starting-pt. of Sahara Railway.

**Orange**, House of O.-Nassau, Princes of Orange, 1530-1703; see WILLIAM OR O. and NETHERLANDS.

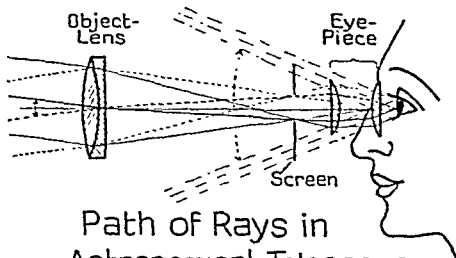
**Orange**, 1) Tn., dépt. Vaucluse, Fr.; pop., 11,000; Rom. amphitheatre; silk-worm breed-



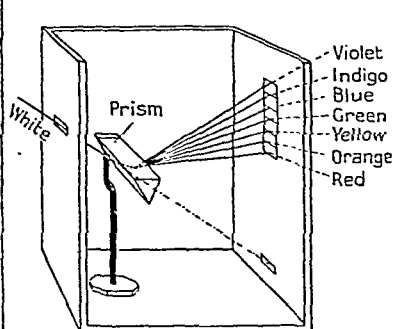
Opuntia



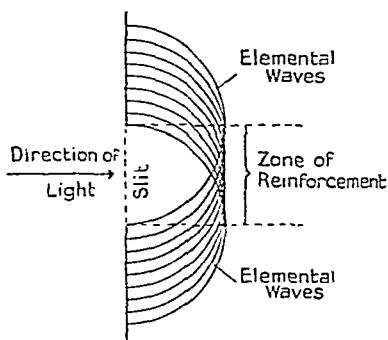
Path of Rays in  
Microscope



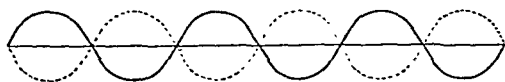
Path of Rays in  
Astronomical Telescope



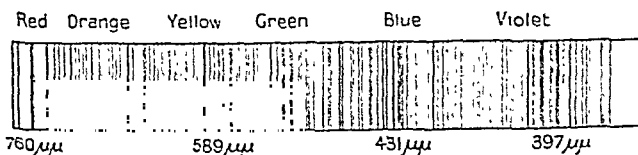
Dispersion of Light



Huygens'  
Law



Interference of two Sources of Light



Solar Spectrum with Fraunhofer Lines

ing. Cap. of Principality of Orange from Mid. Ages to 1713. 2) Tn., N.S. Wales; gold mines; pop., 8,590. 3) City, New Jersey, U.S.A., near New York; pop., 35,400.

**Orange**, (Arausio), principality in S.E. Fr., a lordship N. of Avignon (in mod. dépt. Vaucluse) in 9th cent.; fortified by Ct. Raymond IV, c. 1350; passed to House of Châlon, 1393; confiscated by Francis I, 1543, retaken by William of Nassau, 1559; fortifications destroyed by Louis XIV, 1660; succession disputed by Pr. of Nassau, Fred. I of Prussia, Louis XIV and Pr. of Conti, 1702; principality awarded to Fr. by Treaty of Utrecht, 1713.

**Orange**, citrus tree, producing a pulpy, juicy fruit enclosed in a golden yellow rind. There are numerous varieties which may be classed as sweet (*C. aurantium*), and bitter (*C. aurantium*, var. *bigaradia*). The rind contains a volatile oil used as a flavouring. Cultivated chfly. in S. Eur., Jamaica, Florida, California, S. Africa, whence they are exported in large quantities.

**Orange Free State**, inland prov., Union of S. Africa; bounded N. by Transvaal, W. and S. by Cape Prov., S.E. by Basutoland, and E. by Natal; 49,600 sq.m.; pop., 700,000 (205,000 Europeans, mainly Dut.-speaking; natives: Kaffirs, Bechuanas, Hottentots). Surface a high plateau (to 5,000 ft.); Drakensberg Mtns. in E.; rivs. Orange, Vaal, Caledon, Modder. Grazing, cattle-breeding; rich mineral deposits. Chief exports: wool, diamonds, hides. Cap., *Bloemfontein*. First colonised by Dut. farmers, 1824; Brit., 1848-54; Boer repub. until Second Boer War; annexed by Grt. Brit., 1900; Orange River Colony, 1902; member of Union of S. Africa, 1910, as Orange Free State.

**Orangemen**, members of the Orange Society, an Irish Protestant body flourishing chfly. in Ulster and named after Kg. William III, Pr. of Orange; organised in *lodges*; hold processions and festivities annually on July 12th (anniv. of battle of the Boyne), also July 1st and Nov. 5th; name is often applied in deprecatory sense to all Ulster Protestants.

**Orange River**, or **Garip**, riv. (1,045 m.), S. Africa; rises

Drakensberg Mtns. (Basutoland); flows on S. border of Orange Free State, through N. of Cape Prov., and then on S. border, S.W. Africa, into Atlantic. Tribs., Caledon, Vaal; bar at mouth and rapids impede navigation.

**Orangery**, building in which orange-trees are cultivated; a favourite form of garden

archit. in 18th cent.; the O. in Kensington Gardens was built by Wren, 1704.

**Orang-utan**, large anthropoid ape, native of Borneo and Sumatra, distinguished from other anthropoids by its brown skin, red hair, and small ears. Arboreal and solitary in habit; slow and deliberate in movements; males attain 4 ft. to 4 ft. 8 in. in height, and have flexible expansion of skin on sides of face: long-armed and immensely strong.

**Ora pro nobis** (Lat.), pray for us.

**Oratorians**, members of Orang-Utan Congregation of the Oratory of St. Philip Neri (see ORATORY).

**Oratorio**, (mus.) dramatic comp. usually, but not necessarily, a sacred text for solo and choral singing with instr. accompaniment. Chf. composers: Bach, Handel, Haydn, Mendelssohn, Gounod, Elgar (*qq.v.*).

**Oratory**, (eccles.) 1) small chapel; esp. one attached to a private house; 2) religious society of R.C. secular priests founded in 16th century. **Congregation of O. of St. Philip Neri**, grew from devotional meetings in chapel built by St. P. N. (1575); consists of priests agreeing to a rule but not bound by vows; Brompton Oratory in London belongs to this congregation.

**Orb**, ball surmounted by cross, symbolic of sovereignty. Held in the ruler's left hand, the sceptre (*q.v.*) in the right.

**Orbis sensualium pictus** (1658), earliest children's picture-book by Comenius (1592-1671).

**Orchardson**, Sir Wm. Quiller (1835-1910), Brit. painter; studied under Scott Lauder: R.A., 1877; *On Board the "Belleroophon"*; *Her First Dance*; various portraits.

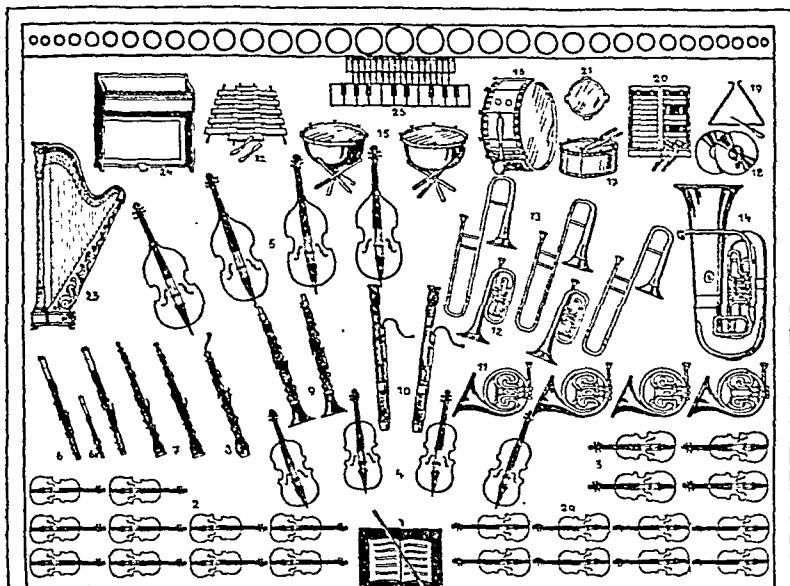
**Orchestra**, in ancient Gr. theatre, place for the choir, now for musicians; also collective name for the instrumentalists (see *fig.*, next p.). Orchestral music became important with rise of opera (*q.v.*) in early 17th cent.; orig. only strings, developing into full O. of strings, wind, brass and percussion instrs., culminating in mod. accumulation of effects, esp. in the Jazz band. Princ. composers of orchest. music are: Bach, Handel (17th-18th cent.); Haydn, Mozart, Beethoven, Wagner (18th-19th cent.); Brahms, Strauss, Tchaikovsky, Rimsky-Korsakov, Stravinsky, Walton (19th-20th cent.). See MUSIC, HISTORY of. Famous conductors of O. of mod. times incld.: Sir Thomas Beecham, W. J. Damrosch, Sir Chas. Hallé, Hans Richter, Bruno Walther, Felix Weingartner, Sir Henry Wood.

**Orchestration**, method of distributing the component parts of a mus. idea or comp. among the instr. of an orchestra; see INSTRUMENTATION.

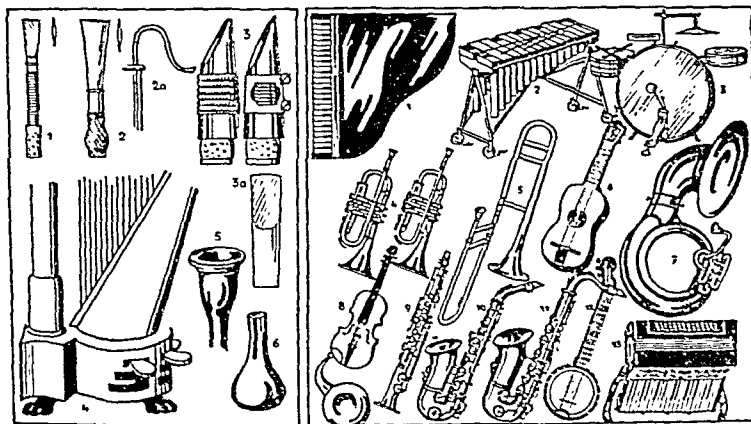


The Orangery,  
Kensington Gardens





*Symphony Orchestra:* positions of instrumentalists as seen from the audience: 1) Conductor's desk; 2) First violins; 2a) Second violins; 3) Violas; 4) Cellos; 5) Double basses; 6) Flutes; 6a) Piccolos; 7) Oboes; 8) English horn; 9) Clarinets; 10) Bassoons; 11) Horns; 12) Trumpets; 13) Trombones; 14) Tuba; 15) Kettle-drums; 16) Bass drum; 17) Side-drums; 18) Cymbals; 19) Triangle; 20) Glockenspiel; 21) Tambourine; 22) Xylophone; 23) Harp; 24) Harmonium; 25) Organ.



*Jazz Band (on right):* 1) Piano; 2) Vibraphone; 3) Trap and kettle drums, tom tom, cymbals; 4) Jazz trumpets; 5) Trombone; 6) Ukelele; 7) Sousaphone; 8) Trumpet violin; 9) Soprano saxophone; 10) Alto saxophone; 11) Tenor saxophone; 12) Banjo; 13) Jazz accordion. Also bongos, lotus flutes, flexatone, musical saw, whistles, Amer. whip, instruments rendering animal sounds, etc.

*Mouthpieces and special parts (on left):* 1) Oboe (double reed); 2) and 2a) Bassoon; 3 and 3a) Clarinets (single flat reed fixed on underside of mouthpiece); 4) Pedals of the harp; 5) Mouthpiece of trombone; 6) Mute for trumpet.

## THE ORCHESTRA

**Orchestraion**, mechanical-mus. instr., imitating an orchestra.

**Orchids**, a large family of perennial plants with fleshy tuberous roots and spicate flowers with a spurred lip, often fantastic in form. The tropical varieties produce blooms which are much sought after by collectors, and when their natural climatic conditions are reproduced may be successfully cultivated in hot houses. The flavouring vanilla (*q.v.*) is obtained from an orchid.



Orchid

**Orchis**, wild flowers of the orchid tribe, many varieties, best known being: the early purple O.; spotted O. (light brown flowers); marsh O. (reddish); butterfly O. (white); bee and fly orchids.



Orchis

**Orchomenos**, 1) anc. city, Boeotia, Greece, N.W. of L. Copais, cap. of the Minyans (*q.v.*). Excavns. reveal three prehist. settlements (first Neolithic; last with "Minyan ware"). *Treasury of Minyas*, a beehive tomb of Bronze Age. O. was rival of Thebes; twice destroyed and rebuilt in 4th. cent. B.C. 2) Anc. city, Arcadia, Greece.

**Orcus**, Rom. name for Hades (*q.v.*).

**Ordeal by fire** (also by water combat, etc.), a form of trial used in Mid. Ages. Abol. in Eng., 1219.

**Order**, group of persons belonging to a spec. rank or class; badge or insignia worn by member of such an O. (O. of the Bath, O. of Merit). **Orders**: **Holy o.**, in C. of E., those of bps., priests, and deacons; in R.C. Ch.: **Major o.**, bps., priests, deacons, and subdeacons; **Minor o.** door-keepers, lectors, exorcists, acolytes; now conferred as prelim. to Holy orders. **O. of knighthood**: see KNIGHTHOOD. **O. of architecture**, five generic styles of classic design: 1) Doric (Gr.); 2) Tuscan (Rom.); 3) Ionic (Gr.); 4) Corinthian (Gr.); 5) Composite (Rom.); see COLUMN. **O. in council**, issued by Privy Council (*q.v.*) in virtue either of kg.'s prerogative or of Act of Parliament. Like by-law, but unlike Act of Parl., can be challenged in court as being in excess of jurisdn.; have force of law and are normal constitutional mode of giving effect to important Govt. decisions. See PREROGATIVE.

**Orderly**, (milit.) soldier detailed to carry messages or to attend to the personal needs of officers. **O. officer, sergeant**, etc., detailed for special duties. **O. room**, the office of a regt. or other unit.

**Ordinal numbers**, (Lat.) numbers taken in sequence, e.g., first, second, third, etc.

**Ordinary shares**: see SHARES.

**Ordinate**, (geom.) a co-ordinate (*q.v.*); distance of line drawn from a point in a plane

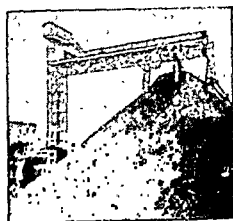
to the abscissa and parallel to the other axis. The axis of the ordinate usually referred to as the Y axis.

**Ordination**, formal admission to the ministry of Christ; cf., ORDERS; SACRAMENTS.

**Ordnance**, artillery (guns, howitzers, etc.), as dist. from small-arms. In Brit. army, under **Master-General of the O.** (member of the Army Council) are directorates of artillery, of mechanisation of ordnance services, and of ordnance factories. **Royal Army Ordnance Corps**, raised as sep. corps, 1881 (formerly part of R.A.S.C.); "royal" since 1919; supplies army with munitions, clothing, necessities, etc.; depot, Hilsa (S. Hants). **O. survey**, topographical survey of the U.K., under control of Board of Agriculture; fndd., 1791, primarily for milit. purposes, but also for publishing maps for general use; surveyors place mark of broad arrow on walls or rocks at points where measurement taken, shown as B M (bench mark) on maps. Mapping on various scales of Gt. Brit. begun 1819; of Ireland, 1825; largest are *cadastral* maps on scales of 6 in. to 10 ft. to the mile; best known are the 1-in.-to-the-mile maps, some editions of wh. are printed in colour and with contours and hachures to show relief; these were first completed for whole U.K. in 1890, and are periodically revised.

**Ordovician**, belonging to a geol. period or system following the Cambrian and preceding the Silurian; see GEOLOGICAL FORMATIONS.

**Ore**, mineral containing any valuable substance in payable quantity. *Ore-dressing*, extraction (concentration) of valuable mineral from an ore, with rejection of the gangue (tailings). *Hand-picking* of coarsely broken material. Material finely ground in stamps, ball-mills, etc., may be sieved or classified in sizes, then treated by water-concentration (washing), magnetic, electric, and dielectric separation, jigging, leaching with chemicals (e.g., cyanide for gold), etc., etc.



Tailings

**Ore.**, abbr. Oregon.

**Oreads**, (Gr. myth.) mountain nymphs (*q.v.*).

**Orebro**, 1) Swedish prov.; 3,563 sq.m.; pop., 220,000. 2) Cap. of prov., E. of Lake Hjelmars; pop., 37,400. Match factories.

**Oregon**, ("Beaver"), State, U.S.A., on Pacific coast; 96,699 sq.m.; pop., 953,800; Cascade Mtns. (mineral deposits); and plateau in E. (agriculture by irrigation); mining, quarrying; lumber; grain, fruit; cap., Salem.

**Orel, Orlov**, chf. tn. Prov. O., Russian S.F.S.R. (c. 11,560 sq.m.; pop., 1,893,795), at confl. of rivs. Orlik and Oka; pop., 78,320. Rly. junctn.; tobacco factories.

**Orellana**, Francisco de (c. 1490-1546), Span. navigator; accompanied Pizarro to Peru, 1531; 1st explorer of Amazon.

**Orenburg**, chf. tn. Prov. O., Russian S.F.S.R. (c. 22,100 sq.m.; pop., 814,305), on Riv. Ural, S.E. Europe; pop., 126,300. Silk factories; Orenburg shawls (of finest goat's wool). Caravan centre; rly. junct.; settlements of Memnonites and Ger. colonists in neighbourhood. Fighting during 1917 Revolution. Suffered in 1920-21 famine.

**Ore rotundo** (Lat.), with a full, round voice; in grand declamatory manner.

**Orestes**, (Gr. myth.) son of Agamemnon and Clytaemnestra. Avenged murder of his father by slaying his mother; seized with madness and pursued by the Furies, he expiated his sin by fetching the statue of Artemis from Tauris, whence he returned with his sister Iphigenia (q.v.). Trilogy by Aeschylus; play by Euripides.

**Orford**, Earl of: see WALPOLE, SIR ROBT.

**Organ**, 1) functional pt. of animal or veg. organism. 2) Publicat. or journal as mouthpiece of a cert. party or pt. of view. 3) (Mus.) Powerful wind instr. played by means of a keyboard, used esp. in churches (also in a much elaborated form in cinemas). Pressure on *manuals* (q.v.) with the hands and on *pedals* with the feet causes air from bellows to enter numerous pipes of grt. variety of tone (*register*), whence notes are emitted. **O.-point**, (Mus.) a long, sustained bass pedal note, above which the melodies and harmonies continue.

**Organdie**, fine, transparent muslin, plain or figured; used for collars, dresses, etc.

**Organic chemistry** deals with compounds cntg. carbon, a constituent of most of chf. derivatives of plants and animals. O. compounds of veg. and animal origin usu. consist of carbon, hydrogen, and oxygen, sometimes nitrogen, sulphur, and phosphorus. O. chemistry should be disting. from *bio-chemistry*, the chemistry of living processes.

**Organism**, (biol.) individ. possessing a degree of structural and functional specialtn. and capable of growth and reproduction.

**Organisation**, methodical regulatns. of processes; union of persons for common purpose; society.

**Organotherapy**, treatment of disease by means of preparations of the ductless glands, e.g., thyroid.

**Organs of government**, institutions thr. wh. a State expresses its will and manifests its existence: in Brit. Emp. chf. O. of G. is nominally the Crown, actually the Cabinet.

**Organzine**, silk thread produced by

doubling twisted singles; the warp in silk fabrics.

**Orgetorix**, a chief of Helvetii; destd. by Caesar, B.C. 58.

**Orgy**, hysterical religious rites, in anc. mysteries, esp. in honour of Demeter or Bacchus; hence, any form of unbridled revelry, esp. alcoholic or sexual.

**Oriel**, (archit.) term applied to a small room off the hall in country mansions, having a projecting bow window; hence, applied also to any similar window.

**Oriel College**, Oxford; fndd. 1326, by Edward II and his almoner, Adam de Brome. Matthew Arnold became a Fellow, 1845, and Cecil Rhodes matriculated here, 1873.

**Orient**, land of the rising sun, the East as distinct from the Occident (q.v.); countries lying E. Oriel Window of Europe; in narrower sense, Arabia, Palestine, Syria and Turkey. **O. Express**, *train de luxe*, 1st and 2nd class only; Paris-Vienna-Bucharest-Constantinople; runs 3 times weekly. **Oriental**, of the East; native of East, Asiatic; esp. Chinese, Japanese. **Orientalist**, student of Semitic and other Eastern languages and civilisations. **Orientalism**, position of a body in relation to the points of the compass; (in archit.) placing of a church so that the altar is at east end.

**Oriente**, prov., E. Cuba; 14,206 sq.m.; pop., 924,500; cap., *Santiago*.

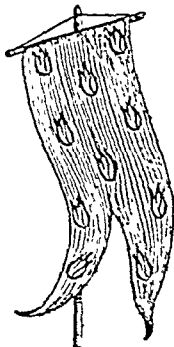
**Ori flame** ("Golden Flame"), flag of St. Denis, patron of Fr., and Fr. nat. flag, c. 1110-1415; red with gold tongues of fire (*flamemes*).

**Origen** (185-254), a Gr. father of the Church; philos. and theologian; taught at Alexandria, and Caesarea; imprisoned in Decian persecution, 250. Textual criticism of O.T. (*Hecsalpa*), exegesis, apologetics, (defended Christianity agst. Epicurean philos., Celsus), dogmatics; his system tinged with Neo-Platonism and Gnosticism; distinguished esoteric and exoteric Christianity.

**Original sin**, in orthodox Christian view, inheritance of sin from Adam; common to all men.

**Origin of Species**, work by Darwin (q.v.), 1859, in wh. he develtd. his theory of evolution.

**Orinoco**, riv., S. America; rises Sierra Parima, S. Venezuela; flows N.W., then N., forming Venez.-Colombian frontier for 200



Ori flame

m., then E.; drains into Atlantic through delta (700 sq.m.); length 1,400 m., navig. up to rapids 700 m. from mouth.

**Oriole**, one of group of bright-coloured, forest-dwelling birds of trop. and temp. regions.

**Golden o.**, bright yellow plumage; visits N. Eur. in spring. **Green o.**, native of New South Wales; olive green and yellow plumage; builds cup-shaped nest suspended from branch of tree.



Oriole

**Orion**, 1) (Gr. myth.) giant and hunter, shot by Artemis. 2) (Astron.) Conspicuous constell., containing star Betelgeuse; see PL., ASTRONOMY, N.C.H., B; S.C.H., G.

**Orissa**, division of Brit. India; see BIHAR AND ORISSA.

**Orkney Islands**, group of 67 islands (28 inhabited) and numerous rocks or skerries, sep. from N. coast of Scot. by Pentland Firth (6-8 m. wide); forms a Scottish co. (area, 376 sq.m.; pop., 22,100). Surface low, except in *Hoy* (fine cliffs); largest isl. *Mainland* (190 sq.m.; over half the pop.), with cap. *Kirkwall*; the S. islands surround *Scapa Flow* (q.v.). Antiquities include Standing Stones of Stennes. Together with Shetland Isls., Scandinavian from 875 to 1468, when they passed to Scotland.

**Orléans**, Fr. ducal family since 1344; younger branch of Hse. of Bourbon: 1) **Charles**, Comte d'Angoulême (1391-1465), poet and soldier; capt. by Eng. at Agincourt; his s. was Louis XII of Fr. 2) **Philippe I** (1640-1701), bro. of Louis XIV, m. Henrietta, sister of Ch. II of Eng., 1661. 3) His s., **Philippe II** (1674-1723), Regent during minority of Louis XV. 4) **Louis Philippe Joseph** (1747-93), Philippe Égalité, member of Convention, voted for death of kg.; executed. His s., **Louis Philippe** (1773-1850), Kg. of the French, suc. Charles X, 1830; deposed, 1848. 5) **Louis Philippe Robert** (1869-1926).

**Orléanists**, Fr. polit. party supporting claim of Orléans branch to Fr. crown; opposed to the Legitimists, or supporters of elder branch of Hse. of Bourbon, and to the Bonapartists.

**Orléans**, city, France, cap. dépt. of Loiret; on Riv. Loire; pop., 70,610; cathed., museum, mediaeval houses; tobacco, blankets, machinery; wine, cereals, wool. Besieged by the English, 1429; relieved by Joan of Arc (q.v.), the Maid of Orléans.



Orley

**Orley**, Bernaert van (1491-1543), Flem. painter; Ital. influence.

**Orloff**, Russ. counts: 1) **Grigori Grigorievich** (1734-83), Russ. statesm.; lover of Catherine II of Russ.; 2) his brother, **Alexis Grigorievich** (1737-1808), murdered her consort, Peter III, in 1762; encouraged first (unsuccessful) rising of the Greeks, 1769.

**Orloff diamond**, large diamond (c. 195 carats) stolen from Brahmin temple; bought by Ct. Grigori Orloff for £90,000 and given by him to Catherine II of Russ., 1772. Formerly part of royal regalia of Russia.

**Orlop deck**: see DECK.

**Orlov**: see OREL; OROFF.


**Orme's Head**, Great, headland, Carnarvonsh., N. Wales, N.W. Llandudno; 680 ft.; **Little Orme's Head**, 463 feet.

**Ormolu**, properly, an alloy of copper and zinc, but name also given to gilt-brass; used for mountings of furniture (esp. Fr. 18th cent.); metal cast, chiselled, and finally polished and gold-lacquered.

**Ormonde**, James Butler, 1st Duke of (1610-1688), Irish soldier and statesm.; assisted Strafford in Irel., 1633; attempted to suppress Irish rebellion, 1641; Lord-Lieut., 1644; peace with rebels, 1649; accomp. Charles II in exile, 1650-60; Duke and again Lord-Lieut., 1661; dismissed, 1670; reappd., 1667; retd. to Engl., 1685.

**Ormskirk**, urb. dist., S.W. Lancs; pop., 17,100; centre potato-growing district.

**Ormuzd**, personification of Good in the dualistic religion of Zoroastrianism (q.v.).

**Ornaments**, (mus.) embellishments of a melody; special signs (e.g., *tr.*  = trill; ~ = turn, etc.), or small notes known as *gracenotes* (q.v.).

**Orne**, dépt. in N. France; 2,371 sq.m.; pop., 273,717; dairy produce, horse-breeding; quartz, lace; hardware. Cap., *Alençon*.

**Ornithology**, scientific study of bird life in all its phases.

**Ornithopter**, flying mach., intended to be propelled by flap. wings. None yet successful.

**Ornstein**, Leo (1895- ), Amer. composer, b. at Kremenchug, Ukraine; orches. and chamber music.

**Orography**, branch of physical geog. treating of mtns. and mtn. systems.

**Orpen**, Sir Wm., R.A. (1879-1931), Brit. artist. Offic. artist in World War. Portraits.

**Orphanage**, institution for care and education of children who have lost one or both parents. First Brit. O., *Orphan Working Home*, 1758 (cf. FOUNDLING HOSPITAL).

**Orpheus**, (Gr. myth.) legendary poet and musician of Thrace, whose lyre charmed all nature; followed his wife, Eurydice, to Hades,



Sir William Orpen

and obtained her release on condition that he did not look back at her before reaching the upper world. He looked back; Eurydice returned to Hades, and Orpheus was afterwards torn in pieces by the Bacchantes. Became centre of the *Orphic Mysteries*. Orphic poems ascribed to him. **O. and Eurydice**, opera by Gluck (q.v.), 1762.

**Orphrey**, gold-embroidered band or border on an eccles. vestment.

**Orpiment**, sulphide of arsenic,  $As_2S_3$ , used as pigment, and at one time as a depilatory; very poisonous.

**Orpington**, residential tn., W. Kent, in fruit-growing dist.; pop., 7,000; gives name to two breeds of fowls: *Buff O.* and *Black Orpington*.

**Orrery**, clockwork mechanism (invented by Geo. Graham, c. 1700), for illustrating the planetary motions, positions, etc. Named after Chas. Boyle, 4th E. of O. (1676-1731), whose edn. of the *Epistles of Phalaris* led to the "Ancient r. Modern" controversy with Bentley and to Swift's *Battle of the Books*, and for whom one of the first was made.

**Orris**, dried root of species of iris: *I. fœtida* and others, cultivated in Italy. Pleasant odour; used in face- and tooth-powders. See IRIS.

**Orsay**, Alf. Guillaume, Ct. d' (1801-52), Fr. artist and sportsman; leader of society in Paris and London; m. dau. of Ld. Blessington by his 1st wife; became intimate with 2nd Lady Blessington and inmate of her house after her husband's death; portraits of Byron and D. of Wellington.

**Orsini**, noble Rom. family, incl. three popes, Celestine III, 1191; Nicholas III, 1277; and Benedict XIII, 1724. **O., Felice** (1819-1858), Ital. revolutionary; exec. for attempt on life of Napoleon III.

**Orsova**, Rumanian tn. on Riv. Danube, near Iron Gates; pop., 5,000; Hungarian before 1919.

**Ørsted**, Hans Christian (1777-1851), Dan. nat. philos.; disc. electro-magnetism.

**Orthez**, small tn., Basses-Pyrénées, S. France, near Pau. Near here Soult was defeated by Wellington, 1814.

**Ortho-**, prefix; straight, right.

**Orthochromatic**: see ISOCHROMATIC. **O. photography**, process which attempts to render coloured natural objects as truthfully as possible in monochrome. Silver bromide in plate or film is too sensitive to blue light, too little sensitive to red; hence uncorrected plate gives blue as white, and red as black. Correction by: 1) bathing plate in dyes which change sensibility; 2) interposing screens of coloured glass or gelatine; *colour filters*



Orpheus

(q.v.), which weaken rays to which plate is excessively sensitive.

**Orthoclase**, potash feldspar ( $K.Na$ )  $AlSi_3O_8$ ; chief constituent of granite, gneiss, porphyry, etc. **Orthoclastic**, term applied to crystalline rock, esp. feldspar (q.v.), having a cleavage at right angles; cf. **PLAGIOCLASTIC**.

**Orthodox**, right thinking; adhering strictly to (relig.) dogma; **O.-Anatolian Church**, official designat. of Grk.-Cath. Church (q.v.). **O. Eastern Church**: see GREEK CHURCH.

**Orthogon**, (geom.) rectangular fig., e.g., *Orthogonal Projection*.

**Orthography**, correct spellg. accord. to com. usage.

**Orthopaedics**, study of deformity and malformation of bones, joints, and muscles, and of their treatment.

**Orthoptera**, order of insects with biting mouthparts and incomplete metamorphosis; including the cockroaches, stick and leaf insects, grasshoppers, crickets, and mantids.

**Ortolan**, small singing bird, allied to buntings (q.v.); migrant, spending summer in W. Europe, winter in Africa; frequents open wooded country, feeding on insects and small seeds.

**Oruro**, 1) dept., Bolivia; 21,000 sq.m.; pop., 138,000; tin, copper, silver. 2) Cap. of dept.; pop., 34,000; gold mines; rly. centre.

**Orvieto**, tn. in Perugia, It.; pop., 20,000. Gothic cathedral.

**Orwell**, riv., Suffolk; rises nr. Stowmarket as *Riv. Gipping* (11½ m.); becomes Riv. Or-



By Courtesy of Nippon Yusen Kaisha  
Dōhombōrī, a main thoroughfare in Osaka

well (11 m.) at Ipswich; flows into estuary of Riv. Stour betw. Felixstowe and Harwich.

**Oryx**, large African desert antelope, with long horns and tufted tail, of which gemsbok (q.v.) is a species.

**Os** (Lat.). 1) the mouth; 2) bone; 3) (chem.) symbol of osmium.

**Osage Dam**, Missouri, U.S.A., 148 ft. high; storage capacity: 500,000 mill. galls. (1931); power-generating.

**Osaka**, city, Japan, on Bay of Osaka, S. coast of Hondo; second city and most important commercial centre of Japan; iron-

works, shipyards, cotton mills; pop., 2,200,000.

**Oscar**, Kgs. of Sweden and Norway: 1) **O. I** (1799-1859), s. of Gen. Bernadotte; Kg., 1844. 2) **O. II** (1829-1907), s. of 1); kg., 1872; acquiesced in separation of Norway, 1905.

**Osci**, centr. Ital. people, conquered by Rom. **Oscan**, their language; extinct in early Rom. times.

**Oscillation**, regular swinging movement of a body round a zero position, e.g. pendulum; maximum departure from zero position is called the *amplitude*. Time between successive identical positions and movements is called *period of oscillation*; no. of complete oscillations p. sec., *frequency* measured in *Hertz* units (*q.v.*). Division into *longitudinal* (*q.v.*), *transverse* (*q.v.*), oscillations. When energy is used or dissipated, e.g., by friction, emission of waves, *damping* occurs, and amplitude decreases; where sufficient energy is supplied amplitude remains constant (undamped O.). Os. propagated in space are known as *waves* (*q.v.*). *Electrically oscillating circuit*, as in wireless, contains capacity and self-induction (*q.v.*), period is determined by relation betw. these. If aerial forms part of circuit, energy is radiated away. Os. maintained by valve (*q.v.*). See also **RESONANCE**.

**Oscillograph**, device for recording rapidly changing electric currents; a galvanometer (*q.v.*) with very rapid response. Also *cathode ray* (*q.v.*) O., in which magnetic effect of current on cathode ray beam is made use of; employed in television reception.

**Osier**, name given to several trees of willow family, esp. those cultivated for basket-making; native to Europe and N. Asia; silvery leaves and yellow catkins.

**Osijek**, fortified tn., Yugoslavia, on Riv. Drave; pop., 34,500; corn trade; silk, cotton, leather. Former cap. of Slavonia.

**Osiris**, (Egypt. myth.) god of the dead, orig. Kg. of Egypt; consort of Isis (*q.v.*). Dethroned, murdered, and dismembered by his brother, Set. Isis eventually found the remains of Osiris and, with the help of her son, Horus, defeated Set and regained the kingdom.

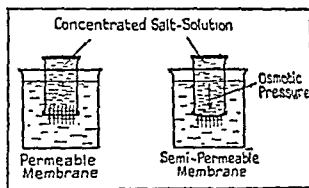
**O si sic omnia** (Lat.), Oh, if only [he had said, or done] everything thus; of person who has sd. or done something well once only.

**Oslo** (*Christiania* until 1924), cap. of Norway, at head of Oslo Fjord; pop., 258,000; cathed., royal palace and park, parliament house (*Storting*, *Bygning*), supreme law courts, univ. (1811), nat. theatre, museums; harbour (ice-bound in winter); docks; shipping and trading centre of Norway.

**Osmanli**, Turk. dynast., fndd. by **Osman I** (1259-1326). **Osman Pasha** (1832-1900), Turk. field-marshal; siege of Plevna, 1877.

**Osmium**, (chem.) sym. Os, at. wt. 190.8, sp. gr. 22.48; rare element found with iridium (*q.v.*) in platinum ore; bluish-grey, brittle substance with m.p. 2700°C.; on acc. of its extreme hardness used as constituent of tips of fountain-pen nibs.

**Osmosis**, (chem.) or *Osmose*, process by wh. liquids pass through membranes (e.g., parchment) under influence of molecular forces. If solution of sugar in water be separated from pure water by a *semi-permeable membrane*, i.e., one through which sugar cannot pass, water flows through membrane into sugar solution; pressure required to prevent this flow is called the *osmotic pressure* of the sugar solution, and is approx. equal to pressure of gas having same number of molecules per unit volume as sugar in solution. O. is fundamental in all living organisms, which consist of cells enclosed in membranes. *Electro-osmosis*, passage of liquid through finely porous diaphragm or membrane when liquid on two sides is subjected to difference of electric potential (*q.v.*); also movement of fine particles of suspended solid or liquid in liquid under application of electric force (two phenomena are fundamentally identical). Important technical applications: deposition of suspensions of clay, rubber (*latex*), abrasives, etc., on metal electrodes; removal of suspended water particles in oils. The movement of particles is called *kata-phoresis*.



Osmosis

**Osnabrück**, cap. dist. of O. (2,395 sq.m.; pop., 430,000), in prov. of Hanover, Prussia; pop., 95,200; mediaeval church and town hall; industrial centre. Peace of Westphalia signed here, 24 Oct., 1648.

**Osprey**: see **EGRET**.

**Ossa**, mountain in Thessaly, Greece, 6,496 ft.; separated from Olympus by Vale of Tempe.

**Ossetian Autonomous Areas**, two districts in centr. Caucasus, Russia; S. part (c. 1,280 sq.m.; pop., 89,500), adminis. since 1922 by Georgian S.S.R.; N. part (c. 2,330 sq.m.; pop., 154,000) adminis. by N. Caucasian Area. *Adai Khokh*, 15,250 feet. Ossetian milit. rd., 182 m. long. Ossetes descended from Alani (*q.v.*); mentioned A.D. 35.

**Ossian**, **Osian**, semi-historical, 3rd-cent. Gaelic bard; poems published by Jas. Macpherson (1762-63) attrib. to him.



Osiris

**Ossory**, anc. kgdm. of Ire., in S.W. Leinster; fl. 2nd-12th cents. Name preserved in Ch. of Ire. and R.C. bprics. of O.; eldest son of Marq. of Ormonde bears title of E. of Ossory.

**Ostade**, Adrian van (1610-85), Dut. genre painter, prob. taught by Frans Hals; *The Alchemist*; *The Cobbler*; *Man with a Jug*.

**Osteitis, otitis**, (med.) inflammation of bone.

**Ostend**, seaside resort, W. Flanders, Belgium; on North Sea; pop., 44,000; third port of Belgium; oyster and lobster fisheries. Occupied by Germans, 1914-18. Harbour entrance blocked in May, 1918, by sinking of "Vindictive" during Brit. raid.

**Osteology**, branch of anatomy dealing with development and structure of bones.

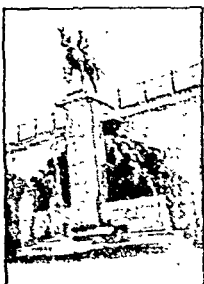
**Ostia**, town and port of ancient Rome, at mouth of Riv. Tiber; cathed.; now a village.

**Ostiaks**, people of Finno-Ugrian stock bet. the Obi and the Yenisei rivs.; hunters and fishermen numbering c. 20,000.

**Ostinato**, (mus.) persistently recurring phrase, gen. in the bass; *basso ostinato*.

**Ostracism**, banishment by plebiscite of Athenian citizens deemed too powerful or ambitious; introd. 509 B.C.; voters inscribed name of the victim on pieces of pottery (*ostraka*); hence, exclusion, by popular feeling, from society, privileges, etc.

**Ostrich**, large flightless bird of suborder *Struthioniformes*, native of Africa and Arabia; neck and legs very long, only two toes; polygamous, male brooding the eggs during night-time and caring for the young after they are hatched; the three or four hens deposit their eggs in a common nest excavated in the earth or sand, and during the day the eggs are covered over with a layer of sand and left to the heat of the sun. The O. is bred on farms in S.



Leopold II Memorial, Ostend



The Digue, Ostend



Ostrich

Africa and elsewhere, for the sake of the feathers, wh. are plucked periodically and are of high commercial value.

**Ostrogoths**: see GOTHs.

**Ostrovski**, Alexander Nicholas (1823-86), Russ. dramat.: *The Storm*.

**Ostwald**, Wilhelm (1853-1932), Ger. chem.; a pioneer of modern electro-chemistry and physical chem.; dir. Physico-chemical Instit., Leipzig; Nobel Prize (Chem.), 1909.

**Oswego tea**, N. Amer. perennial plant, allied to mint; scarlet flowers; formerly used medicinally.

**Oswestry**, munic. bor. and mkt. tn., Salop; pop., 9,800; named after St. Oswald, Kg. of Northumbria, killed by Penda of Mercia in 642. Remains of castle; Brit. earthwork 1 m. north.

**Otago**, provl. dist., S. Island, N. Zealand, divided into Otago Portion and Southland Portion; 25,200 sq.m.; pop., 214,700; agric., sheep-breeding, fruit-farming, gold-mining; chf. tn., *Dunedin*.

**Otari**, port on W. coast of isl. of Hokkaido, Japan; pop., 156,800; timber export.

**Otavi**, town in N. of Brit. (formerly Ger.) S.W. Africa; copper mines. **Otavi Rly.** runs to Swakopmund on the coast.

**O tempora, O mores!** (Lat.), "What times, what customs!", ejaculation of Cicero in speech agst. Catiline; expresses disapproval of changes.

**Othello**, 1) a Moor, princ. char. in Shakespeare's trag. *Othello*, whose jealousy became proverbial. 2) Opera by Verdi (g.r.), 1877.

**Othniel**, (O.T.) delivered Israel from oppression of Chushan-Rishathaim, Kg. of Mesopotamia (Judg. iii).

**Otho**, Marcus Salvius (A.D. 32-69), Rom. Emp., 69; murdered Galba; suicide after defeat by Vitellius.

**Otitis**, (med.) inflammation of ear.

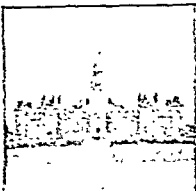
**Otitis media**, inflammation of middle ear.

**Otium cum dignitate** (Lat.), leisure with dignity.

**Otology**, science of structure and disease of the ear. **Otosclerosis**, hardening of tissues of middle and internal ear, causing deafness.

**Otranto**, port in Prov. of Lecce, Italy, on Str. of Otranto, betw. Adriatic and Ionian seas; pop., 3,000; R. C. abpric.; castle.

**Ottava rima**, stanza form of Ital. orig.; 8 decasyllabic lines, containing 3 rhymes: a bababcc; used by Tasso (g.r.) and Ariosto; basis of Spenserian stanza (g.r.)



By courtesy of the High Commissioner for Canada  
Parliament Buildings and Peace Tower, Ottawa

**Ottawa**, 1) left trib. (775 m.) St. Lawrence Riv., joining it opp. Montreal; lumber trade. 2) Cap., Dominion of Canada, on Ottawa Riv., prov. of Ontario; pop., 166,000; univ.; Anglican and R.C. catheds.; hdqrs. Roy. Can. Mounted Police; centre lumber trade, rlys., and water power; see Ill., prev. page. **O. Conferences**, 1) 1894, betw. self-governing colonies, whereat it was agreed to petition Imperial govt. that they might make treaties of reciprocity. 2) 1932, Imperial Economic Conference, to discuss tariffs and mutual preference within the Emp., and kindred subjects.

**Otter**, aquatic carnivore frequenting rivs., streams, and lakes of Gt. Brit., Eur., Asia, N. and S. Amer.; feeds on fish; body is long, limbs short with webbed feet; tail long and thick; fur very short and thick. Closely allied is **sea-o.**, which has a wide geographical range; differs from O. in form of hind-feet, number of teeth, and short bushy tail; feeds on crabs, molluscs, small fish. Its thick, short fur is highly valued. **O.-hound**, breed of harrier (*q.v.*), with thick woolly coat, used for otter-hunting. **O.-hunting**, takes place during spring and summer, with pack of otter-hounds (or sometimes foxhounds); followed on foot.

**Otterburn, Battle of** (also known as *Chevy Chase*), a border raid, 1388, when the Eng., under the Percys, were deftd. by the Scots, under the Earl of Douglas, who was slain. The subject of several Eng. and Scottish ballads.

**Ottery St. Mary**, mkt. tn., Devonsh., Eng., on Riv. Otter; pop., 3,600; church with transeptal towers; b.-place S. T. Cole-ridge.

**Otto**, a.): *Rom. Emps.*: 1) **O. I** (912-973), broke power of the duchies; estab. royal power through Ch. dignitaries (Ottonic System); Ger. Kg. 936, Rom. Emp. 962. 2) **O. II** (973-983). 3) **O. III** (983-1002). 4) **O. IV** (1198-1215), s. of Henry the Lion and Matilda, dau. of Henry II of Eng., rival of Philip, Duke of Suabia, deposed in fav. of Frederick II. b.): *Dukes or Kgs. of Bavaria*: 1) **O. of Nordheim** (1056-83), war with Henry IV. 2) **O. of Wittelsbach** (1120-83), rescued Frederick I, Barbarossa, retreating from It., Duke of Bavaria, 1180. 3) **O. I** (1886-1912), Kg., declared insane; Pr. Luitpold, regent. c.) *Others*: 1) Margrave of Brandenburg: **O. the Lazy**, sold Brandenburg to Chas. IV, 1373. 2) Kg. of Greece: **O. I** (1815-67), kg., 1832, under protection of Eng., Russ., Fr.; deposed 1862. 3) **O. Henry**, Pr. of Palatinate (1502-59), enlarged Heidelberg Castle. 4) **O.**, Bp. of Bamberg (1060-1139), Apostle of Pomerania. 5) **O.**, Bp. of Freising, historian, d. 1158.

**Otto**, Berthold (1859- ), Ger. educationalist; fndd. *Berthold-O. School*.

**Ottocar, Ottakar**, Kgs. of Bohemia: 1) **O. I** (d. 1230), supported Ger. Kg. Otto (Emp. Otto IV) agst. his rival, Philip. 2) **O. II** (1230-78), kg., 1253; acquired Austria, Styria, Carinthia, and part of Carniola; unsuccessful candidate for Ger. throne.

**Ottomans**, that branch of Turks who founded Turkish Emp.; lived orig. in Centr. Asia under their 1st Sultan, Othman (1288-1326); they founded a realm in Asia Minor, soon extended into Eur., and in 1453 took Constantinople. **Ottoman Empire**, see TURKEY.

**Otway**, Thomas (1652-85), Eng. dramatist: *The Orphan*; *Venice Preserved*.

**Oudenarde**, tn. in prov. of E. Flanders, Belgium, on Riv. Scheldt; pop., 7,100; textiles and lace-making. **Battle of O.** (1708), defeat of Fr. under Vendôme and Duke of Burgundy by Marlborough and Prince Eugène (War of Span. Succession).

**Oudh**, part of the United Provinces of Agra and Oudh (*q.v.*), between the Himalayas and Riv. Ganges; 24,210 sq.m.; pop., 11 millions (11 million Hindus); fertile cultivated soil (wheat, rice, etc.). Cap., Lucknow.

**Oudinot**, Nicolas Charles (1767-1847), marshal of France under Napoleon, Duke of Reggio. Fought at Austerlitz, Friedland, Wagram, etc.

**Ouida**: see DE LA RAMÉE, MARIE LOUISE.

**Oulu**, 1) dept., N. Finland; includes part of Lapland; lakes, forests; 65,250 sq.m. pop., 430,000. 2) Cap. of dept. on N.E. coast, Gulf of Bothnia; pop., 23,480.

**Ounce**, 1) Snow-leopard of Centr. Asia. 2) (abbr., oz.) Brit. and U.S. wt.: a) avoirdupois, 437½ grains or 16 drams (1/16 lb.); b) troy, 480 grains or 20 dwt. (1/12 lb.); c) apothecaries', 480 grains or 8 drams (1/12 lb.). 3) Apothecaries' liquid meas., 1/20 pint (Gt. Brit.), 1/16 pint (U.S.A.); 2 oz. = 1 wineglassful; 3 oz. = 1 teacupful.

**Oundle**, mkt. tn., Northants; on Riv. Nene; pop., 2,000. **O. School**, public sch. for boys; orig. Grammar Sch. (fndd. 16th cent.); enlarged by the Grocers' Company, 1883; c. 580 boys.

**Ourthe**, trib. of Riv. Meuse, Belgium, 103 m. (one-third navig.); rises near Liège.

**Ouse**, 1) riv., Yorks, Eng., formed by confluence rivs. Swale and Ure; flows past York, Selby, and Goole; joins Riv. Trent to form Riv. Humber; length 60 m. 2) Or **Great O.**, rises Northants, Eng., flows past Bedford, Huntingdon, and Ely into the Wash beyond King's Lynn; length, 160 m. 3) Riv., Sussex, Eng., flows past Lewes into Eng. Channel at Newhaven; length 30 miles.

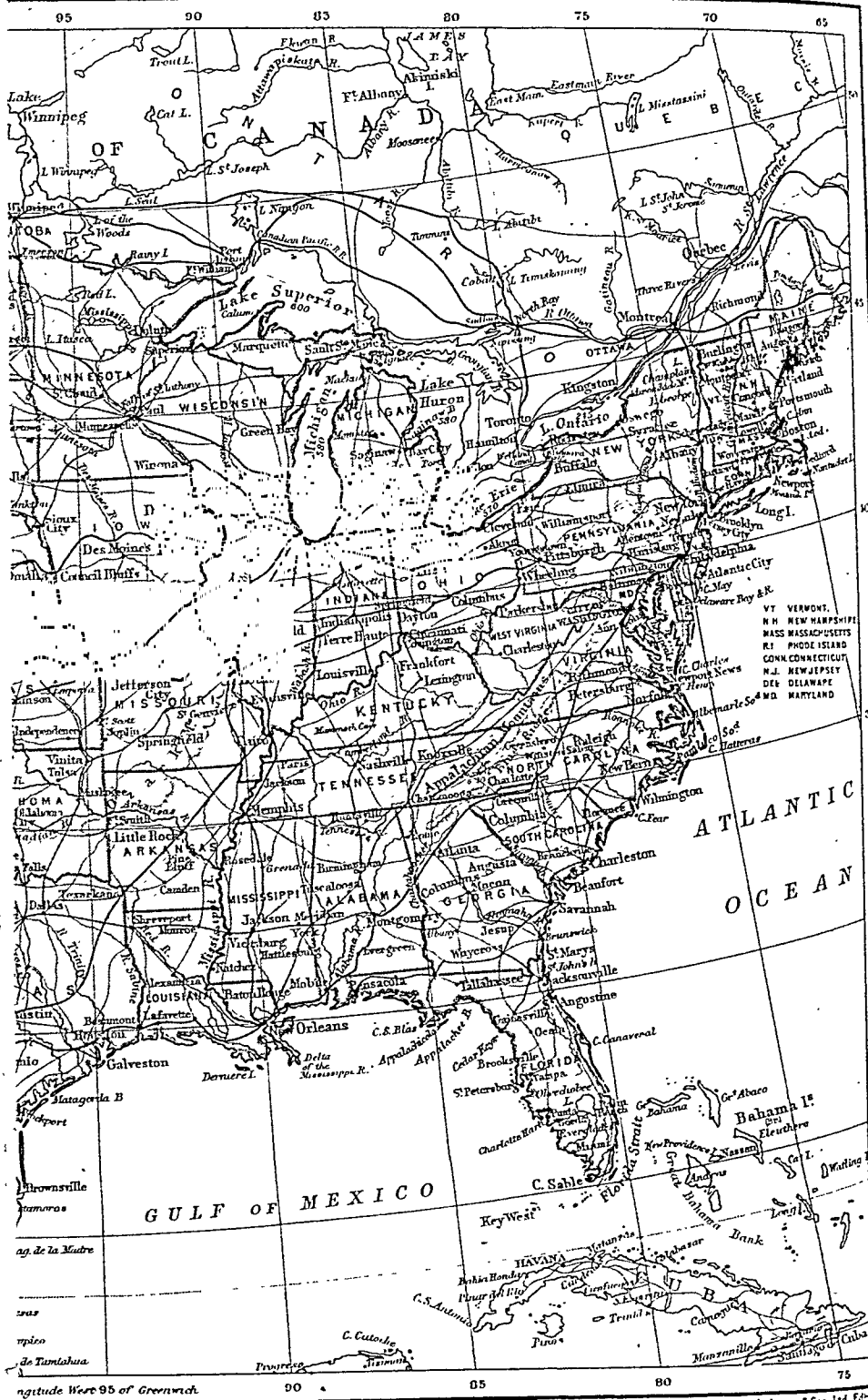
**Ouseley**, Rev. Sir Frederick Arthur Gore (1825-89), Eng. composer of ch. music.

**Où sont les neiges d'antan?** (Fr.),





# STATES



"Where are the snows of yesteryear?" (Villon).

**Outboard motor**, motor engine (up to 5 h.p.) for rowing or sailing boats, overhanging stern or side.

**Outcrop**, (geol. and mining) portion of rock or mineral stratum (*q.v.*) projecting above surface of ground.

**Outposts**, troops detailed for the protection of a force at rest. Consist of sentry-groups, pickets and supports.

**Outram**, Sir Jas. (1803-63), Eng. gen.; went to India as cadet, 1819; commanded Persian expedition, 1856; returned to Calcutta, 1857, to help suppress mutiny; prominent in relief, defence, and capture of Lucknow; described by Sir Chas. Napier as the *Bayard of India*.

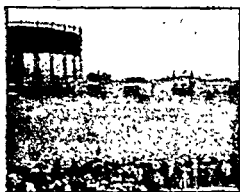
**Outtrigger**, rowing-boat with rowlocks (*q.v.*) on a projecting frame, not on gunwale.

**Outside broker**, a stock-broker who is not a member of a Stock Exchange.

**Ouzel**, fam. of semi-aquatic birds allied to thrushes; found in N. Hemisphere and S. Amer.; plumage gen. brown; short wings, broad tail, early breeders.

**Oval**, **The**, Kennington, London, Eng.; ground of Surrey County Cricket Club, c. 9 acres. Opened, 1846. Ground is leased from the Pr. of Wales, who is Lord of the Manor.

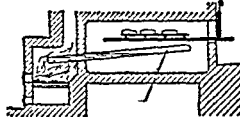
**Ovambo**, Bantu natives of S.W. Afr., agriculturists; notable for their industry. **O.-land**, Kennington Oval



territ. of 80-100,000 Ovambo (Bantu) Negroes, in N. portion of former Ger. S.W. Africa (*see* SOUTH-WEST AFRICA).

**Ovary**, 1) genital gland in females, connected with the uterus and containing the egg-cells or ovules. In woman, there are 2; an ovule is emitted every 4 wks. (ovulation) which, if unfertilised, is naturally discharged by menstruation (*q.v.*). 2) (Bot.) Part of female organs in plants; that part of the pistil containing immature fruits (ovules).

**Oven**, closed space heated by internal or external heat, usu. to moderate temp.; **Coke o.**, used in making metallurgical coke, works at high temp. **Baking o.**, for baking bread, formerly constructed for wood fuel; now heated either by steam, gas, oil, or electricity (*see* ILLUS.).



Heat-conducting pipe  
Baking Oven

**Over**, (cricket) no. of balls bowled in period bef. umpire calls "over" as signal that bowling must change to opposite end of pitch; in Eng. 6 balls, in Australia eight.

**"Maiden O."** one during which no runs are scored.

**Over-arm stroke** (swim.). In this, when swimmer is lying on the side, under arm is brought back to hip, upper dipped in front of head and pulled back past chest; legs are kicked wide apart, and closed as upper arm leaves water (*see* ILLUS., *s.v.* SWIMMING).

**Overbeck**, Johann Friedrich (1789-1869), Ger. painter; found. group of artists known as "Nazarites" or "Pre-Raphaelites," whose views influenced Holman Hunt and members of Eng. Pre-Raphaelite Brotherhood (*q.v.*).

**Overburden**, (geol. and mining) the earth and rock covering a certain stratum; gen. bears useful mineral.

**Overbury**, Sir Thos. (1581-1613), Eng. poet; friend of Rochester; poisoned in the Tower.

**Overdraft**, (banking) permission granted by a bk. to a depositor to draw an agreed amt. beyond the deposits in his acc., *i.e.*, a loan or advance to a customer.

**Overhead costs**, expenses wh., unlike raw materials, wages, etc., cannot be allocated to any partic. piece of work or production of a given unit, *e.g.*, rent, lighting, office expenses, etc.; in trading concerns they are practically all costs other than that of purchase of materials or goods.

**Over-insurance**, amt. insured exceeding value of insured object; insur. co. is responsible only for the actual value of the object.

**Overnight money**, (banking) funds loaned by bks. to *bill brokers* in the *discount market* (*q.v.*) from one afternoon to the following morning, at low rates of interest.

**Over-population**, (econ.) excess of number of residents in an area over its capacity to provide them with means of subsistence.

**Overtone**, (mus.) harmonics (*q.v.*); notes with a higher frequency of vibration, accompanying a fundamental note.

**Overture**, (mus.) instrumental prelude to an opera, oratorio, or play.

**Overijssel**, prov. on Zuider Zee, Holland; 1,317 sq.m.; pop., 513,300; fertile marshland on coast; cap., *Zwolle*.

**Ovid** (Publius Ovidius Naso) (43 B.C.-A.D. 17), Rom. poet, last of the Augustans, d. in exile; *Ars amandi*; *Metamorphoses*; *Fasti*; *Tristia*.

**Oviducts**, *Fallopian tubes*, small tubes lying on either side of uterus by means of wh. ovules are conveyed from ovaries to uterus.

**Oviedo**, tn., Sp.; cap. of prov. of O. (4,205 sq.m.; pop., 806,000), in the Asturias; pop., 76,000; 14th-cent. Gothic cathed., univ.; govt. arms factory.

**Ovule**, (bot.) small structure in ovary of a plant wh. develops into seed after fertilisation; (zool.) female germ-cell.

**Owen, Sir Richd.** (1804-92), Eng. biologist; superintendent of nat. history dept., Brit. Mus., 1856; *Odontography*, 1840-45; *Parthenogenesis*, 1849; *Anatomy of the Vertebrates*, 1866-68. **O., Robt.** (1771-1858), fndr. of Socialism in England; manager and part-owner of cotton mills, New Lanark, 1800; introd. extensive improvements in condition of operatives; fndd. unsuccessful socialistic community, New Harmony, Indiana, 1825; from 1828, devoted his life to propagation of Socialism.

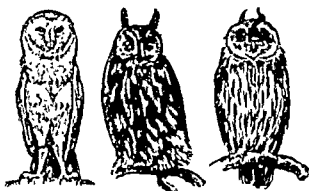


Robert Owen

**Owl**, nocturnal bird of prey of the sub-order *Striges*, characterised by its swift, silent flight, soft plumage, absence of wax-like skin or cere at base of bill, relatively immense forward-directed eyes, and the facial disk surrounded by ring of short feathers, giving the effect of spectacles. Species are found in practically all parts of the world, and some are migratory in habit. At least ten species are visitors or resident in Gt. Britain. **Barn o.**, common throughout Gt. Brit., nesting in barns, church towers, hollow trees; **long-eared o.**, resident; **short-eared o.**, winter visitor, arr. in autumn, dep. spring; **brown or wood o.**, resident; **little o.**, introduced from Europe and now established. All are useful to agriculture on account of large numbers of rats and mice they destroy.



Eagle-Owl

Barn Long-Eared Short-Eared  
OWLS

**Owyhee Dam**, Oregon, U.S.A., 405 ft. high; storage capacity: 232,983 million gallons.

**Ox**, castrated bull when arrived at maturity.

**Oxalic acid**, (chem.)  $(\text{COOH})_2 \cdot 2\text{H}_2\text{O}$ ; poisonous transp. crystals obtd. by heating sawdust with sodium hydroxide or by heating sodium formate with sodium carbonate; occurs nat. in many plants, e.g. wood-sorrel, and in rhubarb as calcium oxalate. Used for removing ink stains, as a mordant in dyeing, and in photog. Salts of O.A. are termed oxalates, e.g. *iron oxalate* used in photography. Salts of lemon, or salts of sorrel, is acid potassium oxalate.

**Oxenstierna**, Swed. noble family. **Axel O.** (1583-1654), Chanc. of Swed. under

Gustavus Adolphus, after whose death he controlled Swed. policy.

**Ox-eye daisy**, *Chrysanthemum leucanthemum*, tall, white field-flower with single blossom, having white petals and yellow centre; *C. segetum*, yellow O.D. or corn marigold. Also known as marguerite.

**Oxford, Earl of:** see HARLEY, ROBERT.

**Oxford and Asquith, Earl of:** see ASQUITH, HERBERT HENRY.

**Oxford**, co. tn. of O. shire, on Thames (locally Isis), at its confluence with the Cherwell; pop., 80,540. Famous univ. dating from 12th cent., comprising 21 colleges and two halls (c. 5,000 undergraduates); four women's colleges and halls (not incorporated, although women were admitted to full membership of univ. in 1920); several other institutions (mainly theological) outside the university. Ancient cathed. (on site of 8th-cent. ch.), Bodleian Library, Sheldonian Theatre, Ashmolean Museum, Examination Schools. Industries include printing and publishing (Clarendon Press), motorcar manuf., marmalade.



Oxford, "The High"

**Oxford Movement**, (eccles.) movement within the Ch. of E. to deepen spiritual life by attention to outward forms (vestments, mediaeval customs, ritual, etc.); its aims were expressed in "Tracts for the Times" (1832-1841), hence its leaders (Newman, Pusey, Keble, etc.) have been known as "Tractarians."

**Oxfordshire, or Oxon.**, midland co., Eng., area, 751 sq.m.; pop., 209,600; surface flat in N.; well-wooded hills in S. (Chiltern Hills in S.E.); principal riv. the Thames; chf. tns.: Oxford (co. tn.), Banbury, Henley, Woodstock; agric., cattle-breeding, blankets, agric. machinery.

**Oxford Street**, thoroughfare in W. district of London, Eng. Originally called *Tyburn Road*, as it ran betw. St. Giles's and Tyburn (q.v.). Present street, with its continuation, **New O. St.**, completed, 1840.

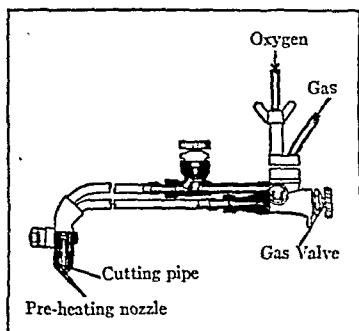
**Oxide**, (chem.) compound of oxygen and another element; often formed by combustion. **Oxidation**, chem. process of combining oxygen with a substance; converse is *reduction*, removal of oxygen or decrease in proportion of non-metallic part of a compound; all combustion is process of oxidation. Discvd. by *Lavoisier* (q.v.); superseding the Phlogistic theory (q.v.).

**Oxlip**, small flower resembling primrose; a cultivated cross betw. primrose and cowslip is also so called.

**Oxon.**, abbr. 1) *Oxfordshire*; 2) *Oxonensis* (Lat.), of Oxford (signature of bp.).

**Oxus**, ancient name of Amu Daria (*q.v.*).

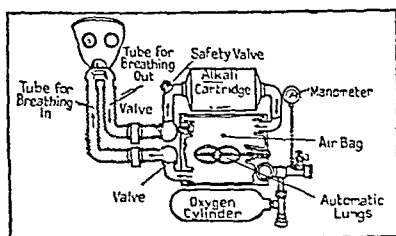
**Oxy-**, Gr. prefix signifying presence of oxygen. **O.-acetylene flame**, prod. by burning a mixture of oxygen and acetylene in a blowpipe; used for welding when high



Oxy-acetylene Flame

temps. are required. **O.-hydrogen flame**, prod. by burning a mixture of oxygen 1 part, hydrogen (or coal gas) 2 parts. Formerly used to heat lime to high temp. for purpose of producing brilliant light (limelight).

**Oxygen**, chem. element; sym.; O; at. wt. 16.0; gas heavier than air; discovered by Scheele (*q.v.*) 1773; most widely distrib. element, forming  $c. 1/5$ th of atmos., and united with hydrogen to form water; present in nearly



Oxygen Apparatus

all minerals. Obtd. industrly. by fractional distillation of liquid air, as a bluish fluid wh. boils at  $-183^{\circ}\text{C}$ . O. essent. for life of plants and animals and for combustion; its imp. in oxidation (*q.v.*) recogd. by Lavoisier (*q.v.*). In 18th cent. believed that acidic property of acids was due to O. (actually due to

hydrogen or the "hydrogen-ion"), hence its name ( $\delta\acute{\epsilon}\psi$ s, meaning "sharp"). **O. apparatus**, strong cylinders filled with oxygen under pressure, having a funnel attached for inhaling; used to prov. oxygen artific. in cases of gas-poisoning, and in certain diseases, *e.g.*, pneumonia.

**Oxymoron**, figure of speech in wh. words of contrary intent are combined, as *e.g.*, "faith unfaithful."

**Oxyrhynchus**, anc. city, Upper Egy., on Riv. Nile, modern *Behnesa*: site of discovery in 1895-96, by Grenfell and Hunt, of papyri; see LOGIA.

**Oxyuris vermicularis**, (*med.*) thread worms, commonest form of worm found in children; occur in the rectum.

**Oyster**, marine bivalve mollusc, found in large colonies on the flat seabed near the shore (*oyster banks*); artificially cultivated in oyster-beds for their delicate flavour. See also PEARL.



Oyster

**O.-catcher, sea-pie**, bird allied to plovers, widely distribt. thr. Europe; frequents the sand dunes and pebble beaches of coasts; feeds on limpets, mussels, cockles, and other small molluscs.

**Oystermouth**: see MUMBLES.

**Ozarks**, highlands of Missouri, Illinois, Oklahoma, Arkansas, and Kansas, U.S.A.; 2,000 feet.

**Ozocerite**, wax-like mineral, of yellowish, greenish, or brown colour, having strong, unpleasant smell before being purified; found in Galicia and Baku; used for making candles.

**Ozæna**, (*med.*) chronic inflammation of mucous membrane of nose, accomp'd. by foetid discharge.

**Ozone**, modified form of oxygen. Ozone molecule has 3 atoms, oxygen molecule 2 atoms; unlike oxygen, O. is deep blue when liquefied, and very active chemically. Has germicidal and bleaching properties; formed from oxygen by action of ultra-violet light, and also by passage of silent elect. discharge, by which air and oxygen are "ozonised" commercially. Used for bleaching and for purifying drinking water and air. Appliances for generating ozonised air yield air containing O. from 500 to 1,500 parts per million.

# P

**P**, (chem.) symbol of phosphorus.

**P.**, abbr.: 1) *Pater* (Lat.), father; 2) *pinxit* (Lat.), he painted; 3) *pagina* (Lat.), page; 4) pawn (chess); 5) *piano* (Ital., mus.), softly.

**Pa.**, abbr. Pennsylvania.

**P.A.**, abbr.: 1) *pro anno* (Lat.), for the year; 2) *per annum* (Lat.), by the year.

**Paca**, rodent of S. Amer., size of a hare; fore and hind limbs of equal length, tail small, longitudinal rows of light-coloured spots on fur.

**Pace** (Lat.) by leave of; *pace tua*: by your leave), infers "with your permission for me to disagree with you."

**Pace**, Brit. and U.S. linear meas., 30 in.; short pace, 21 in.; stepping-out pace, 33 inches. **P-maker**, one who sets the pace in a race.

**Pacelli**, Eugenio (1876- ), Ital. prelate, Papal Nuncio, Berlin, 1920-30; Cardinal Sec. of State and Archbishop of the Vatican Basilica, 1929.

**Pachmann**, Vladimir de (1848-1933), Russian pianist; famous for interpretation of Chopin.

**Pachomius, St.** (292-346), Egypt. monk; estab. 1st monastery, on isl. of Tabenna, in the Nile.

**Pachyderms**, non-ruminant animals with thick hide; pigs, hippopotami, tapirs, rhinoceroses, and elephants.

**Pacific Highway**, from Vancouver, Canada, to the Mexican border, 1,675 miles.

**Pacific Ocean**, largest of the oceans, betw. Asia, Australia, and America, occupies half the world's surface. Area, not including secondary seas, 64,000,000 sq.m.; av. depth, 13,450 ft.; greatest depth, near Philippine Islands, 35,400 ft., greatest recorded in the world. Important secondary seas, Bering Sea, Sea of Okhotsk, Sea of Japan, Yellow Sea, South China Sea, Gulf of Panama and Indian Ocean. First navigated by Magellan, 1520; encountered no storms, he named it *Pacific*.

**Pacifism**, unconditional oppos. to war. **Pacifist**, one who supports that attitude.

**Pacinotti**, Antonio (1841-1912), Ital. physicist, invented ring armature and commutator for dynamos.

**Packfong**, Chinese nickel silver; formula: % Cu, 32 Ni, 25 Zn, 2-3 Fe.

**Pack**, Eng. measure, = 240 lb. wool; 280 lb. meal; 3 bushels coal.

**Pack-ice**, large expanse of fragments of ice floating on sea, broken from solid sheet of ice.



Pack-Ice

**Pack ing**, (tech.) in machines, used in stuffing-boxes (*q.v.*) and elsewhere where joint at wh. relative motion of 2 parts takes place reqs. to be rendered air-, water-, or oil-tight. Hemp, compounds of metal and asbestos, etc., are used.

**Pactolus**, (anc. geog.) small riv., Lydia, flowing past Sardis into the Hermus; celebrated for its gold.

**Padang**, chf. port W. Sumatra, Dut. East Indies; pop., 41,120 (includ. Emma Harbour); tobacco.

**Paddington**, met. bor., W. London, Eng., N. of Riv. Thames; pop., 144,900. **P. Station**, London termin. of Gr. Western Rly. (*q.v.*).

**Paddle**, short, wooden, oar-like device with broad blade, used without rowlocks (*q.v.*) for the propulsion of small craft such as canoes; a flat, oblong modification thereof used in power-propelled ships, and forming part of a *paddle wheel*. **P.-steamer**, earliest type of steamship (now used mainly on rivs.), having either stern-wheel or paddle-wheel on either side, with fixed or feathering floats.

**Paddy**, Indian name for rice in husk.

**Paderborn**, tn., Westphalia, Ger., on Riv. Pader; pop., 34,000; organ buildg.; cattle and grain trade.

**Paderewski**, Ignaz Jan (1860- ), Pol. pianist, composer, and statesm.; Pol. Pr. Min. and Min. of For. Affairs, Jan.-Nov. 1919.

**Padishah, Padshah**, Pers. title borne by the Shah, and formerly by the Great Mogul and Sultan of Turkey.



Paderewski

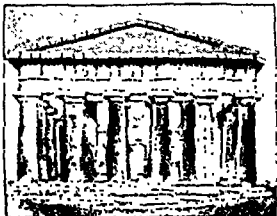
**Padua**, 1) prov. of Veneto, N. Italy; 828 sq.m.; pop., 632,000; 2) its cap., pop., 125,200; basilica of St. Antony; univ. (fndd. 1222); observatory, botan. garden (1343).

**Paeon**, song of praise or jubilation in worship of Apollo; later, song of war and victory.

**Paenonius**, 5th-cent. Gr. sculptor; *Victory* at Olympia. See **NIKE**.

**Paes**, Sidonio (1858-1918), Port. statesman; Pres., 1918; assassinated.

**Paestum** (mod. *Pesto*), ruined Rom. city on Gulf of Salerno, It.; destroyed by Saracens, 9th cent.; well preserved Doric Temple of Poseidon.



Temple of Poseidon, Paestum

**Paganini**, Niccolò (1782-1840), Ital. violinist and composer.

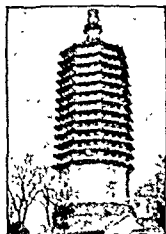
**Paganism** (Lat., *paganus*, a country dweller), heathenism.

**Page**, Walter Hines (1855-1918), Amer. diplomat and editor; ambass. to Gt. Brit. during World War.

**Pagliacci**, I, opera by Leoncavallo (q.v.), 1892.

**Pagoda**, 1) (archit.) form of temple in India and China; usu. circular, consistg. of sev. stories each having a projecting roof. 2) (Numis.)

Gold coin formerly current in India; equiv. to abt. 8/- . **P. tree**, name of several Chin. and Jap. trees resembling P. in shape; esp. *Plumeria acutifolia*, bearing yellow and white flowers.



Pagoda

**Pahang**, largest of Federated Malay States, on E. coast Malay Penins.; 14,300 sq.m.; pop., 150,000; cap. *Pekan*.

**Pahlavi**, **Enzeli**, Persia's chf. port on Caspian Sea; pop., 20,000; Russian trade. Held by Russians in World War.

**Pahlen**, Peter, Ct. (1745-1826), leader of conspiracy which led to assassination of Paul I of Russia, 1801.

**Pai-ho**, river (350 m.), N. China, rises N.E. range of *Kuen-lun Mtns.*; flows into Gulf of Pe-chih-li.

**Pailleron**, Édouard (1834-99), Fr. poet and dramat.: *Le Monde où l'on s'ennuie*.

**Pain**, Barry Eric Odell (1865-1928), Brit. humorous writer and journalist; contributor to *Punch*, the *Speaker*, etc.; in *A Canadian Canoe*, 1891; *Eliza*, 1900.

**Paine**, John Knowles (1839-1906), Amer. composer. Oratorio, *Saint Peter*; *Columbus March*, etc. **P.**, **Thos.** (1737-1809), Brit. auth. and free-thinker; emigr. Amer. (champd. cause of independ.) and France during Revolutn.; member of Con-

vention, 1792; *The Age of Reason*, 1793, attack upon revealed religion.

**Painlevé**, Paul (1863- ), Fr. mathemat. and statesman; Pr. Min. and Min. of War, 1917; several times later Pr. Min. and Pres. of the Chamber.

**Painted lady**, *Pyrameis cardui*, butterfly with orange-red and black-spotted wings; fnd. in all temperate regions.

**Painting**, art of producing plane representations of natural objects or conventional decorative forms, etc., by applying colour to a surface. Principal processes are: *tempera p.*, in wh. colour is mixed with some medium such as glue or yolk of egg, soluble in water; *fresco p.*, or application of liquid pigment to a lime-plaster surface; *oil p.*, where colours are mixed with vegetable oils as media; and *water-colour p.*, a special form of tempera. For history and schools of painting see ART.



Painlevé

**Paisiello**, Giovanni (1740-1816), Ital. composer of operas and church music: *La Serva padrona*; *La Molinara*.

**Paisley**, largest tn., Renfrewsh., Scot.; pop., 86,400; manuf. cottons, woollens, carpets, and (formerly) Paisley shawls.

**Palace**, in the med. city, the house of a great lord, with hall and dwelling rooms; later a royal residence. **P. of Pleasure**, collection by W. Painter of tales taken from Livy, Boccaccio, Bandello, Straparola, and other class Ital. and Fr. writers; source of many Eliz. plays, 1st vol. pub. 1566.

**Paladin**, one of Charlemagne's knights (the 12 peers) (c.g., Roland) in Med. Romance; any knight-errant or champion.

**Palae-**, prefix: old (prehistoric). **Palaeogeography**, study of land and sea forms in early geolog. periods. **Palaeography**, sc. of inscriptions and writings of antiquity and Mid. Ages. **Palaeontology**, study of early forms of life from fossilised remains. **Palaeozoic Era**, oldest of great time division of wh. there are any clear organic records; see GEOLOGICAL FORMATIONS.

**Palaeomon**: see **INO**.

**Palaeolithic Period**, (archaeol.) Old Stone Age, division of Stone Age (q.v.); sub-divided into *Lower (Earlier) Palaeolithic* (Pre-Chellean, Chellean, Acheulean, Micoquean [qq.v.]); *Middle Palaeolithic* (Moustertian [q.v.]) and *Upper [Later] Palaeolithic* (Caspian, Aurignacian, Solutrian, Magdalenian [qq.v.]). Followed by Mesolithic or Epipalaeolithic Period (q.v.). This period passed through from glacial (ice) ages, with three inter-glacial periods. Man depended on hunting for subsistence. See also **EOLITHIC** and **NEOLITHIC**.



Jan van Eyck  
Man with Carnation



Dürer  
Portrait of a Girl



Raphael  
Gran Duca Madonna



Velazquez, Venus



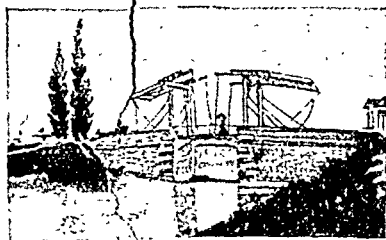
Rembrandt, Burgomaster Six



Leibl  
Peasant Girl



Manet  
The Bunch of  
Lilac



Van Gogh, The Drawbridge



Etty  
Youth at the Prow and Pleasure at the Helm



**Palaestra**, anc. Gr. wrestling school.

**Palafox y Melzi**, José de (1780-1847), Duke of Saragossa, Span. gen.; twice besieged in Saragossa by Napoleon's troops, 1808.

**Palais**, Fr. palace or other noble building.

**P. Bourbon**, built 1722 for Bourbon-Condé family, on left bank of Seine in Paris; now occupied by Chamber of Deputies. **P. de Justice**, group of bldgs. several times destroyed and rebuilt, on isl. of Cité, Paris; now seat of Fr. Law Courts; orig. residence of Merovingian kgs. c. 6th cent.; built on remains of Roman citadel; only mediaeval remains are Ste.-Chapelle, Conciergerie, and several halls and kitchens. **P. Royal**, in Paris, nr. Louvre (q.v.), built by Richelieu, 1629-34; S.W. wing now occupied by Council of State and Théâtre Français.

**Palamon and Arcite**, legendary kinsmen of Thebes, rivals for the love of Emilia; story adopted by Boccaccio (q.v.) in *Teseide* from Fr. redaction of a Grk. novel (both lost); re-told by Chaucer in the *Knight's Tale*; whence dramatised by Shakespeare and Fletcher in *Two Noble Kinsmen*; subject of poem by Dryden (q.v.).

**Palanquin**, in eastern Asia, covered conveyance borne by four men.

**Palatals**, (phon.) sounds pronounced with help of palate, e.g., *g, k, ch*.

**Palate**, (anat.) roof of the mouth. In front is the bony *hard P.*, wh. is connected at back with muscular *soft P.* The soft P. ends at the centre in the *uvula*, and on either side in 2 palatine arches betw. which lies the tonsil. In diphtheria, there is paralysis of soft P., causing speech to be nasal and fluid taken by mouth to be returned through the nose. See CLEFT PALATE.

**Palatinate**, Upper, dist. in Bavaria, Ger., from the Fichtelgebirge to Riv. Danube; 3,730 sq.m.; pop., 630,000; agric., cattle breedg., iron mines; cap., *Regensburg* (Ratisbon). See also PALATINE.

**Palatine**, pertaining to a palace, house with royal privileges, e.g., *county or earl palatine*. In the Holy Rom. Emp, the *Palatinate* was a State on the Rhine, whose ruler was one of the Electors (q.v.). **P. County**, Eng. term for a county (q.v.) sep. from rest of kgdm. for some purposes of government. For defence agst. Scots and Welsh respec. Durham and Cheshire were made P.Cs. in Mid. Ages, also Lancs, to provide income for its duke. Lancs still has own courts and other features of anc. semi-independent status. See LANCASTER, DUCHY OF. **P. Hill**, the centr. of the seven hills on which Rome was built.

**Palau, Pelew**, isls., W. of Caroline archipelago, Pacific Ocean; c. 185 sq.m.; pop., 5,320 (1,100 Jap.); tropical forest; largely volcanic; principal island, *Babelthnap*; export of phos-

phates. Bought by Ger. from Sp., 1899; under Jap. mandate since 1919.

**Palaver**, orig. used of conversations and bargaining, betw. Portug. and African natives; hence, idle unnecessary talk.

**Palawan**, mountainous isl. Native of Palau Playing String Game



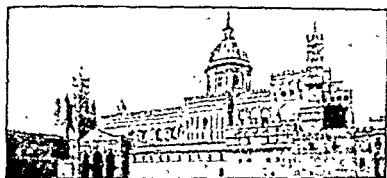
betw. Borneo and Philippines; belongs to U.S.A.; 4,850 sq.m.; pop., 89,760 (mostly non-Mahomm. Malays).

**Pale**, 1) boundary or limit. **English Pale**, dist., E. Ireland, comprising parts of cos. Dublin, Meath, Louth, and Kildare, estab. by parl. of Drogheda after 1494 and surrounded by a fence or "pale"; within the P. alone was the kg.'s writ effective; outside was hostile country. Existed till subjugatn. of Ireland by Elizabeth. 2) (Her.) Vertical stripe on shield, one third width of shield; one of the ordinaries. See HERALDRY.

**Palembang**, residency (33,150 sq.m.; pop., 872,550) and tn., pop., 62,915 (2,715 Eur.), in S.E. Sumatra; petroleum, tobacco.

**Palenque**, anc. ruined city, S. Mexico, deserted before Span. invasion; remains of so-called palace; Temple of Inscriptions; Temple of the Cross (cruciform tablet disc., 1842).

**Palermo**, cap. of prov. of P. in Sicily, It., on Bay of P., and on slopes of *Mt. Pellegrino*; pop., 390,000; R.C. abb., cathed., univ.;

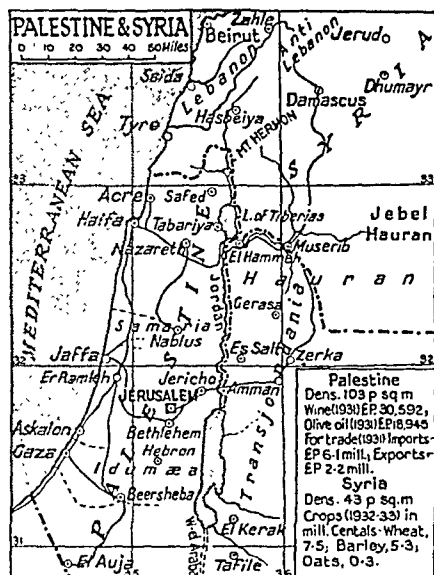


Palermo, Cathedral

machine and iron industries. Phoenician settlemt.; Roman, 254 B.C.; Moors, 830-1072; seized by Normans, 1072; Span., 1282; inquisition, 1513; earthquakes, 1693, 1726; delivered from Bourbon rule by Garibaldi, May, 1860.

**Palestine**, Canaan, the "Promised Land," country, W. Asia, under Brit. mandate; bounded W. by Medit., N. by Syria, E. by Syria and Transjordan (Jordan Vall. marking E. frontier) and S. by Sinai Penins. (Egy.) and the head of Gulf of Akaba. Area, 10,155 sq.m.; pop., 1,035,200 (760,000 Moslems, 175,000 Jews, 90,000 Christians). Balfour Declaration (1917) assigned P. as Jewish nat. home; immigration of Jews since the World War. Coast-line uniform, with Bay of Acre in North. Land rises from

maritime plain to high plateau of Judea (2,500 ft.; highest peak 3,320 ft.), scored by ravines and passes; on this plateau stands the cap., *Jerusalem*. To the E. the high ground is cleft by the great N.-S. rift vall. containg. the Jordan, Sea of Galilee, and the



Dead Sea, reaching a max. depression of 1,292 ft. below sea-level. In the N. are the foothills of Lebanon and Mt. Hermon. Maritime plain very fertile: wheat, barley, durra, olives, oranges, apricots, figs, tobacco; vineyards; cattle, sheep, goats, camels. Minerals include rock salt and sulphur. Exports, oranges, soap, wines, almonds, durra, hides, and skins. Climate hot in summer, rainy in winter. Rlys. (incl. Sinai Milit. Rly., Kantara-Rafa), 455 m. Ports: Jaffa and Haifa. Brit. mandate (1923) includes Transjordan (q.v.). History, see JUDAH and JERUSALEM.

**Palestrina**, Giovanni Pierluigi da (1525-1594), Ital. composer; ch. music: *Missa Papae Marcelli*; *Impropria* (since 1560 performed every Good Fri. in Sistine Chapel). By Council of Trent his work was recognised as model for ch. music.

**Paley**, Wm. (1743-1805), Brit. theologian, archdean. of Carlisle; *Popular Evidences of Christianity*, 1794; etc.

**Palgrave**, F. T. (1824-97), Eng. poet and critic; Prof. of Poetry at Oxford, 1884;



Palestrina

*Golden Treasury of English Songs and Lyrics* (anthology).

**Pali**, dial. of Sanskrit (q.v.), sacred lang. of Buddhism. See LANGUAGE SURVEY, Ind. Language.

**Palimpsest** (Gr.), parchment twice written on, the writg. havg. been removed; by chem. means orig. writing can often be restored and rendered legible.

**Palindrome** (Gr.), word that reads the same backwards or forwards, e.g., "redder."

**Palingenesis** (Gr., re-birth): 1) relig. regeneration; 2) metempsychosis (q.v.); 3) (biol.) exact reproduction in offspring of ancestral characters.

**Palisade**, strong stake having lower end set firmly in ground, with other end sharpened; fence made of palisading.

**Palissy**, Bernard (c. 1510-89), Fr. potter and enameller; workshop in Tuileries (1564-65); perfected process of coloured enamel ware named after him.

**Palk Strait**, channel (40-80 m.) separating India from Ceylon; divided by Adam's Bridge (q.v.) from Gulf of Manar.

**Palladio**, Andrea (1508-80), Ital. architect; revived style of anc. Rome; *Four Books of Architecture*. Hence *Palladian style* (introd. into Eng. by Inigo Jones, 1620).

**Palladium**, 1) (myth.) wooden statue of Gr. goddess Pallas Athene, on preservation of wh. safety of ancient Troy was believed to depend; hence, anything wh. affords protection, a safeguard. 2) (Astron.) Name of one of the asteroids (q.v.). 3) (Chem.) Hard, silvery-white metal belonging to platinum group; symbol, Pd; sp. gr., 11.8; at. wt., 106.7, m.p. 1557°C.; used as an alloy with gold in jewellery and dentistry; a useful catalytic agent, esp. in hydrogenation.

**Pallas**, name of Athena (q.v.).

**Palliative**, in med., relief of symptoms without curing.

**Pallium**, vestment of anc. orig. in R.C. Ch.; a narrow looped band of white lamb's wool, passing over the head with 2 pieces falling back and front; orig. worn only by Pope, now symbol of office of abps. and metropolitans.

**Pali Mall**, thoroughfare from Trafalgar Sq. to St. James's Palace, London; noted club centre.

**Palm**, 1) inner surface of hand betw. wrist and bases of fingers. 2) Member of order of trees, *Palmaceae*; incldg. both trop. and sub-trop. species; branchless trunk and a spreading mass of large leaves at summit. See COCONUT P.; DATE P., etc. 3) (Meas.) Anc. Hebr. and obs. Eng. linear meas., 3 in., or 1/3 span. **P. oil**, palm butter, yellow or red fat obtained from the kernels of the W. African oil palm (*Elais guineensis*); also from a S. American palm; used in the manufacture of margarine and soap. **P. Sunday**,

Sunday before Easter, commemorating entry of Christ into Jerusalem, when palm leaves were strewn before Him.

**Palma Jacopo** (Palma Vecchio) (1480-1528), Ital. painter of Venetian School.

**Palma, Palma de Mallorca**, 1) cap. of the Balearic Isls., Sp.; fortified harbour; pop., 81,400. 2) San Miguel de la Palma, one of the Canary Isls.; cap., *Santa Cruz de la Palma* (pop., 7,000).

**Palman qui meruit ferat** (Lat.), let him who has deserved the palm (of victory) bear it off; Nelson's motto.

**Palmerston**, Henry John Temple, 3rd visct. (1784-1865), Brit. statesm.; For. Min., 1830-41, 1846-51; dismissed for independent attitude in for. affairs; Home Sec., 1852; Pr. Min., 1855, '57, '59; supported independence of Belgium and maintenance of Ottoman Empire.

**Palmetto State**: see SOUTH CAROLINA.

**Palistry, chiromancy**, art or practice of foretelling personal destiny or character from lines and folds in palm of hand; known in anc. China and mentioned in Gr. and Rom. lit.; still extensively practised



Palmerston

#### PALISTRY

A) Pointed finger; B) Conic finger; C) Spatulate finger; D) Square finger; E) Will power; F) Logic.

Mounts. G) Venus; H) Jupiter; I) Saturn; J) Sun; K) Mercury; L) Mars; M) Moon.

Lines. 1) Life; 2) Head; 3) Heart; 4) Saturn; Fate; 5) Sun. Fortune; 6) Girdle of Venus; 7) Hepatic; Liver; 8) The Rascette.



in East, and in Europe, esp. by gypsies; relative prominence of lines or fleshy pads (*mounts*) is supposed to indicate degree in which various qualities exist in subject.

**Palmitic acid**,  $C_{16}H_{32}O_2$ ; fatty acid found combined with glycerine (*q.v.*) in numer. animal and veg. fats and oils, e.g., spermaceti and palm oil; when saponified with alkalis forms hard soaps; acid is used in manuf. of candles.

**Palmyra**, ruined city, Syrian Desert; known to exist bef. 300 B.C.; under Rom.

rule c. A.D. 15; revolt of Syrians under Qn. Zenobia agst. Romans (c. A.D. 270) ended in conquest and destructn. of P. by Aurelian, 272.



Palmyra

**Palolo** worm, marine edible worm of the South

Seas, measuring from 9 to 18 in.; emerge from sunk coral reefs in immense numbers, periodically in Oct. and Nov., when the natives catch them in nets.

**Palpation**, (med.) diagnosis by feeling parts of body with hand.

**Palpitation**, (med.) unusually rapid beating of the heart, with such force that subject is conscious of the beats.

**Pályi**, Melchior (1892- ), Hung. pol. econ.; *Unsolved Problems of Theory of Money*.

**Pamir**, "Roof of the World," high mtn. plateau (13,000 ft.), Centr. Asia, in Russia, Afghanistan, and China; focus of great Asiatic ranges (Tien Shan, Kunlun, Karakoram, Himalayas, Hindu Kush); comprises high valleys or "pamirs" separated by ridges 5,000 ft. above gen. lvl.; several lakes; headwaters Riv. Oxus (Amu Darya); climate rigorous; visited in summer by Kirghiz shepherds.

**Pampas**, large, treeless, grassy plains of S. Amer., S. of Amazon. **P. grass**, *Cortaderia argentea*, ornamental, variegated perennial grasses; *Poa caespitosa* indig. to Austrl.; in Sthrn. U.S.A., *Chrysopsis graminifolia*. **Pampiro**, cold wind blowing from Andes across the pampas.

**Pamphlet**, small book of one or more sheets stitched, but not bound; a short essay.

**Pamplona**, cap. of Navarra, Sp., on Riv. Arga; fortif.; pop., 33,300; textile indus.; 12th-cent. Romanesque Cathedral.

**Pan**, (Gr. myth.) god of flocks and shepherds; goat-legged, horned. A piper, playing on reeds, or **Pan pipes**. His sudden appearance to travellers induced a **Panic** fear.

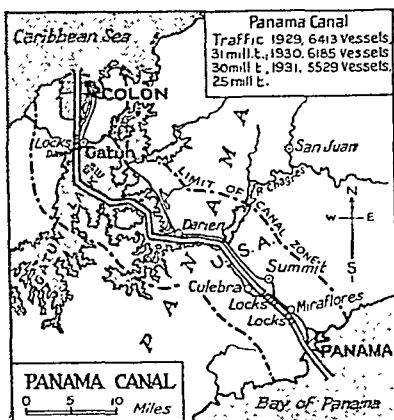
**Pan-** (Gr.), prefix: all, universal. **Pan-america**, concept of co-operation of all States in N. and S. Amer. to combat influence of non-American States over smaller States of America. See MONROE DOCTRINE. **Pan-athenaea**, in anc. Greece, greatest Athenian festival (in honour of Athena). **Pandemonium** (Gr.), complete confusion, literally, gathering of all evil spirits; in Milton, equivalent of Hell. **Panentheism**, philos. doctrine that the universe is contained in God; distinct from **Pantheism** (the world is God), and from **Deism** (world is outside God).

**Pan-Europe**, movement initiated by Austr. Count Coudenhove and Count Kalerghi, to establish economic and polit. union in Eur. (United States of Europe). **Pangeneses**, discredited theory that every part of organism contributes to production of offspring. See WEISMANN. **Pan-Islam**, collective name for Mohammedan races considered as a whole. **Panpsychism**, 1) doctrine that there is soul in all things (see HYLOZOISM); 2) theory that the human reason is merely a channel for the manifestation of Divine reason. **Panslavism**, movement originating in Tsarist Russ. to unite all Slav peoples un-

der Czar. **Pantheism**, philos. doctrine that the whole universe is God, and every part of it a manifestation of Him (*cf.* PANENTHEISM).

**Panada**, mixture of flour, butter, and liquid, used as flavouring and for binding of meat or fish.

**Panama**, Centr. Amer. Repub. on *Isthmus of P.*, (40 m. wide, connecting N. and S. Amer.); mountainous country with damp, tropical forest on Atlantic side and dry plains on Pacific side; 32,000 sq.m.; pop., 468,000 (52,200 whites); chf. export, bananas. Cap. P., on *Gulf of P.*, Pac. Oc., pop., 62,000; pearl fishery. Formerly a dept. of Colombia, P. decld. its indep. in 1903: the Canal Zone is under jurisdiction of U.S.A., as also are (for certain purposes) the cities of P. and Colón. **P. Canal**, through *Isthmus of P.*, from Colón, on Atlantic, to P., on Pacific; 50½ m.; 46 ft. deep; channel width 300-1,000 ft.; on N., Gatun Lake (85 ft. above sea-lvl.) is entered by Gatun locks; through Gaillard Cut, on S., sea-lvl. is reached by Pedro Miguel and Miraflores locks; canal runs due S., from Colón into Gatun lake, then S.E. to Panama; passage takes 7-9 hrs. Work begun, 1881, by P. Canal Co., fndd. by de Lesseps; sus-



pended 1889 (P. scandal); completed 1904-14 by U.S.A.; cost \$373,600,000; U.S.A. owns Canal Zone (5 m. on either side). **P. palm**, *Jipijapa* (*Carludovica palmata*), a palm-like plant of Centr. Amer., from the leaves of which the genuine Panama hats are made.

**Panchromatic plates**, (photog.) plates sensitive to the entire spectrum and used either for isochromatic photog. with a suitable screen where a full colour-value rendering is required, or for the three-colour process. Development must take place in darkness or in a green safe light.

**Pancras, St.**, suffered martyrdom A.D. 300 at Rome, aged 14; 1st ch. consecrated in Eng by St. Augustine was dedic. to him.

**Pancreas**, (physiol.) gland situated below and behind stomach; P. secretes into small intestine the pancreatic juice wh. is essential to digestive process; also manufactures internal secretion, insulin (*q.v.*), wh. passes directly into blood-stream.

**Panda**, small, handsome carnivore sometimes called the *Cat-bear*; magnificent red coat and long, ringed tail; size of large cat; expert climber; fnd. in E. Himalayas; valuable fur.

**Pandanus**, palm-like Malayan plants the leaves of wh. furnish a useful fibre. Certain varieties are cultivd. as ornamental plants.

**Pandects**, compendium of Roman law compiled by Justinian in 6th century.

**P. and O.**, abbr. Peninsular and Oriental Steam Navigation Co., fndd. 1834; fleet consists of c. 42 liners, tugs, etc.; service from England to India, Australia, New Zealand, and the Far East.

**Pandora**, (Gr. myth.) the first woman; fashioned by Zeus to bring ruin on the human race; married Epimetheus (*q.v.*); in **P.'s Box** were all the evils that beset mankind; opened by P. and evils let loose, Hope alone remaining inside.

**Panegyric** (Gr.), speech or song of high praise; eulogy.

**Panem et circenses** (Lat.: bread and circus shows), all that the public wants, acc. to the satirist Juvenal (*q.v.*).

**Pangolin**, scaly ant-eater, Old World edentate of S.E. Asia and Centr. and S. Afr., having complete coat of overlapping, horny scales enveloping head, body, tail, and limbs, giving it appearance of a fir-cone; long, worm-like tongue; powerful claws used for breaking into nests of termites and ants, on which it feeds. Rolls itself into a ball when alarmed.



Pangolin

**Panic**, unreasoning fear; once believed to be inspired by *Pan* (*q.v.*).

**Panicum**, (bot.) irreg.-branched cluster; compound raceme. **P. grass**, useful forage grass (*manna grasses*).

**Panicum**, (bot.) large genus of grasses. Millet, used as a food grain, is *P. miliaceum*.

**Panizzi**, Sir Anthony (1797-1879), Brit. librarian; inaugurated book catalogue and reading room at Brit. Museum; principal librarian, 1856.

**Pankhurst, Emmeline** (1858-1928), Eng. suffragist; co-finder. Women's Social and Political Union; with her daughters, **Christabel** (1880-), and **Sylvia** (1882-), led mili-



Mrs. Pankhurst

tant campaign for extending suffrage to women from 1908.

**Panne**, silk velvet with lustrous surface, threads of wh. are turned over by ironing.

**Panner**, (min.) primitive miner, who washes alluvial or ground ore, in pan, with water, with a peculiar swirling motion, causing light, worthless material to be thrown out, the valuable mineral remaining.

**Pannwitz**, Rudolf (1881- ), Ger. philos. and poet: *Crisis of European Culture*.

**Panopticon**, name of circular prison, suggested by Jeremy Bentham, enabling supervision of prisoners from a centr. point, espec. that built (1813-23) at Millbank, London, where Tate Gallery now stands.

**Panorama**, complete view of landscape; survey; series of large pictures painted on canvas, wh. unroll and pass consecutively before spectator. **P. telescope**, apparatus for obtaining vision of whole horizon; revolving telescope connected by prisms with fixed eye-piece. See PERISCOPE.

**Panspermy**, hypothesis propounded by Arrhenius (q.v.) that life in the most primitive form is carried about the universe by the pressure of light, which overcomes gravity on very minute objects. A planet, as it cools and becomes habitable, may be "infected" by germs, which then develop higher forms of life by evolution.

**Pansy**, member of the violet family, cultivated in many varieties.

**Pantagruelism**, theories and practice of Pantagruel; see RABELAIS; burlesque, ironical buffoonery, covering serious satire.

**Pantaloon**, typical senile character in Italian *Commedia dell'Arte*; imported thence to the modern Harlequinade.

**Pantelleria**, Ital. isl., Mediterranean, 70 m. S.W. of Sicily; 35 sq.m.; pop., 10,000; mineral springs.

**Pantheon**, in anc. Rome, circ. temple dedic. to "all the gods"; since 7th cent. a Chr. ch. (Sta. Maria Rotonda); tomb of Raphael and of the kgs. of Italy.

**Panthéon**, in Paris; orig. ch. of Ste. Geneviève (blt. 1765); secularised and renamed P. during Fr. Revolution; burial place of many disting. Frenchmen.

**Panther**: see LEOPARD.

**Pantograph**, device for reproducing drawings on a larger or smaller scale, or of same size.

**Pantomime**, theat. or ballet performance

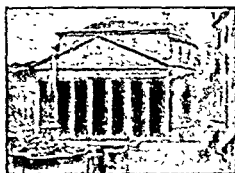
in wh. performers convey meaning by mime (q.v.), usu. set to music; now esp. burlesque of fairy tale, combined with harlequinade, given at Christmas.

**Papa** (Lat.), the Pope. **Papabile**, designation of cardinals who are considered likely successors to the papacy. **Papacy**, office or state of the Pope (q.v.) as spiritual or temporal ruler; papal authority based on claim that St. Peter and his successors as bps. of Rome were appointed by Jesus Christ His vicars on earth; nature and extent of authority of early Popes much disputed; conversion of Northern barbarians by Rom. missionaries in 6th and 7th cents. consolidated papal authority; after fall of Western Empire, secular government of Rome and district tended to concentrate on Holy See; in 11th and 12th cents. several great Popes (Gregory VII, Urban II) consolidated papal authority within and without It.; long contests of Popes with Holy Roman Empire and France culminated in Great Schism (q.v.); Reformation and growth of national spirit in 16th to 17th cents. restricted sphere of papal influence in temporal concerns; kgdm. of United It. suppressed temporal rule of P. in Rome itself (1870); this was partially restored (1929) by formation of Vatican City (q.v.). **Papal brief**, letter written in modern characters on thin white parchment, issued from Vatican Court; stamped with Pope's "Ring of the Fisherman" (q.v.). **Papal Bull**: see BULL. **Papal legate**, envoy, always a Cardinal, appointed to represent Pope outside Vatican State for some specific and temporary purpose; cf. NUNCIO. **P. States**: see STATES OF THE CHURCH.

**Papain**, enzyme (see FERMENTS) present in juice of the papaw (q.v.), and used as a digestive; similar to pepsin (q.v.).

**Papaw, papaya**, *Carica papaya*, tropical palm-like tree with yellow thick-skinned fruit having an edible pulp; pulp contains papain (q.v.).

**Paper**, material composed of vegetable fibres, matted and compressed into sheets, used as basis for printing and writing, for wrappings, wall-coverings, etc. Origin of paper-making obscure but known to have been practised by Chinese in 2nd cent.; in general use (made from cotton) in 8th cent.; in Europe, first made in Sp.; cotton replaced by linen c. 14th cent.; first paper-mill in England, Tate's (at Hertford), 16th century. **P. manufacture**: 1) *By hand*. Old rags are graded according to quality and colour, cut into small pieces, and passed into a wil-



Pantheon, Rome



Papaw

lowing machine to remove dirt and break up; next process is boiling, to remove chemical impurities and foreign matter; when this is complete the result—technically known as “half-stuff”—is bleached and still further broken (the fibres being thoroughly separated and reduced in size), and “loading” with mineral clay and colouring takes place. The material, now technically “pulp,” is run into vats into wh. is dipped a wooden mould with a wire cloth stretched across, on which fits a movable deckle. The mould, when lifted, retains a definite quantity of pulp wh., when surplus water is drained, forms a moist sheet of paper. This is placed on a damp felt; the process is repled. until a pile of alternate sheets and felts is formed; these are pressed, then separated, pressed again, and finally sized, dried, and glazed.

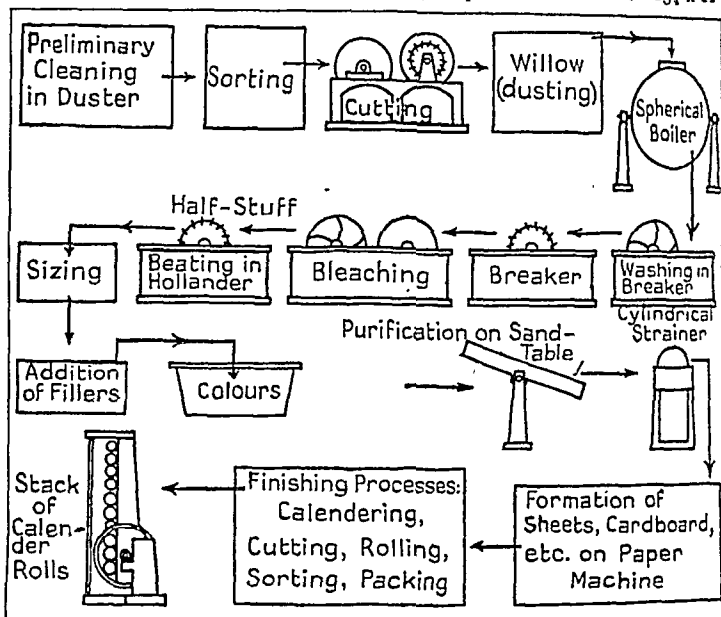
2) *Machine manufacture:* At beginning of last century Fourdrinier introduced into England a mach. for paper - making wh., with var. improvmts., has revolutionised the process. Half-stuff, in an agitated state, is ejected on to an endless travelling cloth composed of wire of very fine mesh through which surplus water drains. At end of this cloth the fibres become in reality a continuous sheet of wet paper. This is passed over a couch roll and, alternately, over and under drying cylinders of progressive temperature, thus drying paper, which is then run on to reels or cut into sheets.

**MATERIALS:** Increasing demands for printing papers has caused a search to be made for other materials; wood has proved the most useful. Trees reduced to pulp either by crushing or boiling and, as pulp, transported to the paper mills throughout the world. Esparto (coarse grass grown in Spain and Africa) is another important discovery. The leaf is plucked and baled as pulled. Other common materials used in papermaking include straw, jute, hemp, and manilla hemp.

**Ordering:** Paper is bought by the ream, consisting of 480, 500, or 516 sheets. It is usually sold at a given price per pound, according to quality, the total ream prices being governed by the number of pounds weight to the ream.

STANDARD SIZES FOR PAPER, BOARDS AND CUT CARDS.

PAPERS		Inches
Writings		
Foolscap		13 $\frac{1}{2}$ x 16 $\frac{1}{2}$
Small Post		14 $\frac{1}{2}$ x 18 $\frac{1}{2}$
Sheet and $\frac{1}{2}$ Cap		13 $\frac{1}{2}$ x 22



#### Paper Manufacture

Sheet and $\frac{1}{2}$ Cap	13 $\frac{1}{2}$ x 24 $\frac{1}{2}$
Small Demy	15 $\frac{1}{2}$ x 20
Large Post	16 $\frac{1}{2}$ x 21
Small Medium	17 $\frac{1}{2}$ x 22
Medium	18 x 23
Small Royal	19 x 24
Super Royal	19 x 27
Imperial	22 x 30

#### Printings

Large Foolscap	13 $\frac{1}{2}$ x 17
Crown	15 x 20
Large Post	16 $\frac{1}{2}$ x 21
Demy	17 $\frac{1}{2}$ x 22 $\frac{1}{2}$
Medium	18 x 23
Royal	20 x 25
Large Royal	20 x 27
Imperial	22 x 30

#### BOARDS (TRIMMED)

Royal	20 x 25
Postal	22 $\frac{1}{2}$ x 28 $\frac{1}{2}$
Imperial	22 x 30
Large Imperial	22 x 32
Index	25 $\frac{1}{2}$ x 30 $\frac{1}{2}$

## CUT CARDS

	Inches
Thirds . . . . .	1 $\frac{1}{3}$ x 3
Extra Thirds . . . . .	1 $\frac{1}{3}$ x 3
Small . . . . .	2 x 3 $\frac{1}{2}$
Carte-de-visite . . . . .	2 x 4 $\frac{1}{2}$
Large . . . . .	3 x 4 $\frac{1}{2}$
Postcard . . . . .	3 x 5 $\frac{1}{2}$
Court . . . . .	3 x 4 $\frac{1}{2}$
Double Small . . . . .	3 x 4 $\frac{1}{2}$
Cabinet (photo.) . . . . .	4 x 6 $\frac{1}{2}$
Double Large . . . . .	4 x 6
Quad Small . . . . .	4 x 7 $\frac{1}{2}$
Quad Large . . . . .	6 x 9

**Paper-chase**, cross-country run, in wh. 2 of the runners (hares), receiving a start, lay a trail with paper, wh. is followed by the rest. **P. currency**, paper money issued (chfly. by note-issuing banks) which is inconvertible, i.e., cannot be exchd. for gold. *Actual C.* may be paper notes, but if convertible into gold, is not P.C. but *gold notes*. **P. nautilus**, or **argonaut**, eight-armed cephalopod; female has thin, slightly coiled shell which is clasped by her two front arms, while her body rests within but is unattached. See NAUTILUS. **P. Tiger, War of the**, name given to conflict in S. China with bandit who received the name of P. T. from his extreme ferocity; its successful issue during 1924 led to establishment of rule of Kuomintang (q.v.) in Canton and province.

**Paphos**, anc. city in Cyprus, famous for Temple of Aphrodite.

**Papier-mâché**, paper pulp treated with size; moulded while soft into boxes, toys, ornaments, etc.; often coated with coloured lacquer (q.v.).

**Papilionaceae**, (bot.) large family of plants, having the corolla (q.v.) shaped like a butterfly, e.g., the pea.

**Papillae**, (physiol.) small excrescences, e.g., nipples.

**Papillon**, "butterfly dog," very small var. of pet dog, white with yellow, brown or black markings, thick silky coat, and large ears.

**Papin**, Denis (1647-1710), Fr. phys. and inventor, best known by **P.'s Steam Digester**, used for cooking or extracting substances with water over b.p. in sealed vessel capable of withstanding pressure (*autoclave*). Pioneer of steam engine, steam pump, gas (explosion) engine, steamboat.

**Papinianus**, Aemilius (A.D. 140-212), Rom. jurist; *Quaestiones* and *Responsa*.

**Pappus**, hairy tuft crowning fruit or seeds of certain plants such as the dandelion.

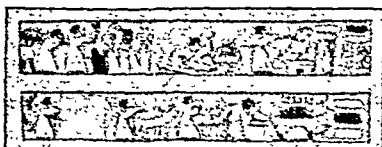
**Pappus of Alexandria** (3rd and 4th cent. A.D.), Gr. geometer; problems on circles and spirals; see GOLDENUS'S THEOREM.

**Papua** (Malay, curly headed; orig., name of aborigines of Oceania, including New Guinea), official title of Brit. New Guinea

(q.v.). **Papuan**: see LANGUAGE SURVEY, *Austral-Languages*.

**Papworth**, parish, W. Cambs, 5 m. S.E. of Huntingdon; vill. settlement for tuberculosis patients.

**Papyrus**, paper reed, *Cyperus papyrus*, tall sedge growing in Egy. and other countries; from the pith, cut into strips, dried and



Egyptian Papyrus—Portion of Book of the Dead

stuck together, the writing material of the ancients was prepared. **Papyri**, anc. Egyptian MSS. on rolls of P. containing many important relics of Egypt. and Gk. literature.

**Par**, nominal value of shares or debentures; or nominal value in relation to gold equivts. of one currency in relation to another. In bills of exchange, value equiv. to gold parity. **P. of exchange**, rate of foreign exch. corresp. to gold parity; see PARITY.

**Pará**, 1) State, N.E. Brazil, on Amazon and P. rivs., bounded on N. by Brit., Fr., and Dut. Guianas; on E. by Atlantic; 444,000 sq.m.; pop., 1,400,000; forests and plains. 2) Cap. P., officially *Belém*; pop., 250,000; port at mouth of P.; exp. of rubber, cocoa, Brazil nuts. 3) *Rio Pará*, (c. 190 m.), estuary of Riv. Tocantins (q.v.).

**Para-**, Gr. prefix meaning near, against, contrary to, e.g., parachute (against a fall).

**Parabasis**, in theatre, destruction of illu-

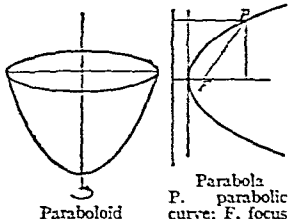
sion by direct speech to audience; originating in Old Attic comedy.

**Parable**, a didactic story in form of a simile.

**Paraboloid**,

(geom.) symmetrical curve produced when a circular cone is cut by a plane perpendicular to the generatrix (see CONE, *Conic section*); parabolic curve is geom. locus of all points equidistant from a line (*directrix*) and a point (*focus*); see Illustration. **Parabolic**, (geom.) having form of parabola. **Paraboloid**, (geom.) non-centric figure formed by *revolution* of parabola on its axis.

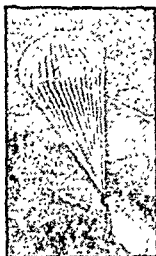
**Paracelsus**, Theophrastus Bombastus v.



Paracelsus

Hohenheim (1493-1541), Ger. physician, naturalist and mystic philosopher; introduced new methods of treatment. Robt. Browning (*q.v.*) used the name and (in part) the character for a psychological poem pubd. 1835.

**Parachute**, device enabling a person to descend from aeroplane or airship whilst in flight; resembles umbrella in shape, with large silk canopy; opens automat. or on aviator pulling rip-cord. P. descends at from 16-24 ft. p. second. First successful P. descent made by Garnerin from a balloon, Paris, 1797.



Parachute Descent

**Paraclete** (Gr. advocate, defender), title given to the *Holy Ghost* (John xiv. 16, etc.).

**Paradise** (Pers., enclosure), abode of the blessed after death; in O.T. *Garden of Eden*; the idea is present in nearly every religion. **P. Lost**, epic poem on Fall of Man in 12 books (1667), by Milton (*q.v.*); he followed it (1671) with **P. Regained** (4 bks.).

**Paradox**, apparent contradiction or absurdity; statement contrary to accepted opinion.

**Paraffin**, 1) (chem.) one of the paraffin series of hydrocarbons (*q.v.*). 2) Term used in Eng. as synonym for petroleum lamp-oil, or kerosene, also for paraffin wax; medicinal petroleum is called liquid paraffin.

**Paragoge**, (gram.) addition of letter or syll. at end of word; e.g., *amidst* for *amid*. **Paragogic future**, cohortive tense in Heb. gram.; lengthened form of imperf. or future tense, usu. confined to 1st person, giving sense of "let me," or "let us."

**Paragraph**, distinct part of discourse or writing, marked by ¶, or begun on new line usu. inset from margin.

**Paraguay**, 1) S. Amer. inland repub. betw. Bolivia, Brazil, and Argentina; many lakes and marshes; 61,600 sq.m. (omitting Chaco, 100,000 sq.m., in dispute with Bolivia); pop., 1,000,000; chf. exports, hides and meat extracts; cap. and port, *Asunción*. Constit. of 1870 provides for Pres., Senate (20), and Chamb. of Deputies (40.) Colony of Spain, 1535; Jesuit mission State, 1588-1768; indep. since 1811; many revolutions.



**Parahyba**, cap. of State, Brazil (29,000 sq.m.; pop., 1,400,000); Franciscan convent; pop., 52,800.

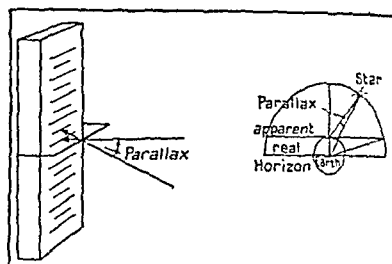
**Parakeet**, general name for the smaller members of the parrot family; varying in size from a sparrow to that of a magpie, with short, strong beak and long tail; long wings; brilliant plumage; tropical birds of Australia, Asia.

**Parallipomena** (Gr.), left to one side; name given in Douai Bible (*q.v.*) to Books of Chronicles.

**Parallax**, 1) (astron.) angular difference betw. apparent and true altitude (*q.v.*) of a celest. body; i.e., angle made at celest. body betw. position of observer and centre of earth; varies with alt. of star and time and place of observation. P. and length of earth's radius give data for calculating distance of sun or moon from earth, light year



Parakeet

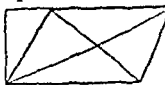


Parallax

(*q.v.*), and parsec (*q.v.*). 2) (Physics) apparent deviation when reading scale, e.g., of thermometer, obliquely; see fig.

**Parallel**, (geom.) straight lines and planes always at equal distance from each other, though prolonged to infinity, are said to be parallel. **Parallelepipedon**, geom. figure bounded by 3 pairs of parallel surfaces. **Parallelism**, of verses (Lat. *parallelismus membrorum*), verse form, esp. in classic. Heb. poetry in which contrasted ideas appear in antithetic clauses.

**Parallelogram**, quadrilateral figure with opposite sides parallel; opposing lines and angles equal. **P. coupling**, see COUPLING. **P. bars**, gym. apparatus for balancing exercises, etc.



Parallelogram

**Paralysis**, 1) complete loss of muscular power. 2) **General P. of the Insane** (G.P.I.), syphilitic softening of brain; improvement possible by infection with malaria. 3) **P. agitans**, Parkinson's disease, shaking palsy, characterised by trembling of hand and mask-like face.

**Paramaribo**, cap. of Dut. Guiana, S. Amer.; port; pop., 47,500.

**Parameters**, (eccles.) gen. term for altars, cloths, hangings, candelabra, vestments, and other things of beauty used for adornment of a ch. or its services.

**Parameter**, (geom.) in Conic Sections, chord on focus, vertical to principal axis.

**Paraná**, 1) S. American riv., formed by Parahyba and Rio Grande; length 2,300 m., width  $\frac{3}{4}$  to 2 $\frac{1}{2}$  m.; navigable up to Asun-



ción. 2) State of Brazil, betw. Upper and Centr. P. and coast; 77,150 sq.m.; pop., 1,000,000; cap., *Curityba*. 3) Argentine tn. on P. riv., port; pop., 38,000; cap. of Argentina, 1852-1861.

**Paranoia**, a severe mental disease, often chronic, with definite delusions.

**Paraphenylene diamine**,  $C_6H_4(NH_2)_2$ , organic chemical largely used for dyeing hair brown to black. Many people are sensitive to it, and suffer from severe and intractable skin disease after its use, or even from contact with fur dyed with it.

**Paraphrase**, re-writing in diff. words or notes, for elucidation of an idea or melody.

**Parapsychology**, doctrine of hidden psychic forces operating at a distance (telepathy, telekinesis, "second sight"); see OCCULTISM.

**Para rubber**, secretion of Brazilian tree, *Hevea brasiliensis*; see RUBBER.

**Parasag**, anc. Pers. linear meas., c. 3½ miles; see FARSAKH.

**Paraseleno**, or **parhelion**, mock moon or sun; brilliant spot appearing on lunar or solar halo (q.v.).

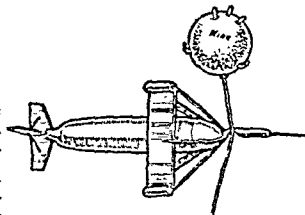
**Parasite**, animal or plant living at the expense of another (host), either consuming its substance (e.g., certain bacteria and protozoa, and some insects and crustaceans during larval stage) or subsisting on its food but not drawing nourishment from the host itself (e.g., tapeworm); latter class properly known as *commensals*.

**Parataxis**, arrangement of clauses or propositions without connectives.

**Parathyroid glands**, four glands close to, or within, *thyroid G.*; regulate distrib. of calcium in body. If the glands are all removed, tetany (q.v.) supervenes, and convulsions occur.

**Paratyphoid**, fever resembling typhoid, but caused by different bacterium; usu. carried by water or milk.

**Paravane**, weapon of defence agst. submarines and mines; consists of torpedo-shaped body towed by long wire from ship,



Paravane

and fitted with plane and automatically controlled depth rudder, so that it remains below surface and some distance to side of ship's course; used to deflect mines aside and cut them adrift, and as torpedo against submarines.

**Parcae**; see FATES.

**Parchment** (derived from *Pergamon*;

q.v.), shaved, untanned, smoothed skin, used as writing material before invention of paper, now only for book-bindings and drums. **P. paper**, vegetable paper treated with zinc chloride or sulphuric acid; transparent, durable. Used for documents; as filter in dialysis (separation of crystalline and non-crystalline substances); for sealing household vessels, etc.

**Pardon**, 1) forgiveness. 2) (Eccles.) A papal *indulgence* (q.v.). **Pardoner**, one licensed to grant or sell papal indulgences.

**Paregoric**, tincture of camphor, containing also opium, aniseed, and benzoic acid, used medic. to relieve coughs and colic; dangerous for children.

**Parenteral route**, means by which drugs are given other than by way of alimentary tract, e.g., intravenous (into veins) and intraspinal (into spinal cord); see INJECTION.

**Parenthesis**, word or phrase interpolated in a sentence grammat. complete without it. **Parentheses**, marks ( ) used to indicate parenthesis.

**Parerga** (Gr. "by-works"), appendices; collected minor works; *Parerga and Paralipomena*, see SCHOPENHAUER.

**Par excellence** (Fr.), pre-eminently; outstanding.

**Parhelion**: see PARASELENE.

**Pariah**, in southern Ind., oppressed, despised race of people; hence desig. lowest classes of society, outcasts, "untouchables."

**Parietal bone**, (anat.) skull-bone on either side of head, behind and above the ear.

**Parimutuel**, system of betting in which amounts staked are paid into a pool which is divided between winners after deduction of costs of operation; usually operated by means of *totalisator* (q.v.), use of which on horse race-courses was legalised in Eng., 1928.

**Paripassu** (Lat.), with equal step; side by side; on the same lines.

**Paris**, (Gr. myth.) son of Priam, Kg. of Troy; judged the beauty of Hera, Athena, and Aphrodite, awarding prize ("Apple of



The Judgment of Paris, after Rubens

Discord") to Aphrodite; his abduction of Helen was cause of Trojan War. See ERIS; PHILOCTETES.

**Paris**, Matthew, (c. 1200-59), Eng. monk and chronicler; *Chronica majora* (ending 1259).



cious metal in their coins, e.g., the gold content of £1 is worth \$4.8665 in U.S.A. currency.

**Park**, Mungo (1771-1806), Brit. explorer of interior of Africa.

**Park**, 1) in orig. sense, tract of land preserved for hunting. 2) Private land surrdg. a country house, planted with trees and laid out ornamentally; or similar land reserved for use of public in or near a town. 3) (Milit.) Space in encampment for artillery, etc.; hence, space reserved, stand or enclosure for temporary use of motorcars, etc.

**Parker, Sir Gilbert** (1862-1932), Canadian novelist and Brit. politician; *When Valmond came to Pontiac*. **P., Sir Hyde** (1739-1807), Brit. admiral, served in N. Amer. waters, 1766-80; assisted his father, Sir Hyde Parker (1714-82) in battle of Dogger Bank, 1781; rear-admiral at Toulon and Corsica, 1793; commanded in Jamaica, 1796-1800; in command (Nelson 2nd in command) of fleet attacking Copenhagen, 1801; recalled and censured for failing to follow up victory in Baltic; succ. by Nelson. **P., Joseph** (1830-1902), Brit. Congregational divine; pastor at Banbury, 1853; Manchester, 1858; and London, 1869. Twice chmn. of London Congregational Board and of Congreg. Union of Engl. and Wales; responsible for bldg. of City Temple, Holborn Viaduct, opened 1874. **P., Louis Napoleon** (1852- ), Brit. composer, dramatist, and pag-eant master and designer; director of music, Sherborne School, 1873-92; *Disraeli*; *The Vagabond King*; *Young Tamlane*.

**Parkinson, James** (1755-1824), Brit. physician, specialised in nervous diseases. **P.'s. disease:** see PARALYSIS AGITANS.

**Park Lane**, thoroughfare in W. district of London, betw. Oxford St. and Piccadilly, boundary of Mayfair and Hyde Park; in 19th-cent. houses occupied by wealthy aristocracy; now largely replaced by blocks of flats and hotels.

**Parlando**, (mus.) in speaking tone.

**Parliament**, in Eng.-speaking countries, supreme legis. body. Parliamentary power of taxation, rendering its support essential, enables it to control govt. Consists, in Eng., of Hse. of Lds. and Hse. of Commons (q.v.).

**P. Act**, 1911, precluding Hse. of Lds. from amending or rejecting money bill, and providing that any bill passed thrice by Hse. of Com. shall not req. assent of Hse. of Lords.

**P., Houses of**, headquarters of Brit. legislative body, in city of Westminster on site of anc. royal palace of W., wh. was built in 11th cent.; after serious damage by fire (1512) it ceased to be royal residence, and St. Stephen's Chapel, attached to palace, became meeting-place of Commons until 1834, when entire bldg., with exceptn. of W. Hall (q.v.), was destroyed by fire. Existing H. of

P. built to design of Sir C. Barry and Aug.

Pugin, 1837-50; opened by Qn. Victoria, 1852; bldg. covers c. 8 acres, having 13 open courts, residences for 18 officers, over 1,000



Houses of Parliament, London

rooms and 100 staircases. Chamber of Hse. of Lds. 90 ft. long; of Com. 70 ft. long. *Victoria Tower* on S.W., 336 ft. high. *Clock Tower*, on N.W., 316 ft. high, with clock ("Big Ben"), having dial 22½ ft. in diam., placed there, 1859. See also ST. STEPHEN'S HALL.

**Parma**, cap. of Prov. of P., N. Italy (1,336 sq.m.; pop., 365,000); pop., 72,000. Univ. (1512); school of art; metal and timber industry. Prov. of P. since 1545 (with Piacenza) indep. Duchy; Austrian, 1735; French, 1802; incorp. with Italy, 1860.

**Parmenides of Elea** (5th cent. B.C.), Gr. philosopher. See ELEATIC SCHOOL.

**Parmesan**, dry, hard cheese, gen. grated and used for flavouring.

**Parmoor**, Ch. Alfred Cripps, 1st bn. (1852- ), Brit. statesm.; Cons. M.P. 1895-1906, 1910-1914; Lord Pres. of Council in Lab. govt., 1924, 1929-31; did not join Nat. govt. of 1931.

**Parnassiens**, Fr. schl. of poets in 19th cent., fndd. by Xavier de Ricard and Mendès on basis of admiratn. for Gautier, Leconte de Lisle, Baudelaire, and Banville; work characterised by beauty of style and plasticity of form.

**Parnassus** (mod. *Liákkoura*), mtn., Phocis, Greece, 8,070 ft.; anciently dedicated to Apollo and the Muses.

**Parnell, Charles Stewart** (1846-91), Ir. statesm. and Nationalist leader; organised Irish Nat. M.P.s into close-knit uncompromising body; forced Home Rule policy on Lib. party; influence destroyed by divorce case brought by O'Shea. **P., Thos.** (1679-1718), Anglo-Irish poet and divine; member of Scriblerus Club; *The Hermit*; *Night-Piece on Death*, etc.

**Parody**, burlesque of some lit. composition, imitated closely in form, style, and matter.

**Parole** (Fr.), word of officer prisoner-of-war not to escape in return for release from close imprisonment; by extension, any release on conditions verbally accepted.

**Paronyms** (Gr.), words coming from same root.

**Paros**, one of Cyclades isls., Greece; c. 112 sq.m.; mountainous; source of Parian marble.

**Parotid gland**, gland which secretes saliva; lies in front of ear; its duct opens into mucous membrane of the cheek.

**Parotitis**: see MUMPS.

**Paroxysm** (Gr.), 1) crisis of disease; 2) sudden spasm, e.g., of coughing.

**Parquet**, 1) (bldg.) floor constructed of wood blocks, laid in simple patterns; 2) term in Eur. countries equiv. to "stalls" in an Eng. theatre; 3) (finan.) On Paris Bourse (q.v.), enclosure where brokers transact business.

**Parr**, Thomas (c. 1483-1635), Eng. centenarian, known as *Old Parr*; brought to London from Shropsh. by Thos. Howard, Earl of Arundel, when reputedly over 130 yrs. of age; presented to Chas. I; buried in Westminster Abbey.

**Parramatta**, tn., New S. Wales, Australia, on P. Riv.; pop., 16,400; W. indust. suburb of Sydney.

**Parret**, riv. (35 m.), Somerset.; flows past Langport and Bridgwater into Bristol Channel.

**Parrot**, tropical bird of the family *Psittacidae*, which includes the grey parrot of Africa, the large and gorgeous-plumaged macaw, the conure, amazon, ground-parrot of Australia, and the long-tailed parakeet. **P-fish**, member of the family *Diodontidae*, in which the bones of the jaws are welded together so as to form a cutting, parrot-like beak of great power. These fish are mostly inhabitants of trop. seas, and some are brilliant in colouring.

**Parry**, Sir Charles Hubert Hastings (1848-1918), Eng. composer, *Blest Pair of Sirens*, symph., etc.; direc. Royal Coll. of Music from 1894. **P.**, Sir William Edward (1790-1855), Brit. arctic explorer; attempted North-West Passage.

**Parry**, (fencing, etc.) act of warding off opponent's blow.

**Parsec**, (astron.) unit of measurement; distance at wh. mean radius of Earth's orbit subtends an angle of 1"; i.e., parallax = one second of arc; amounts to approx. 3.26 light-years (q.v.), or 206,265 times the mean distance of Earth from sun.

**Parsees**, descendants of Parthians (Persians) in India, esp. Bombay, and Singapore; c. 100,000, followers of teaching of Zoroaster (q.v.). **Parseeism**, orig. polytheistic relig. of Parsees, monotheistic since Zoroaster.

**Parseval**, Augustus von (1861- ), Ger. constructor of semi-rigid airships.

**Peredur**, legendary hero in search of Holy Grail; in Celtic as *Peredur*; in 12th-cent. Fr. epic. by *Chrestien de Troyes*; opera by Wagner (1882).

**Parsley**, *Petroselinum*, umbelliferous plant; *P. sativum*, garden P. used in cooking; *P. regelum*, corn parsley, grows wild. *Ell-*

*usa cynapium*, Fool's P., is a poisonous weed, not unlike true P. when young.

**Parsnip**, *Pastinaca sativa*; umbelliferous plant, with conical, white root; wild variety is poisonous, but by cultivation root has been rendered edible and palatable. A wine is made from the root.

**Parsons**, Sir Chas. Algernon (1854-1931), Brit. engineer; trained at Armstrong works, 1877; invented P. steam turbine; fidd. work at Heaton, Newcastle-upon-Tyne, 1880; F.R.S., 1898; pres. of Inst. of Marine Engineers, 1905-06, and of Brit. Assoc., 1919-22.

**Part** (meas.): see LINE.

**Parterre** (Fr.), ornamental arrangement of beds or plots in a flower-garden; also, the ground-floor in the auditorium of a theatre.

**Parthenogenesis**, reproduction without fertilisation by male element.

**Parthenon**, temple of Virgin (*Parthenos*) goddess Athena on Acropolis at Athens; built c. 5th cent. B.C. **P. Frieze**, adorning ex-



Ruins of the Parthenon

terior of temple; what remained of sculptures now in Brit. Museum. See ELGIN MARBLES.

**Parthenope**, (Gr. myth.) one of the Nereids (q.v.); anc. name for Naples. **Parthenopæan Republic**: see NAPLES.

**Parthians**, Iranian tribe wh. under dynasty of *Arsaces* founded the kgdm. betw. Euphrates and Indus (c. 250 B.C.-A.D. 225), and threatened the Rom. Emp. 53 B.C. Rom. deftd. at Carrhæ, death of Crassus.

**Particeps criminis** (Lat.), an accomplice in a crime.

**Particular average**, (insur.) damage or loss of cargo occurring when parts of the vessel or cargo are washed away by storm; loss falls entirely upon owners of that particular cargo, or the insurers of that cargo; see GENERAL AVERAGE.

**Particularism**, devotion of polit. effort to interests less than those of State, e.g. (Eng. usage) those of locality or sect; (Ger. usage, esp. since 1870) those of States as against Empire or Federal Republic.

**Parting**, (metall.) method of separating gold and silver by dissolving out silver by nitric acid. Ratio of silver to gold must be at least 4 : 1; if necessary, silver is added to lead left in cupellation (q.v.). **P-tool**, used in lathe (q.v.) work for separating the finished turn-piece from the part gripped in the chuck.

**Partner**, (com.) one of two or more persons jointly carrying on business. If actually taking part in management of firm, an *active P.*; if merely supplying some of the capital, a *sleeping P.*; *nominal P.* lends only



Parrot

his name, having no monetary int. and taking no active part. A P., whether *active* or *sleeping*, is liable for all debts of the *partnership*, unless he is a *limited P.*; see **LIMITED PARTNER**. *Partnerships* in U.K. limited by law to 10 persons for banking business and 20 in any other business.

**Partridge**, Sir Bernard (1861- ), Brit. artist; cartoonist to *Punch*.

**Partridge**, group of game-birds of pheasant tribe. **Grey p.** is common in most parts

of Brit. Isles, from Norway to Spain, and eastwards to Asia Minor. **Sisi p.**, a smaller bird, inhabiting shores of Red Sea. **Snow-p.** inhabits snowy regions of Himalayas and N. and W. China. **P.-shooting**;



Partridge

birds are either driven or walked up over dogs. *Season* (Gt. Brit.): Sept. 1st-Jan 31st.

**Parturiunt montes, nascetur ridiculus mus** (Lat.), the mountains are in labour, a ridiculous mouse will be brought forth; proverbial expression equiv. to "much ado about nothing."

**Party**, in polit., group formed to promote common princ. or interest. Modern form originated 17th cent., Eng.; now organised in most countries, with perm. funds, headquarters, and paid workers. See **BLOC**; **COALITION**.

**Parvenu** (Fr.), upstart; cf. **NOUVEAU RICHE**.

**Pas** (Fr.), step, espec. in dancing.

**Pasadena**, resid. tn., California, U.S.A., adjoining Los Angeles; pop., c. 80,000; Huntington library and art gall.; observatory on Mt. Wilson (6,660 feet).

**Pascal**, Blaise (1623-62), Fr. natural philos. and mathemat.; *Pensées*; *Provincial Letters*.

Pascal,  
Death-Mask

**Paschal**, name of 2 popes and 1 antipope, of whom the most important, historically, are: **P. II** (1099-1118), ended Investiture struggle in Eng. by retaining right to invest with ring and crozier, but recog. royal nomination to vacant benefices; pursued some struggle unsuccessfully with emperors. **P. III** (1164-68), antipope.

**Paschal cycle**: see **CYCLE**.

**Pas-de-Calais**, maritime dépt. N.W. France, so named from its situation; 2,600 sq.m.; pop., 1,700,000; fertile, low-lying; cap., Arras.

**Pasha** (Turk.), title of a high Turkish milit. or civil official, placed after the name, e.g., Kemal Pasha.

**Pašić**, Nicholas (1846-1926), Serb. statesm.; head of Radical Party; frequently Premier; suppressed Croat separatists, 1925.

**Pasque flower**, purple-flowered species of anemone (*A. pulsatilla*), blossoming about Eastertide.

**Pass**, (geog.) defile; gap leading through mtn. range.

**Passage**, (astron.) passing of a celestial body thr. meridian, obs. thr. meridian circle.

**P. grave**, (archaeol.) *chambered barrow*, grave of Neolithic Period (*q.v.*), consisting of small chamber of upright stones approached by a corridor lined with upright stones, the whole being roofed with flat slabs and covered by a long barrow. See also **SHAFT GRAVE**.

**Passaro, Cape**, headland, S.E. extremity of Sicily.

**Passau**, tn., S. Bavaria, Germany, on Riv. Danube; pop., 25,000. Treaty of P. (1552), betw. Maurice of Saxony and Charles V, secured Protestants' freedom of worship.

**Paschendale**, vill., 7 m. N.E. of Ypres, Belgium; scene of much fighting in World War; P. Ridge objective of British in third battle of Ypres (1917).

**Passe-partout** (Fr.), 1) gummed paper frame round a picture; 2) master key.

**Passeriformes**, the great order of perching birds; includes all the finches, warblers, thrushes, etc.

**Passfield**, Sidney James Webb, 1st bn. (1859- ), Brit. statesm. and writer on economics; Soc. M.P., 1922-29; Pres. Bd. of Trade, Jan.-Nov. 1924; Sec. for Domin. and Colonies, 1929-30, and for Cols., 1930-Aug. 1931; bec. Baron, 1929; mrd. M. Beatrice Potter, 1892, writer on econ. and sociology.



Passfield

**Passing notes**, (mus.) unessential notes proceeding, usually by step, from one chord to the next.

**Passion**, intense feeling; esp. (eccles.) sufferings of Christ described in Gospels and commemorated during Lent. **P. music**, mus. setting of gosp. narrative of the P.; e.g., Bach's. **P. plays**, dramatic reprod. of the P.; of mediaeval origin; still performed periodically in certain localities, e.g., at Oberammergau every 10 yrs.

**P. Sunday**, S. before Palm S. (*q.v.*). **P. week**, wk. before Holy Week (*q.v.*); sometimes synon. with Holy Week. **P.-flower**, a tropical Amer. climbing plant (*Passiflora*), so



Passion Play at Oberammergau

called because the var. parts of the flower are thought to bear a resemblance to the instruments of the Crucifixion; the corona, the crown of thorns, the stamens and pistils, the nails, etc. The fruits of certain var. are edible.

**Passionists**, R.C. relig. order, founded, 1720, by St. Paul of the Cross (1694-1775) to inculcate devotion to Passion of Jesus Christ; preaching, foreign missions; habit black, with embroidered heart on breast enclosing words "Jesu XPI Passio."

**Passive resistance**, resistance to gov. or law consisting in negative inst. of active measures; e.g., withholding taxes. In Eng., specif., movement to withhold payments levied for relig. teaching under Education Act (1902).

**Passover**, Jewish 8-day festival celebrated at the Full Moon of Nisan (Apr.) in commemoration of the exodus from Egypt; the Feast of Unleavened Bread, when leaven is not eaten and mazoth (q.v.) takes the place of bread.

**Passport**, official identity card with photograph and written particulars of bearer; also, document ensuring safe-conduct in time of war, e.g. to ships of a neutral State.

**Passy**, Fred. (1822-1912), Fr. pol. economist and politician; fndd. Fr. Soc. for Internat. Arbitra., 1867; Nobel Peace Prize, 1901.

**Paste**, 1) substance composed of flour and water, used as adhesive; also meat or fish pounded and packed in jars. 2) Composition of glass used to make artific. gems. See STRASS.

**Pastel**, drawing in coloured chalks; esp. pop. during 18th cent. for portraits.

**Pastern**, part of horse's foot, betw. fetlock and hoof.

**Pasteur**, Louis (1822-95), Fr. chemist; his researches in chemistry regarding lactic and alcoholic fermentation revolutionised the production of alcohol and export of wines from Fr.; further bacteriological experiments led to discovery of curative and preventive treatment by inoculation of hydrophobia in man and rabies in dogs, and eventually (1888) to fndtn. of the **Pasteur Institute**, where such treatment is administered. **Pasteurise**, to sterilise a fluid (milk, etc.), and check its fermentation by process discovered by P. in wh. fluid is heated to 140°-160°F.

**Paston Letters**, collection of abt. 1,000 letters written 1422-1509, by Paston family in Norfolk; provide valuable information concerning domestic life of period, and evi-

dence for the development of the vowel-sounds of Mod. English.

**Pastor**, Louis, Bn. von (1854-1928), Ger. historian: *History of the Popes*.

**Pastoral**, literary or musical composition expressing rustic life, esp. artificial type of

conventional Arcadia; style popularised in Eng. in 17th cent.; derives its origin, through Virgil's *Bucolics*, from Theocritus (q.v.). **P.**

**Elegy**, poem of mourning in conventional arcadian setting cast in form consisting either wholly or partially, of dialogue betw. shepherds, e.g., Spenser's *Daphnida*, Milton's *Lycidas*, Shelley's *Adonais*, Arnold's *Thyrsis*. **P. Epistles**

(N.T.), from St. Paul to Timothy and Titus, dealing with the pastoral (ministerial) office.

**P. letter**, open letter from bp. to clergy or laity, either regularly at certain festivals or on special occasion. **P. staff**, one of the insignia of a bp.; formed like a shepherd's crook and freq. of great beauty and exquisite craftsmanship.

**P. theology**, dealg. with duties of a priest tows. his congregation.

**Pastor Fido**, II, pastoral play by Guarini, 1st acted 1585, translated into Engl. as *The Faithful Shepherd*.

**Patagonia**, S. parts of Chile and the Argentine, S. America. Aboriginal **Patagonians**, nomadic hunters, gradually dying out.

**Patch**, small piece of blk. silk cut in var. shapes attached to face to conceal a blemish or draw atten. to a good feature; fashionable in 17th-18th centuries.

**Patchouli**, Indian shrub of mint family, yielding oil used in perfumery.

**Patella**, (anat.) knee-cap; small bone covering front of knee-joint. **P. reflex**, involuntary kick given by the leg in response to a light tap on tendon just below knee-cap; patients suffering from tabes (q.v.) do not show this reflex.

**Paten**, (eccles.) plate, usu. of gold or silver, for bread or wafer in the Eucharist.

**Patents, designs and trade-marks**, means established by various Acts of Parliament (Patents and Designs Acts, 1907-28; amndd., 1932) and International Conventions to protect industrially useful creative work. **Patent** (sole right to make, use, and sell) granted to inventor only, or jointly, on application to H.M. Patent Office, London (prelim. fee, £1). Application must be accompanied by *specification* of nature of invention; *complete specfn.*, filed a year later, must describe invention sufficiently to enable



Pastoral Staff



Pasteur

a skilled technician to carry it out. In return for this description, State grants inventor 16-year monopoly; hence description must be correct and adequate. Patent only granted for *invention* (which must be more than skilled application of known means) and *manufacture* or *method* of manufacture. Although granted, Patent may be invalid for many reasons: 1) Want of novelty owing to any previous publications; 2) insufficient description; 3) incorrect statement of claims (amendment possible); 4) want of *subject-matter*, i.e., sufficient ingenuity, etc., to constitute an invention. Final decision rests with Hse. of Lords. Under *International Convention*, adhered to by nearly all countries, application, in any one country, ensures priority in all others in which application is made within 12 months. *Registered Design* (fee 10/-) protects only exact form registered, not principle of construction, etc. *Trade Mark* (fee £1) must be registered for certain class of goods, and must not be descriptive of them, but should be a distinctive word or symbol. Invention must not be used commercially or published before application for patent; this does not apply to trade mark. *Letters Patent*, unsealed and therefore "patent" (open), letters from the sovereign to the patentee, recording the grant to him of some monopoly, office, franchise, or other privilege or dignity, and open to public inspection in the Chancery Enrolment office; used in the commission to others of various powers normally executed by the crown, in the incorporation of bodies by charter, etc. Various fees are payable for grant of different forms of Letters Patent.

**Pater**, Walter Horatio (1839-94), Engl. writer and critic: *Marius the Epicurean*.

**Paternity**, relationship of father to his children, whether legit., illegit. or adopted; responsibility may be established by legal process.

**Paternoster** (Lat.), Our Father, 1) the Lord's Prayer; 2) bead of rosary indicating that the Lord's Prayer is to be said. **P. line**, fishing line with hooks and sinkers at regular intervals, like beads on rosary. **P. Row**, narrow thoroughfare in City of London, so called from the **paternosterers** (makers of beads for rosaries) who used to work there. The street, wh. is adjacent to St. Paul's Cath., has for long bn. a centre of publishing business and book-trade.

**Paterson**, William (1658-1719), Scot. economist; fndd. Bank of England, 1694; author of scheme for planting Scots colony at Darien (Panama).

**Paterson**, tn., New Jersey, U.S.A., on Passaic Riv.; pop., 138,500; silk, textiles; machinery, aeroplane motors.

**Pathan**, name used in India for Afghans, esp. those domiciled in India or on the India-

Afghanistan border; large numbers enlist in Indian Army.

**Pathetic fallacy**, term given in condemnation by Ruskin (q.v.) in *Modern Painters* to the literary practice of referring to inanimate objects as though they were possessed of passions and emotions.

**Pathfinder Dam**, on N. Platte Riv., Wyoming, U.S.A. (1922); water-supply.

**Pathogenic**, causing disease, e.g., bacteria.

**Pathology**, sc. of alterations in functions and changes in the body caused by disease.

**Patiala**, 1) richest and largest of the Punjab States; 5,492 sq.m.; pop., 1,700,000 (Hindus and Sikhs); wheat, cotton, maize, sugar-cane. 2) Cap. of State; pop., 47,500.

**Patience**, or **solitaire**, card-game with many var., usu. for 1 player, who has to arr. cards of 1 or 2 packs in a def. order accdg. to certain rules.

**Patina**, 1) greenish film on anc. copper, copper-alloy, etc., caused by exposure; term used also of similar deposit on Stone-Age implement. 2) Fine gloss acquired by age on the surface of old wood-work, furniture, panelling, etc.

**Patmore**, Coventry (1823-96), Brit. poet; *The Angel in the House*, 1854-62.

**Patmos**, one of Sporades isls. in Aegean Sea; c. 63 sq.m.; reputed site of writing of the Apocalypse by St. John the Evangelist during his banishment under Domitian, A.D. 95. Annexed by Italy from Turkey, 1912.

**Patna**, 1) native State, prov. Bihar and Orissa, India; 2,400 sq.m.; pop., 500,000; cap., *Bolangir*. 2) City, cap. Bihar and Orissa, on Riv. Ganges, in rice-growing area; univ.; commercial and rly. centre; pop., 158,200.

**Patois**, Fr. local, provincial dialect; hence (gen.) brogue, jargon.

**Patras**, Greek seapt., cap of prov. of Achaia and Elis (2,000 sq.m.; pop., 320,625); naval base; currant and wine industry. Pop., 61,280.

**Patres conscripti** (Lat.), conscript fathers; the Roman Senate.

**Patria** (Lat.), fatherland, country; **P. potestas**, right and duty of the parent to look after the person and fortune of the child.

**Patriarch**, 1) head of family or tribe, wh. he rules by paternal right; (O.T.) name given to ancestors of Israelites, esp. Abraham, Isaac, and Jacob, and to David. 2) (Eccles.) Orig. a bp. in the anc. Ch.; in Eastern Ch., a bp. (in rank above a Metropolitan) of one of the 4 sees, Constantinople, Alexandria, Antioch, Jerusalem, and extended to apply to some other bps. **Patriarchate**, rank of tribal patriarch, system of patriarchal govt.; office, jurisdiction of eccles. patriarch. **Patriarchy**, dominance of father and father's

side in life of a people. Ant.: Matriarchy (*q.v.*).

**Patricians**, nobles of anc. Rome; in Mid. Ages, families connected with the adminis. of towns. Now, term for old distinguished families.

**Patrick, St.** (c. 389-461), Brit. apostle and national saint of Ireland. **P., Order of St.**, third order of knighthood in Gt. Brit.; one class, limited to 22 knights; fndd. by George III, 1788; motto: *Quis separabit?* ("Who shall separate?"); chapel of Order in St. Patrick's Cathed., Dublin.

**Patrimony**, property inher. from father or ancestors; fig. used of endowment of churches, etc.

**Patristic**, derived from, or relating to, the *Fathers of the Church* (*q.v.*) and their teaching. **Patristics**, the study of the writings of the Fathers.

**Patroclus**, in Homer's *Iliad*; Achilles' friend slain by Hector.

**Patron**, (Rom. antiq.) relation in wh. citizen stood to slave whom he had freed; patrician protector of plebeian client; (in gen.) one who encourages and supports a cause or person; regular customer of shop-keeper; (eccles.) person having right of bestowing benefice in Ch. of England. **P. Saint**, saint adopted as guardian by a town, trade, profession, etc.; saint to whom a part. ch. is dedicated.

**Patti**, Adelina Juana Maria, Baroness Cederström (1843-1919), operatic singer; 1st appearance in opera, New York, 1859, London, 1861; last public appearance, 1914.

**Pattison**, Mark (1813-85), Eng. clergyman and author; rector of Lincoln Coll., Oxford, 1861; wrote on education, also critical lives of *Casaubon*, 1875, and *Milton*, 1880.

**Paul**, cap. of Fr. dépt. Basses-Pyrénées; pop., 37,700; winter health resort; horse-racing centre; castle of Henry IV (14th century).

**Paul, 1)** Saul of Tarsus (N.T.), apostle of Gentiles, born c. A.D. 3, of tribe of Benjamin; Roman citizen; Pharisee, studied under Gamaliel in Jerus., foremost in persecution of Christians until converted by vision on rd. to Damascus (Acts ix), after wh. he became apostle of Christ and active missionary (3 missions to Asia Minor and Greece); in assembly of apostles supported Chrtm. Gentiles in conflict with Chrtm. Jews. Arrested on charge of heresy, imprisoned at Caesarea; on appealing as Rom. citizen sent to Rome, where, accdg. to tradit., he was beheaded (c. A.D. 62). **Epistles of P.**, 13 Epistles in N.T. are attrib. to Paul: Romans, Corinthians (2), Galatians, Ephesians, Philippians, Colossians, Thessalonians (2), Timothy (2), Titus, Philemon, Hebrews. 2) name of 5

popes, of whom the most important his- torically, are: **P. III** (1534-49), excommtd. Hy. VIII of Eng., completing breach with Anglican Ch. See also FARNESE. **P. IV** (1555-59), refused to acknowledge Elizabeth as Qn. of Eng.; made return of Angl. Ch. to Rome impossible; introd. *Index Expurgatorius*. **P. V** (1605-21), quarrelled with Eng. over oath of allegiance; condemned Gallicanism, 1613. 3) Czar of Russia (1754-96-1801); son of Peter III and Cath. II; mad, murdered by Palace conspiracy. **P. of Aegina**, Gr. writer on medicine, in 7th cent. A.D.



Pope Paul III

**Paul-Boncour**, Joseph (1873- ), Fr. statesm.; socialist; Fr. delegate to L. of Nations until 1928; Pr. Min., 1933.

**Paulinus of Nola, St.** (c. 353-431), bp. and poet: *Epistolae*; *Carmina*.

**Paulsen**, Fred. (1846-1908), Ger. philos. and educationalist.

**Paulus Diaconus**, Lombard. histor., c. A.D. 800; *History of Lombardy*.

**Paulus**, Lucius Aemilius, 1) Rom. consul; deft. by Hannibal at Cannae, 216 B.C. 2) His son (c. 229-160 B.C.) subdued Macedonia.

**Paunch**, 1) the belly; 2) first and largest stomach in ruminating quadrupeds.

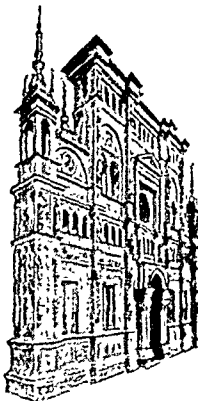
**Pauper**, destitute person in receipt of public assistance; in Eng. under Poor Law Act (1930) certain near relatives, if possessed of sufficient means, are liable for maintenance of P.; in default support of P.s is a charge on County or County Borough Councils, who either grant them "outdoor relief" in money, goods, or medical aid at their homes, or house them in institutions. P.s not resident in Poor Law institutions are (from 1918) no longer disfranchised in England. See POOR LAW; PUBLIC ASSISTANCE.

**Pausanias**, 1) Spartan gen. (d. c. 471 B.C.) in Persian wars (victory at Plataea, 479). 2) Gr. geographer and traveller, 2nd cent. A.D.; *Description of Greece*.

**Pause**, (mus.) rest, or prolongation of a note indicated by a *fermate* (*q.v.*).

**Pavane**, stately 16th-cent. Span. dance in duple time.

**Pavia**, 1) Prov. N. Italy; 1,143 sq.m.; pop., 476,000. 2) Cap. of prov., on Riv. Ticino; pop., 50,500; cathed., univ., engineering



Certosa di Pavia



school. To N. is *Certosa di Pavia* (q.v.). P. was cap. kgdm. of Lombardy 6th to 8th cents. **Battle of P.**, defeat and capture of Francis I by the Imperialists, Feb., 1525.

**Pavillon**, 1) large tent, summerhouse; open-air covered circular platform for orchestras; bldg. on cricket- and sports-grounds for accommodation of teams, spectators, etc. **Brighton P.** pleasure house, built for George IV (when Pr. of Wales), 1724 (enlarged 1823), in Moorish style; sold to the Corporation, 1849. 2) (Numis.) Obsolete Anglo-French gold coin whose value varied from 12s. 2d. to 14s. 7½d.

**Pavlov**, Ivan Petrovich (1849-1919), Russ. physiolog.; Nobel Prize (Med.), 1904.

**Pavlova**, Anna (1885-1931), Russ. dancer; 1st London appearance, 1909.

**Pavo**, "the Peacock," constell.; see Pl., ASTRONOMY, S.C.H., B.

**Pawl**: see RATCHET WHEEL.

**Pawnbroking**, business of lending money on security of personal property deposited by borrower. System of *pledges* establd. in Eur. in Mid. Ages originating in Italy as *monts de piété*, under authority of popes, for lending money to poor. Adopted in Fr. in 16th cent., where P. is still a Govt. monopoly. In Eng. licensed P. introduced in 18th cent.; now regulated under Pawnbrokers' Act (1872).

**Pax**, (eccles.) small gold tablet with representation of Crucifixion; formerly given the "kiss of peace" by priest at Mass and kissed by congregation. **Pax vobiscum** (Lat.: Peace be with you), Christ's greeting to his followers (Luke xxiv. 36), later, common Christian greeting.

**Paxton**, Sir Jos. (1801-65), Brit. archit. and Duke of Devonshire's landscape gardener at Chatsworth; designed Crystal Palace.

**Payment by result**, feature of scientific management (q.v.), extra payment for piece of work done in "standard time." **P. in kind**, formerly a common method of collecting taxes and tolls, esp. for pymts. by farmer to landlord in form of crops and articles of daily use; also used in respect to Ger. reparations, a small per cent. of wh. have been paid in coal, under *Young Plan* (q.v.).

**Payne**, John Howard (1791-1852), Amer. playwright; song: *Home, Sweet Home* (in opera *Clari*).

**Pb**, (chem.) symbol of lead (Lat., *plumbum*).

**Pd**, (chem.) symbol of palladium (q.v.).

**Pea**, climbing plant with papilionaceous flowers and seeds in a pod (*legume*). Garden peas are cultivated as a vegetable; *field peas* as fodder. The **sweet pea** (*Lathyrus odoratus*), is noted for its beautiful fragrant flowers. **P.-bush**, *Sesban aegyptiacum*, shrub with leguminous fruit. **P. soup**, broth made of split peas or pea flour, bacon, vegetables, and condiments.

**Peabody**, George (1795-1869), Amer. philanthropist, merchant, and banker; settled in London, 1837; fndd. and endowed scientific institute at Baltimore, 1857; estab. P. Educational Fund for education in Southern States, and subsidised Harvard and other colleges; gave £500,000 for erection of working-class dwellings in London.

**Peace**, Charles (1832-79), Eng. criminal; murderer, and burglar.

**Peace movement**, efforts for preserv. of peace throughout world, and settlement of internat. disputes by a court of arbitration. The first *World Peace Congress* was held in 1889. See also HAGUE CONFERENCE. **P. Palace**, the building at The Hague, presented by And. Carnegie, 1913 (£300,000), for the Internat. Court of Arbitration.

**Peach**, *Amygdalus persica* (many cultivated varieties), tree bearing juicy, fleshy fruit enclosing a hard stone; kernel yields an oil used as a substitute for almond oil. **P. brandy**, liqueur made of peaches distilled in brandy.

**Peacock**, Thomas Love (1785-1866), Brit. novelist and poet: *Headlong Hall*, 1816; *Nightmare Abbey*, 1818; *Maid Marion*, 1822; *Rhododaphne*, 1818.

**Peacock butterfly** (*Vanessa io*), butterfly with large eye-like spots on the wings; larvae feed gregariously on stinging nettles; found in Europe and N. Asia.

**Pea-fowl**, Indo-Malayan, gallinaceous bird of the genus *Pavo*; male bird (*peacock*) has gorgeous metallic plumage, the train or eyed plumes formed by the elongated upper tail-coverts forms one of the most extraordinary developments among birds.

**Peak**, (tech.) in elec. power station, highest load of day's work; **P. load**, usu. only for short period; therefore taken by batteries, or by spec. generating sets immediately ready for work (Diesel engines); also by storage of power in steam and water under high pressure.

**Peak District**, hilly dist. Derbysh., S. end Pennine Chain; millstone-grit, limestone; summit *Kinderscout* (2,088 ft.); picturesque ravines (Dovedale, etc.), caverns; spas at Buxton and Matlock.

**Peanut**: see EARTH-NUT.

**Pear**, tree of the genus *Pyrus*; fruit of the tree esteemed as dessert; cultivated varieties are derived from *P. communis*, a native of Eur. and Asia. Dessert pears incl. William, jargonelle, beurre d'Amanlis.



Peach-Blossom



Pear

**Pearl**, 1) lustrous, calcareous concretion, white or iridescent, formed, in shell of many bivalve and some univalve molluscs, round a foreign body, or irritant (grain of sand, minute organism, etc.). Finest specimens produced by the large, flat-shelled **P. oyster** (bivalve of genus *Meleagrina*), found in trop. seas (Persian Gulf, Ceylon coast, Pacific, etc.); interior of shells heavily coated with nacreous matter (see MOTHER-OF-PEARL). The most valuable pearls are perfectly symmetrical (spherical or pear-shaped), flawless, and with clear, delicate iridescence. **P.-fishing** is an active industry on coasts of Centr. Amer., Bay of Panama, West Indies, and Borneo, also on W. Australian coast; cultivtn. of *P. oyster* has been practised in China from ancient times. **Cultured ps.**, pearls produced by intentional instead of accidental insertion of an irritant into the oyster; practised esp. in Japan. 2) (Printing): see TYPE. **P.-bordered fritillary**, butterfly having the upper surface of the wings tawny with black spots and the under surface dotted with silver spots. **P.-onion**, small white onion (*q.v.*), esp. cultivated for pickling.

**Pearlite**: see STEEL.

**Pearsall**, Robert Lucas de (1795-1856), Eng. composer; settled in Ger., 1825; choral music, part songs, Cath. hymn-book, etc.

**Pearson**, Sir Cyril Arthur (1866-1921), Brit. newspaper proprietor and publisher; fndd. *Daily Express*, 1900; retired through blindness, 1910, and devoted himself to work for the blind; estab. St. Dunstan's Hospital for blinded soldiers, 1914. See also PIERSON.

**Peary**, Robert (1856-1920), Amer. Arctic explorer; sent by Philadelphia Acad. as leader of Polar Exptn., 1891; with Astrup, establd. that Greenland is an island. Further Arctic explortns. 1898-1902, 1905-07; reached N. Pole, 1909. *Northward Over the Great Ice; The North Pole: Its Discovery*. **P. Land**, N.E. penins. of Greenland.

**Peasants' War**, rebellion of peasants in Centr. and S. Ger., 1524-25, under leadership of Götz von Berlichingen, Florian Geyer, and Georg Metzler. Stamped out with great severity.

**Pease-pudding**, preparation of split peas boiled until soft; put thr. a sieve, with add. of butter, eggs, and seasoning; then pressed into a mould and steamed or baked.

**Peat**, carbonaceous substance formed by partial decomposition in water of var. plants, esp. mosses; when cut and dried forms useful fuel; also used as litter and packing. **P. moss**, *Sphagnum moss*, common moss growing only in swamps. Grows upwards, decaying below, thus forming layers of peat.

**Peccary**, wild boar of S. Amer., resembles small black pig; forest-dweller, associating in large herds.

**Peccavi** (Lat.), I have sinned; it is my fault.

**Peck**, Brit. and U.S. dry meas.; 2 gallons or  $\frac{1}{4}$  bushel.

**Peckham**, dist. of S. London, in bor. of Camberwell; *P. Rye Common* and *Park*, open spaces with gardens, playgrounds, band-stands, etc., covering c. 113 acres.

**Pecos River**, left trib. of Rio Grande, New Mexico, and Texas, U.S.A., 800 miles.

**Pectin**, substance resembling a gum found in apples, pears, beet, and other fruits and roots, to wh. setting power of jams is due. A solution of *P.* sometimes added to jams to make them set without lengthy boiling.

**Pectoral**, (eccles.) breast-plate of Jewish High Priest; ornament formerly worn by R.C. bps. at Mass. **P. Cross**, small cross worn on breast by bps. and abbots as mark of office.

**Peculiar**, (eccles.) ch. or parish exempt from jurisdiction of bp. in whose diocese it is; e.g., Chapel Royal of St. James, St. George's Windsor, Westminster Abbey. **P. People**, Protestant sect, fndd. in London, 1838; refuse to have recourse to medical treatment, relying on prayer and faith for healing.

**Pedagogue** (Gr., leader of boys), school-master, now usu. with implication of pedantry.

**Pedagogics**, science of teaching, theoretical and practical.

**Pedal**, foot-lever 1) (mus.) on organ for playing in conjunction with keyboard; on piano 2 *Ps.*: left—weakening the tone; right—sustaining the notes; on harp (*p. harp*), altering pitch. In comp., a sustained note, usually in bass (see ORGAN POINT). 2) (Techn.) On bicycles, a foot-crank; on motors, for working brakes, throttles, and clutches.

**Pederasty**, male homosexuality (*q.v.*).

**Pediculosis**, presence of *pediculi* or lice on the skin or hair of the body.

**Pedicure**, care of feet.

**Pediment**, (archit.) face, usu. triangular, of upper part of a bldg. of classical design; predecessor of the gable (*q.v.*).

**Pedlar**, itinerant vendor of miscellaneous



Peccary



Peary

small wares, wh. he carries about in a pack; in Gt. Brit. subject to license.

**Pedro, Emperors of Brazil:** **P. I** (1798-1834); first emp., 1822. His s.: **P. II** (1825-91); succeeded, 1831; abolished slavery, 1888; deposed, 1889; last emperor. **Kgs. of Aragon:** **P. I**, son of Sancho Ramirez, reigned, 1094-95; **P. II**, succd. Alfonso II, 1106, d. 1213; **P. III** (g.s.), succd. c. 1276, acquired Sicily (as Peter I) after Sicilian Vespers (q.v.), 1282, d., 1285. **P. IV**, the Ceremonious, succd. 1236, reannexed Balearic Isls., 1344, d. 1382. **Ag. of Castile:** **P. the Cruel** (1333-69), s. of Alfonso XI, succd. 1350; his cruelties led to revolt and his expulsion, 1366; reinstated by Black Prince, 1367; slain by his brother in Du Guesclin's tent at Montell. **Kgs. of Portugal:** **P. I** (1320-67); kg., 1357. **P. II**, reigned 1683-1706; commercial treaty with Gt. Brit. **P. III**, kg.-consort with Qn. Maria Francisca, 1777-86.

**Peeblesshire, Tweeddale**, inland co., S. Scot.; area 354 sq.m.; pop., 15,000; source of Riv. Tweed; surface hilly (*Broad Law*, 2,754 ft.); agric. and pasture. **Peebles**, co. tn. and royal burgh, on Riv. Tweed; pop., 5,900; tourist centre; manuf. tweeds.

**Peel, John** (1776-1854), Cumberland sportsman; maintained pack of hounds at Caldbeck; hero of song *D'ye ken John Peel?* written by his friend, J. W. Graves. **Sir Robert Peel** **P., Sir Robert** (1788-1850), Brit. statesm.; fndd. Ir. Constabulary and Metropolitan Police ("Peelers" or "Bobbies"); Pr. Min., Ch. of Excheq., 1834, 1841; repealed Corn Laws, 1846, and introd. policy of Free Trade.

**Peel, tn.**, on W. coast, I.O.M.; pop., 2,700; summer resort; ruined cathed. and castle on St. Patrick's Isle; fishing.

**Peer**, a member of the hereditary nobility, constituting the upper chamber in Parliament (Hse. of Lds.). The peerage gradually evolved from the practice of summoning great landowners to the King's Council and was established as hereditary by the end of the 13th century. The five orders of peers in England are dukes, marquesses, earls, viscounts, and barons. Abps. and certain bps. are spiritual peers. *See also* PALADIN.

**Peer Gynt**, play by Ibsen (q.v.), 1867,

based on Norweg. folk-lore, satirising nat. temperament.

**Pegasus**, 1) (Gr. myth.) winged horse which sprang from the body of Medusa (q.v.) when her head was cut off by Perseus. Helped Bellerophon to kill the Chimaera (q.v.). Later regarded as horse of the Muses. 2) (Astron.) Constellation; *see* Plate, **ASTRONOMY**, N.C.H., H.

**Pehlavi, Pahlavi:** *see* LANGUAGE SURVEY. **Iranian.** Pers. lit. lang., 3rd to 7th cent., A.D., in wh. sacred books of Zoroastrians are written.

**P.E.I.**, abbr. Prince Edward Island.

**Peiping:** *see* PEKING.

**Peipus** (*Chudskoge Ozero*), lake betw. N.W. Russia and Esthonia; 1,350 sq.m.; drained by Riv. Narova into Gulf of Finland.

**Pekan**, cap., Pahang, F.M.S., on E. coast.

**Pekinese**, pop. lap dog of Chin. orig. with long, silky coat and short muzzle.



Pekinese

**Peking** (**Peiping** since 1928), former cap. of China, sit. at N. edge of the N. China Plain, betw. Riv. Pai-ho and its trib. Hun-ho, 30 m. S. of the Great Wall; pop., 1,297,700. Comprises two adjacent main cities; the N. or *Tatar* or *Manchu City*, built in the form of a square, contains the Imperial City and, within that, the Forbidden City; each city is walled. The *Tatar City* contains the Lama Temple, Temple of Confucius, Hall of the Classics, and the Drum and Bell Towers. From its N. wall a chain of artificial lakes runs S. through the Imperial City to its S. wall. The *Imperial City* contains the university. The *Forbidden* or *Purple City* (so called on account of the colour of its walls) contains many palaces, incl. the ex-royal palace and former residence of the president of the republic. Betw. the S. wall of the Imperial City and the S. wall of the *Tatar City* is the *Legation Quarter*.

Adjoining the *Tatar City* on the S., and overlapping it on both sides, is the rectangular *Chinese City*, also walled; contains Temple of Heaven and Altar of Agriculture. P. was cap. of Tartary in 10th cent. A.D.; captured by Jenghiz Khan, 1215; cap. of Kublai Khan (1280-94), who built a city here and called it *Cambaluc*; cap. of the Chinese Empire, 1267-1911, except from 1368 to 1421 (when Nanking was cap.); cap. of Chinese Republic, 1911-28. Present cap., *Nanking*. **P. man:** *see* SINANTHROPUS PEKINENSIS.

**Pelagianism**, heresy of Pelagius (c. 400); denied the transmission of original sin (q.v.) to the posterity of Adam.

**Pelagius**, 1) name of 2 popes: **P. I** (555-560), refused to accept decrees of 2nd Council of Constantinople, 553; acqtd. them on



Pegasus

death of Vigilius. **P. II** (578-590), sought to heal schism caused by the Three Chapters. 2) (c. 400), Brit. monk and theologian, fndr. of Pelagianism (q.v.) and oppon. of doctrines of predestinatn. and original sin.

**Pelargonium**, large genus of S. African geraniaceous plants; cultivated in green-houses in Eng. to produce a variety of blooms. Lady Washington geranium (*P. angulosum*) is a purple-flowered pelargonium.

**Pelagians**, primit. inhab. of Greece.

**Pelée, Mont:** see MONT PELÉE.

**Peleus**, Kg. of the Myrmidons (q.v.); married Thetis; father of Achilles. See ERIS.

**Pelew Islands:** see PALAU.

**Pelham**, Henry (c. 1695-1754), Eng. statesm.; bro. of Duke of Newcastle; M.P., 1718; Ld. of the Treasury, 1721; Sec. for War, 1724; paymaster of the army, 1730; opposed Walpole; Chanc. of the Exchequer, 1742; Pr. Min. after removal of Ld. Carteret, 1744.

**Pelican**, large aquatic bird with short legs, bulky body, long bill, hooked at end, and having an enormous gular pouch for temporary reception of captured fish. Found in the temperate and tropical regions of both Old and New Worlds; frequent lagoons and wide rivers; fly well, powerful swimmers; congregate in vast numbers at their nesting sites.



Pelican

**Pelion**, wooded mountain range on E. coast of Thessaly, Greece, to E. of Gulf of Volo; chf. summit, *Plessidi* (5,300 feet).

**Pelléas et Mélisande**, play by Maeterlinck (1892), opera by Debussy (q.v.), 1902.

**Pellegrini**, Carlo (1839-89), Ital. caricaturist; contrib. to Eng. journal *Vanity Fair*, over signature "Singe" or "Ape."

**Pellico**, Silvio (1789-1854), Ital. poet and dramat.; imprisoned for political activities; *My Prisons*.

**Pellitory**, small hairy plant, closely related to nettle, wh. grows on old walls, banks, etc.; long leafy-branched stems with small green flowers.

**Pelopidas**, Theban gen. and statesm.; liberated Thebes from Spartans; killed in battle of Cynoscephalae, 364 B.C.

**Peloponnese, The** (anc. *Peloponnesus*), administr. divisn. S. Greece; 8,280 sq.m.; pop., 1,053,325; chf. tns.: Nauplia, Sparta, Patras; forestry, wine-growing, olive trees.

**Peloponnesian War**, 431-404 B.C., betw. Athens and Sparta; end of Athenian supremacy. Described by Thucydides.

**Pelops** (Gr. myth.), son of Tantalus; won the hand of Hippodamia by defeating Oenomaus in a chariot-race. Gave name to

Peloponnesus (see PELOPONNESE).

**Pelota**, national game of the Basques, resembling fives (q.v.). A curved wicker basket (*chistlera*) is used for propelling the ball.

**Peltier effect**, (elec.) observed 1834; one component of the thermo-electric effect; absorption or evolution of heat when an elec. current crosses junction betw. 2 metals, e.g. with current passing from bismuth to antimony, heat is absorbed, and, *vice versa*, evolved. See THERMO-ELECTRICITY.

**Pelvis**, 1) the bony cavity at lower end of trunk; formed by the innominate bones at each side and the sacrum and coccyx behind. Contains, in female, the bladder, uterus, and rectum. The difficulties of child-birth are mainly due to the passage of the baby through the pelvic cavity. 2) Basin-shaped cavity, e.g., P. of kidney.

**Pemba**, isl. off E. coast Africa; see ZANZIBAR.

**Pembroke**, Wm. Herbert, 3rd Earl of (1580-1630), Eng. statesm. and poet; banished from court for intrigue with Mary Fitton, 1601; returned to favour under Jas. I, who apptd. him Ld. Chanc.; chancellor of Oxford Univ., 1617-30; Shakespeare's 1st Folio dedicated to him and his bro., Philip.

**Pembroke College**, Cambridge, fndd. 1347 by Mary de St. Paul, widow of Aylmer de Valence, Earl of Pembroke. Many bps were associated with the College, hence its title, COLLEGIUM EPISCOPALE. Familiarly known also as "Pemmer." **P. College**, Oxford, fndd. 1624 by James I under bequest of Thomas Tesdale of Glympton, Oxfordshire, and Richard Wightwick, rector of East Ilsley, Berkshire. Samuel Johnson entered the coll., 1728. Familiarly known as "Pemmy."

**Pembrokeshire**, marit. co., S. Wales; area 614 sq.m.; pop., 87,200; "Little England beyond Wales" (Flemish settlers in 12th cent.); undulating interior, fine indented coast-line; includes Milford Haven; many isls. off coast; cattle-raising; fishing. Fishguard, port for S. Ire.; Tenby, seaside resort. **Pembroke**, co. tn.; pop., 12,000; cas.; dockyard.

**Pemphigus**, contagious skin eruption characterised by the appearance of watery blisters.

**P.E.N.-Club** (P = poets, E = essayists, N = novelists), internat. assoc. of writers with nat. groups; fndd. in London, 1922.

**Penal servitude**, form of punishment in Brit. for serious offences, in force since 1855 as substitute for transportation; consists in imprisonment combined with enforced labour on public works; minimum sentence, 3 years; after serving substantial portion of sentence convict may be conditionally released on "ticket-of-leave" (q.v.).

**Penalty clause**, provision in a contract of

agreem. under wh. a definite sum is payable in the event of non-fulfilment, or incomplete fulfilment, of its terms.

**Penance**, (eccles.) 1) one of the Sacraments of the Cath. Ch. 2) Act of expiation of sin, voluntarily undertaken or imposed by a priest, as an expression of penitence.

**Penang, Pulau Penang**, "Pearl of the East," northernmost of Straits Settlements; comprises Isl. of P. (110 sq.m.; pop., 200,000); *Prov. Wellesley* (280 sq.m.), on mainland Malay Penins.; and *Dindings Terr.* (islands and strip adjoining Perak; 180 sq.m.). Pop., 359,300 (1,520 Europeans); cap. and chief port of Penang Isl., *George-town* (pop., 150,000). Noted for coast scenery; Ayer Itam Temple; Snake Temple; funicular railway to P. Hill (2,500 feet).

**Penates**, (Rom. myth.) gods protecting the household. See LARES.

**Pendente lite** (Lat.), while the (legal) suit is pending, or proceeding.

**Pendine**, vill. on coast S.W. Carmarthensh., S. Wales. **P. Sands**, scene of various attempts on motor speed records.

**Pendulum**, (phys.) body suspended so as to turn about a horizontal axis not passing through its centre of gravity, oscillating about position of equilibrium. *Simple P.*, small heavy mass (bob) suspended by weightless string. *Compound P.*, any other p., e.g., rod. Time of complete oscillation of simple P. proportional to square root of length, inversely proport. to sq. root of acceleration of gravity, independent of material and mass of bob; nearly indepnt. of amplitude. *Seconds P.*, time of complete oscillation 2 seconds.

**Penelope**, (Gr. myth.) faithful wife of Odysseus (Ulysses), who awaited him at home in Ithaca.

**Penplain**, tract of land wh. has been reduced by erosion to an approximately uniform surface.

**Peneus** (mod. *Salambria*), riv., centr. Greece (c. 125 m.), rises in Thessaly; flows through Larissa and the Vale of Tempe to Gulf of Salonica.

**Penge**, urb. dist., Kent, Eng., S. suburb, Greater London; pop., 27,800.

**Penguin**, flightless aquatic bird of the Southern Hemisphere, chfly. remarkable for its close-set plumage of harsh, scaly feathers, generally devoid of barbs, and the flipper-like character of its wings; walks or hops in upright position when on land; social in habit, assembling in vast numbers on the lonely islands of the Antarctic and Southern Seas, where they breed. Different species vary considerably in size from the little *black-footed P.* to the giant *King P.* of the Antarctic.

**Peninsula**, piece of land nearly sur-

rounded by water; specifi., The P., i.e., Spain and Portugal. **Peninsular War**, The, 1808-14; most important of Napoleonic Wars from Eng. point of view. Brought abt. by Fr. attacking Sp. and Port., with whom Eng. was in alliance. The Eng. under Wellington drove Fr. from Peninsula. It contrib. to fall of Napoleon.

**Penis**, the male organ of generation.

**Penitentes**, (geog.) variety of sérac (q.v.) found esp. in Andes glaciers; formed by peculiar combination of local circumstances favourable to direct evaporation of ice and snow without liquefaction; resemble, in distance, white-robed penitents.

**Penitential**, (R.C.Ch.) manual for guidance of priests in assigning penances (q.v.). **P. Psalms**, Nos. vi, xxxii, xxxviii, li, cii, cxxx, and cxliii. **Penitentiary**, (eccles.) one who imposes or supervises penances (q.v.); esp. (R.C.) the *Grand Penitentiary*, Cardinal presiding over centr. office in Rome which deals with punishments inflicted on those guilty of grave sins.

**Penley**, Wm. Sydney (1851-1912), Eng. actor; became known as a comedian in rôle of curate in *The Private Secretary* and was famous in the title rôle of Brandon Thomas's farce, *Charley's Aunt*.

**Penmaenmawr**, urb. dist. and summer resort on coast Caernarvonsh., N. Wales. betw. headland of P. (1,553 ft.; road tunnel, 1932) and Moel Llys (1,180 ft.); pop., 4,020.

**Penn**, William (1644-1718), Eng. Quaker (q.v.); acquired terr. in N. Amer. which was made province of Pennsylvania in 1681; first governor.

**Pennant**, triang. or bifurcated signalling flag on ships.

**Pennell**, Joseph (1860-1926), Amer. artist resident in Eng.; pubd. and illustrated *A Canterbury Pilgrimage*, 1885; *The Alhambra*, 1896; collab. in authorship with his wife, Eliz. Robins. Many etchings and lithographs.

**Pen nib**, writing implement, formerly cut from a quill, (e.g., of a goose), to-day almost exclusively manufltd. of sheet-steel in mass production; fountain-pen nibs are made of gold with iridium points.

**Pennine Alps**, divisn. of the Central Alps extending from Grt. St. Bernard to Simplon Pass and forming part of boundary betw. Switz. and It.; includes *Monte Rosa* (highest peak, 15,220 ft.), *Matterhorn*, and *Weisshorn*. **P. Chain**, or *Pennines*, centr. mntn. system of N. Eng., running S. from Cheviots to Peak District of Derbysh.; "the backbone of England": *Cross Fell* (2,930 ft.), *Wharfedale* (2,414 ft.); *Ingleborough* (2,373 ft.), *Kinder Scout* (2,088 feet).

**Pennon**, long narrow flag, usu. with two points; borne on lances of knights bachelor,

and lancer regiments. **Pennoncel**, triangular flag or streamer carried by squire.

**Pennsylvania** ("Keystone"), N.E. State, U.S.A.; 45,126 sq.m.; pop., 9,700,000; crossed by *Alleghany* and *Cumberland Mts.*; agriculture; coal, anthracite, iron, oil; cotton, leather; cap., *Harrisburg*. **P. Railroad**, U.S.A., operates in States betw. Mississippi and Atlantic coast: 11,076 miles.

**Penny**, bronze coin of Brit. currency =  $\frac{1}{12}$  of shilling; weighs 145.83 grains troy; abbr. *d.* (see **DENARIUS**). First P. (8th cent.) was a copy of the Europ. coin, *novus denarius*; it was silver and weighed  $22\frac{1}{2}$  grains, 240 Ps. equalling 1 Saxon pound. A gold P. = 20 silver Ps., was struck in 13th cent.; from that period the silver P. declined in value, and after reign of Charles II was only issued as Maundy Money (*q.v.*). Copper halfpence of 17th cent. were the first to bear figure of Britannia, for wh. Frances Stuart (aftwds. Duchess of Richmond and Lennox, 1647-1702) is said to have been the model. First copper P. (replaced by bronze, 1860) was issued in 1797. **Penny-a-liner**, one paid by the printed line for literary work; esp. inferior journalist who pads out his paragraphs in order to increase his earnings.

**Pennyroyal**, *Mentha pulegium*, variety of mint; purple flowers; used in folk med. for a wide range of purposes.

**Pennyweight** (abbr., dwt.), Brit. and U.S. wt.; twentieth part of an oz. (troy), 24 grains, 1.55 grammes; orig. wt. of an old silver penny.

**Penobscot**, riv. (380 m.), Maine, U.S.A.; rises nr. Canad. frontier; flows through P. Bay (30 m.) into Atlantic.

**Penrhyn**, 1) quarrying dist., nr. Bangor, Caernarvonsh., N. Wales; P. slate quarries claim to be largest in the world. 2) Or *Tongareva*, one of the Cook Isls. (*q.v.*), S. Pacific Ocean.

**Penrith**, 1) urb. dist. and mkt. tn., Cumberland, pop., 9,100; ruined cas.; agric. centre. 2) Tn., New S. Wales, Australia; pop., 3,500.

**Penshurst**, vill. W. Kent, on Riv. Medway; P. Place (14th cent.; Lord de l'Isle and Dudley) was birthplace of Sir Philip Sidney. Gives title to Lord Hardinge of P. (*q.v.*).

**Pension**, periodical income paid volun. or under legal obligation to per. incapacd. by age or infirmity, or whose services are no longer required. In Eng., paid to milit. and most civil employees of State, and employees of many cos., loc. authrts., etc. (see **OLD AGE PENSION**; **WIDOW'S PENSION**; **CIVIL LIST PENSIONS**).

**Penstock**, sluice or flood-gate for regulating flow of water.

**Pentacle**, **Pentagram**, geom. fig. formg.

5-ptd. star; anc. symbol of universe and magic symbol in Mid. Ages.

**Pentameter**, verse of 5 feet. **Elegiac p.**, verse of 6 dactylic feet, of wh. 3 and 6 have 1st member only. **Iambic p.**, in Eng. heroic couplets and blank verse (*q.v.*).

**Pentateuch**, first 5 books of O.T. (*Genesis*, *Exodus*, *Leviticus*, *Numbers*, *Deuteronomy*), known as Bks. of Moses.

**Pentathlon**, quintuple event at Olymp. Games; consists of riding, fencing, revolver-shooting, swimming, and cross-country running. The anc. P. consisted of jumping, running, wrestling, and throwing discus and javelin.

**Pentecost**, 1) Jew. festival celebrated on the 50th day after the first day of the Passover (at harvest-time) in commemoration of the giving of the Ten Commandments (*Lev. xxiii*). 2) The Christian feast of Whitsun (*q.v.*).

**Pentelicus**, **Mendeli**, mtn. (3,600 ft.), Attica, Greece; white marble quarries worked since antiquity.

**Penthesilea**, (Gr. myth.) Qn. of the Amazons, slain by Achilles at Troy.

**Pentland Firth**, strait (6-8 m.) separating Orkney Isls. from N. Scotland.

**P. Hills**, range, Scot., in Midlothian, Peebles-sh., and Lanarksh.; *Scald Law*, 1,898 feet.

**Pentode**: see **VALVE**.

**Pentonville**, dist. of N. London in wh. is P.

**Prison**, for male criminals, built, 1842, by Sir Joshua Jebb as a model prison accdg. to the system of separate, or cellular, confinement, main features of wh. are still observed in modern prisons.

**Pentstemon**, genus of N. Amer. garden plants, with showy flowers of white and various shades of red and purple; blossom about July.

**Penumbra**, (astron.) partial shadow, betw. full light and umbra (deep shadow), cast in an eclipse by intervening body.

**Penza**, chf. tn. of prov. of P., Centr. Russian S.F.S.R. (c. 17,540 sq.m.; pop., 2,231,744) on Riv. Sura; pop., 92,225; paper and match industry.

**Penzance**, munic. bor., Cornwall, Eng., on Mounts Bay; seapt. and watering-place; fisheries; pop., 11,300.

**Peony**, tall plant having handsome red or white blooms; popular ornamental plant; many cultivated varieties.



Achilles Slaying Penthesilea  
Greek Vase Painting



Pentacle



Single Peony

**People, Commissary of the**, high official of Soviet Russia, corres. to minister. **P. Sovereignty of**, doctrine that polit. power is or should be diffused as widely as possible. See DEMOCRACY. **P.'s Palace**: see MILE END.

**Peoria**, tn., Illinois, U.S.A., on Illinois Riv.; pop., 105,000; agric. implements; grain, cattle; coal.

**Pepin, Pippin**, Carolingian Mayors of the Palace (q.v.): 1) **P. I.**, of Landen (d. 639); **P. II.**, of Herstal (635-714); father of Charles Martel; overthrew Merovingians; 3) **P. III.**, "the Short" (714-68), s. of Charles Martel and father of Charlemagne; first Carolingian kg. of France.

**Peplum**, in anc. Gr., long gown or tunic fastened on shoulders with clasps; now, short skirt forming pt. of woman's coat or dress.

**Pepper**, the dried, unripe fruit of *Piper nigrum*, climbing plant indigenous to S. India, cultvd. in Malaya, Siam, etc.; black pepper, used as a culinary spice, obtained by grinding the fruit; white pepper from fruits from which the husk (pericarp) has been removed; contains a volatile oil and is used in med. as a carminative; is an ingredient of compound powder of opium for colic. See also CAPSICUM; CAYENNE PEPPER.



Pepper

**P.-mint**, *Mentha piperita*, variety of mint (q.v.); contains an essential oil, Oil of P. used in med. as a carminative; also used as flavouring. *Menthol*, princ. constituent of the oil; white crystals; employed as local analgesic for catarrh and headaches. **P.-tree**, *Schinus molle*, trop. Amer. tree with red berries.

**Pepsin**, substance present in garlic juice (q.v.), which digests proteins in the presence of an acid.

**Peptone**, one of the products of the digestion of protein in the body; meat or white of egg becomes P., and this is broken down in turn to the amino-acids wh. constitute it; used for intravenous injection in treatment of various diseases, e.g., asthma.

**Pepys**, Samuel (1633-1703), Eng. diarist; Sec. of Admiralty, 1686. His *Diary*, covering period from 1 Jan., 1660, to 31 May, 1669, written in cipher and not intended for public., gives unique picture of period of the Restoration and of author's character. Included in Pepys's library, bequeathed to Magdalene Coll., Camb.; deciphered and partially publ'd., 1825 (ed. 3rd Lord Braybrooke); publ'd. practically in entirety (H. B. Wheatley), 1893-99.



Pepys

**Pera**, European quarter of Constantinople (q.v.).

**Perak**, one of the Federated Malay States; W. coast Malay Penins.; 7,870 sq.m.; pop., 765,000 (Chin., 325,000); exports tin; rice-growing centre; cap., *Taiping* (pop., 31,000) largest tn., Ipoh (pop., 53,900; Chin., 34,000).

**Per annum** (Lat.), by the year, annually; **per aspera ad astra** through difficulties to the stars; **per capita**, by heads, individually; **per diem**, by the day; **per mare per terram**, by land and by sea (motto of the Royal Marines); **per mensem**, by the month; **per procuracionem** "by procuracy," as an agent; formula prefixed to signatures written on behalf of another person (*per pro.*); **per se**, by itself; by reason of its very nature.

**Percale**, Indian calico; kind of closely woven cambric (q.v.).

**Perception**, state of awareness of an external object; the object is recognd. through qualities wh. experience has taught are peculiar to it, and is therefore *perceived* in many aspects, although it may be directly sensed in one only.

**Perceval**, Spencer (1762-1812), Brit. statesm.; M.P., 1796; solicitor-gen., 1801; attorney-gen., 1802; opposed Catholic emancipation; Chanc. of Excheq., 1809; succ. Duke of Portland as Pr. Min., 1809; shot by madman, Bellingham, in lobby of Hse. of Com., 11 May, 1812.

**Perch**, 1) (nat. hist.) medium-sized, spiny-finned fresh-water fish belonging to the family *Percidae* which includes a number of species, both fresh-water and marine. The latter are all coastal fishes with a world range in temperate and tropical seas. The bass is the only marine species of importance round British coast. 2) (Meas.) See ROD.

**Perche**, former *comté* of N. France, extending over dépts. Orne, Sarthe, Eure, and Eure-et-Loire; wooded chalk plain; iron-ore deposits; breeding of **Percheron** draft-horses; cap., *Mortagne*.

**Percussion**, (med.) method of diagnosis dependent on the sounds elicited by tapping parts of the body with the fingers. **P. cap**, small metal capsule filled with fulminate of mercury for detonating propellent in a cartridge; see also DETONATOR. **P. drill**, drill which operates by rapid, repeated blows which shatter material; used on rock, stone, brick, glass, etc. **P. instruments**, mus. instr. played by striking: kettle-drum, cymbals, triangle, etc.; esp. for jazz music. (See plate, ORCHESTRA.)

**Percy**: see NORTHUMBERLAND, EARLS AND DUKES OF. **P., Thomas** (1729-1811), Eng. man of letters, Bp. of Dromore; collected and ed. ancient Eng. poems; *Reliques of Ancient English Poetry*, 1765.

**Père Duchesne:** see HÉBERT. **P. Lachaise:** see LACHAISE.

**Perennials**, plants that live sev. years, i.e., that do not die after flowering and fruiting; in certain plants portion above ground dies each year, while root persists.

**Pereunt et imputantur** (Lat.), the moments pass and are counted up against us; frequent inscription on sun-dials and clocks.

**Pérez Galdós**, Benito (1845-1920), Span. novelist; fr. 1889 wrote a series of *Episodios nacionales* in 40 vols.; also *Doña Perfecta*, 1876; *Angel Guerra*, 1891, etc.

**Perfect**, (gram.) tense of action completed in the past, e.g., *he has laughed*.

**Perfectionism**, doctrine that moral and relig. perfection may be attained in this life.

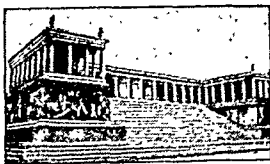
**Perforation**, (med.) piercing of a part. 1) **P. of appendix**, by an abscess; pus is then set free in abdominal cavity. 2) **P. of stomach**, by an ulcer, when stomach contents enter abdominal cavity. Both conditions cause peritonitis (*q.v.*).

**Perfume**, aromatic substances (vegetable, animal, or synthetic), blended in some suitable medium (alcohol, powder). Usu. pleasant smell blended with minute trace of offensive smell. *Animal*: musk, ambergris; *vegetable*: essential oils and perfumes of flowers; *synthetic*: mostly coal-tar products, cumarin, tonka oil, etc.

**Pergamon**, **Pergamum**, **Pergamus**, anc. city, Teuthrania, Asia Minor, 15 m. from Mediterranean coast, said to have been fndd. by Arcadians from Tegea c. 500 B.C. As cap. of a small kgdm. rose to fame under Eumenes II (197-159 B.C.), who enlarged his dominions, maintained friendly relations with Rome, and encouraged the *Pergamenian School of Sculpture*; his great Altar of Zeus (sometimes included among the Seven Wonders of the World), commemorating his victory over the Gauls, is now in Berlin. After 133 B.C. P. was bequeathed by Attalus III to Rome and became a prov. of the Rom. Empire. Later one of the Seven Chs. of Asia. Passed under rule of the Moslems in 14th cent. A.D., with name corrupted into Bergama. P. has given its name to parchment (*q.v.*), the first preparation of which is attributed to Eumenes II.

**Pergamos**, 1) Citadel of Troy. 2) See PERGAMON.

**Pergola**, structure of stone or wood bordering a garden path, having arches at intervals, over wh. climbing, flowering plants are trained.



Pergamum, Altar of Zeus

**Pergolese**, Giovanni Battista (1710-1736), Ital. composer: *La Serva padrona*; *Stabat Mater*.

**Periander** (d. 585 B.C.), tyrant of Corinth c. 625 B.C.; one of Seven Sages of Greece.

**Perianth**, (bot.) protective envelope of a flower (*q.v.*), consisting of calyx and corolla (*qq.v.*).

**Pericardium**, membrane covering the heart. **Pericarditis**, inflammation of P.; may occur after acute rheumatic fever or other diseases.

**Pericles** (499-429 B.C.), Athenian statesman and general; head of Democratic party; with Ephialtes (*q.v.*) broke power of the Areopagus; completed the fortification of Athens; encouraged bldg. of Parthenon, Propylaea, etc. (*qq.v.*); led Athenians in first years of Peloponnesian War (*q.v.*).

**Pericope** (Gr., section), extract from a book; esp. selections from the gospels and epistles appointed to be read in ch. services.

**Peridotite**, (geol.) class of crystalline plutonic rocks composed mostly of olivine (*q.v.*), gen. dark in colour.

**Perigee**, one of the moon's apses (*q.v.*); cf. APOGEE.

**Périgueux**, cap. of dépt. Dordogne, France, on Riv. Isle; pop., 33,400; silkworm breeding; truffles. Rom. ruins.

**Perihelion** (astron.) point at wh. a planet approaches nearest to the sun. See APSES. **Movement of the P.**, slow precession of the major axes of planetary orbits; that of Mercury explainable not by influence of other planets, but only by theory of relativity (*q.v.*).

**Perim**, isl. (7 sq.m.), Str. of Bab-el-Mandeb, S. end Red Sea; Brit. since 1857; coaling station; adm. by Aden.

**Perimeter**, (geom.) total length of the sides or circumference bounding a geom. figure; the periphery.

**Perinæum**, (anat.) area of body corresponding to the outlet of the pelvis; extends from the pubis in front to the coccyx behind. It contains the outlets of the urinary and genital organs, and of the alimentary tract. In the female, during child-birth, injury to P. is liable to occur.

**Periodicals**, gen. applied to reviews or magazines appearing at intervals of a week or longer; began in 17th cent. as catalogues of books with short descriptive notes; modern essay P. began with Paris *Journal des Savans*, 1665; *Tatler*, 1709; *Spectator*, 1711; etc.; in early 19th cent. rise of larger monthly or quarterly P. (*Edinburgh Review*, 1802;



Pericles



*Quarterly Review*, 1809); a few years later beginnings of the more popular fiction P. of which large numbers were soon pub. in Eng. and elsewhere, giving rise to specialised P. for women, children, and other classes; in late years of century numerous P. devoted to special interests ("Trade papers"), pursuits, views, and propaganda; general tendency of modern P. towards wider popular appeal by shorter articles, increasing use of illustration, etc.

**Periodic system**, (chem.) the systematic classification of chem. elements, developed independently by Mendeleeff and L. Meyer (1869), who arranged them in eight groups accdg. to their at. wts. There appears to exist a definite relationship betw. properties of elements and their compounds and at. wts. of elements. At present some 92 elems. are known; many have isotopes, and accdg. to Moseley (q.v.), atomic number, determined from net positive charge of nucleus, should be the deciding factor in position of elements in the P. system.

**Perioeci**, free inhabitants of anc. Sparta who possessed no civic rights. Midway between citizens and helots. Gk., dwellers round.

**Periostitis**, (med.) inflammation of the **periosteum**, viz., the strong vibro-vascular membrane covering the bones.

**Peripatetic**, walking, circulating; name given in anc. Gr. to followers of Aristotle, probably from the arcade in the Lyceum, Athens, in wh. Aristotle walked whilst expounding his philosophy.

**Peripheral**, (geom.) lying at the edge, incidental; opp., *central*, lying in the middle. **Periphery**: see PERIMETER.

**Periscope**, prismatic telescope with tube vertical, so that object glass is some distance above observer's head; in submarine, tube and object glass alone project above surface of water. Used on land to see over obstacles: e.g., in trenches in war-time. **Binocular P.** gives stereoscopic effect; see ill. **Periscopic spectacle lenses**, are so ground that clear vision is obtnd. from every part of surface without wearer having to turn his head.

**Perissodactyla**, hoofed mammals with an

odd number of toes (1, 3, or 5): horses, rhinoceroses, tapirs.

**Peristalsis**, (physiol.) movement of walls of the stomach and intestines, which slowly drives the food contents onwards.

**Peristyle**, (archit.) colonnaded interior court in Gr. and Rom. houses; see COLONNADE.

**Peritoneum**, (anat.) thin membrane lining abdominal cavity and surrounding most of abdominal organs. **Peritonitis** (med.), inflammation of P.: a very serious disease, often leading to death.

**Periwinkle**, 1) lesser (*Vinca minor*), trailing plant with evergreen leaves and blue flowers; fnd. in Gt. Brit., N. Eur., and N. America. 2) Marine snail, living between low and high water-marks, with small, round, non-spiral shell; edible; some allied Amer. varieties are terrestrial.



Periwinkle

**Perkin**, Sir Wm. Hy. (1838-1907), Brit. chemist; pioneer of the aniline dye industry; discovered aniline mauve or purple (1856) and prepared many other coal-tar colours.

**Perlis**, one of the Unfederated Malay States, on W. coast Malay Penins., bordered N. by Siam, S. by Kedah; under Brit. protection; 316 sq.m.; pop., 49,000; cap., *Kansar* (pop., 2,010).

**Perm**, tn., Uralsk, Russia, on Riv. Kama; pop., 119,775; rly. junct.; univ., polytech. college; arsenal now superphosphate works; dairy-farm machinery manufacture.

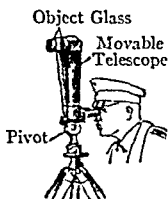
**Permanent magnet**, steel containing tungsten or cobalt, wh. retains magnetism produced by exposure to strong magnetic field. **P. way**, (rly.) the line and bed on wh. rly. is laid; consists of sleepers, rails, and attachments.

**Permanganates**, salts of permanganic acid  $\text{HMnO}_4$ ; used for disinfectants; most important, *potassium P.*,  $\text{KMnO}_4$ .

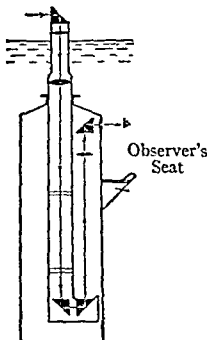
**Permeable**, (phys.) capable of allowing free passage and interfusion of fluids, e.g., a membrane. *Semi-permeable*, allowing certain substances to pass but not others (e.g., water, but not substances dissolved in it). See OSMOSIS.

**Permian**, (geol.) latest formation of Palaeozoic Era; named from Perm dist. in Russia, where it covers a large area; supplies magnesian limestone of N.E. England. See GEOLOGICAL FORMATIONS.

**Permutation**, (math.) any one of possible orders in wh. series of objects can be arranged. No. of Ps. of  $m$  elements taken  $n$  at a time, is no. of ways in which  $n$  elements can



Binocular Periscope



Submarine Periscope

be combined having due regard to order. Thus if  $m = 3$  elements ( $a, b$  and  $c$ ) and  $n = 2$ , the following Ps. are possible:  $ab, ba, ac, ca, bc, cb$ , i.e., 6. In general, the no. of Ps. of  $m$  elements taken  $n$  at a time (written  ${}_m P_n$  or  ${}^m P_n$ ) is  $\frac{m!}{(m-n)!}$ , e.g., where  $m = 3$  and  $n = 2$  the no. of Ps. =  $\frac{3 \cdot 2 \cdot 1}{1} = 6$ . (For meaning of ! see MATHEMATICAL SIGNS).

**Pernambuco**, State of Brazil on Atlantic; c. 38,150 sq.m.; pop., 2,820,000; chf. exports: coffee, tobacco, cotton, sugar; cap., P. (officially Recife); pop., 500,000; observatory; exports dye-woods.

**Pernicious**, (med.) destructive, deadly, e.g., pernicious anaemia (q.v.).

**Péronne**, tn. on Riv. Somme, N. France; captured by the Germans (Franco-Prussian War), 1871, and again (World War), Sept., 1914; retaken by British, March, 1917, by Germans, March 1918, and finally by French and Australians, Sept., 1918.

**Perpendicular**, 1) (archit.) latest Gothic style, distinguished by marked verticality of its lines; mullions of windows are carried right up to the head within its pointed arch, usu. four-centred. 2) (Geom.) A line set at angle of 90° (rt.-angle) to another; on a curve, a line set P. on the curve tangent at the point of contact.

**Perpetual motion**, movements of machine continuing of itself without supply of energy; attempted by many inventors from antiquity until present day. Two main classes of experiment: 1) purely mechanical, using weight, buoyancy, etc., contradicts law of conservation of energy; 2) thermal, using low temp. heat, contradicts 2nd law of thermodynamics (q.v.).

**Perpignan**, cap. of dépt. of Pyrénées-Orientales, France; pop., 74,000; fortress.

**Perquisite**, incidental gain in office or employment, beyond salary or wages for services rendered; odd gratuity or privilege conventionally attached to same office.

**Perrault**, Charles (1628-1703), Fr. writer; fairy tales.

**Persephone**, (Gr. myth.) goddess of Underworld; dau. of Demeter. See PROSERPINE.

**Persepolis**, ruins (30 m. N.E. of Shiraz) of cap. of Persian kgdm.; destroyed 330 B.C.

**Perse School**, Cambridge; public school for boys; fndd., thr. bequest of Stephen Perse (1548-1615), Fellow of Gonville and Caius, 1615; c. 350 boys.

**Perseus**, 1) (Gr. myth.) son of Danae; slew Medusa; freed Andro-



Perseus

meda. 2) (Astron.) Constell. containing stars Mirfak and Algol; see Pl., ASTRONOMY, N.C.H., A-B.

**Pershing**, John Joseph (1860- ), Amer. gen.; c.-in-c. Amer. Exped. Forces in France, 1917-18.

**Persia**, Iran, kgdm., W. Asia, bounded N. by Azerbaijan S.S.R., Caspian Sea and Turkoman Repub.; W. by Turkey and Iraq, S. by Persian Gulf and Gulf of Oman (Arabian Sea), and E. by Baluchistan and Afghanistan; 635,900 sq.m.; pop., 9 mill. (Persians, Kurds, Turkomans: 50,000 Armenians; c. 6,000 Europeans); most of inhab. Shiite Moham-

medans. Surface mainly a barren tableland (Iranian Plateau, 4,000 ft.) surrounded by high mountains; Elbruz Mountains (Demavend, 18,603 ft.) in N. In the interior are deserts (Dasht-i-Kavir in N., Dasht-i-Lut in S. centr. depression), salt lakes, marshes, and lakes without outlet (L. Urumia in N.W.); chf. rivs., Aras (Araxes), on borders of Azerbaijan, and Safid Rud, both flowing into the Caspian Sea. Climate of plateau Continental; winter and spring temperate, summer very hot, with an incessant N. wind lasting for 3-4 months (Shamel); rainfall slight, except in the N. mtns., and confined to winter months, with resultant droughts. Vegetation of Caspian coast luxuriant; valls. and terraces of the plateau fertile; rice, cotton, oranges, vines, tobacco, flowers (roses, narcissi). Min. wealth (undeveloped) includes petroleum, iron, coal, copper, lead, turquoise. Exports petroleum, carpets and rugs, cotton, silk, wool, fruits, opium. Rlys., 470 m. (many lines projected); roads being developed; several air-routes. Divided into 33 provinces. Cap., Teheran.

**HISTORY:** Cyrus (556-529 B.C.) revolted against the Medes and overthrew them at Pasargadae; defeated Croesus of Lydia, 546, and Babylonians, 539: his son, Cambyses, conquered Egypt, 525. Darius and Xerxes made war on Greece; see PERSIAN WARS. Persia conquered by Alexander the Great, 331; govrnd. by Seleucids till Parthian Emp., fndd. by Arsaces, rose to greatness under Mithridates I. New Persian Empire (Sassanids) A.D. 226-642. Conquest by Mongols in 12th century. Nadir Shah (1735-47) re-



General Pershing



Persian Landscape



stored fortunes of Persia and invaded India. Kajar Dynasty, 1794-1925. Anglo-Russian Convention, demarcating spheres of influence and guaranteeing Persia independence, 1907. Defensive alliance with Russia, 1921. Overthrow of the old dynasty and accession of Riza Khan (Shah), 1926 treaty with Afghanistan, 1928.

**Persian:** *see* LANGUAGE SURVEY, *Iranian*.

**Persian art and literature.** Art chiefly expressed through **CALIGRAPHY**, (beautiful MS. Korans from 7th cent.), and **MINIATURE PAINTING**, princ. in MSS., subjects taken from nat. lit.; heroic figs. with landscape backgrounds prominent, figures over-conventionalised. Bagdad school from 12th cent., with Mongol influence 13th-14th cents. Greatest painter Bihzād (c. 1460-1525). Tabriz sch., 16th cent.; Isfahan sch., 16th-17th cent.; leadg. painter, Rizā Abbāsī. **ARCHITECTURE:** characterised by twin minarets and domes often decor. and latticed; and by extensive decoration with brilliant coloured glazed tiles. 18th cent. rectangular, delicate wooden constructions with slender columns, intricate cornices; applied colour integral part of P. arch. **CERAMICS:** 9th-12th cent.; many delicate pieces with primitive designs, figs. and borders of ornamental cufic script; later pottery coarser but perfect glaze and glowing colour, esp. in blue ranges; 14th cent. floral ornament more import.; 16th-17th cent.; Chin. influence. **TEXTILES:** magnificent rugs, univer. esteemed. Classified topographically as Shiraz, Mashad, Khorasan, Kirman, Hamadan, etc. **METALWORK:** gold and silver inlay in copper and steel.

**LITERATURE:** influenced by Arabic, all in MS. to 19th cent. **EPIC POETS:** Firdausi (*Shāh-nama*), Hamdu'llāh Mustawfi (*Zāfar-nama*). **OTHER POETS:** Dawlatshah (*Tadhkiratu'sh-shu'ara*, "Mémorial of Poets"), Hafiz (*Diwan*), Omar Khayyam (*Rubaiyat*), Abu Sa'id (*Quatrains*), 'Abbās of Merv (8th-9th cent.), Daqiqi (d. 952 A.D.). **ROMANCES:** *Yusuf u Zulaika* (by Firdausi); *Jami*, *Laila and Majnun* (by Nizami of Ganja), *Salaman and Absal* (by Jami). **BELLES LETTRES:** Faridu'l Din Attar (*Pend-nameh*), Husayn Wa'iz Kashifi (*Anvari Suheli*), Jami (*Beharistan*), Nizamu'l Mulk (*Siyasat-nāma*), Sa'di (*Bustan*; *Gulistan*). **PHILOSOPHY, MYSTICISM, ETC.:** al-Hujwiri (*Kashf al-Mahjūb*, Sufism), Jalālu'l Din Rūmī (*Masnawī-i-Ma'nawī*), Jami (*Lawa'ih*), Kai-Kā'ūs ibn Iskandar (*Kābūs-nāmah*, ethics). **DRAMA:** Exc. for light comedies P. drama has not passed the stage of the mediæv. Mystery Plays of W. Europe, e.g., *Ta'ziyah* (Miracle Play of Hasan and Husain).

**Persian Gulf,** calm landlocked sea (c. 530 m. long, max. brdth., 220 m.) betw.

Arabia and Persia; in Brit. sphere of influence; pearl fishing.

**Persian lamb,** valuable lamb fur from Bukhara used for commercial purposes.

**Persian Wars,** (490-448 B.C.), 1) three Persian expeditions agst. Greeks, esp. by Athenians, 492, 490, and 480, ending in deft. of Pers. at Salamis and Plataea, 479 B.C. 2) Victorious Gr. offensive, all Gr. tns. being freed from Pers. dominion after batt. of Eurymedon, 466 B.C.; peace signed 448.

**Persimmon,** (bot.) fruit of an Amer. ebony tree, *Diospyros virginiana*, sometimes known as the date plum; yellow, c. 2 in. in diam., with slightly acid pulp.

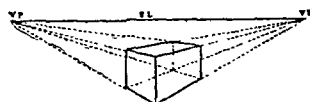
**Persius,** Aulus P. Flaccus (34-62), Rom. satirist; pupil and close friend of Cornutus the Stoic, who, after P.'s death, suppressed all his work except the six extant satires.

**Person,** in law may be a natural P. (human being) or artificial P. (corporation).

**Persona grata** (Lat.), welcome, acceptable person.

**Personal union,** one wh. unites 2 or more States by means of common ruler (e.g., former Austro-Hungarian Dual Monarchy; Brit. Commonwealth of Nations), each State retaining its autonomy. *See* DOMINION.

**Perspective,** (geom.) the appearance of an object from a particular point of view; in P., space betw. parallel lines appears to grow



Perspective

narrower in the distance, or height of a level-topped row of posts to diminish. **P. drawing,** delineates objects in accordance with these phenomena.

**Perspiration,** excretion of sweat by means of the sweat-glands thr. pores of the skin; process assists regulatn. of body temperature, and is intensified by exercise, dry heat, by fear and some other emotions, and by sudorifics (*q.v.*).

**Perth,** 1) co. tn. and royal burgh, Perthsh. Scot., on Riv. Tay; pop., 34,800; cap. of Scot. till 1452; textiles, dyeworks; Scone Palace 2 m. N. 2) Cap., W. Australia, on Swan Riv., 12 m. from Port Fremantle; univ. (1913); Ang. and R.C. abps.; exports, wool and wheat; park (1,000 acres); pop. (incl. suburbs and port), 204,780.

**Perthes,** Johann Georg Justus (1749-1816), Ger. publisher at Gotha (Thuringia); issued *Almanach de Gotha* (1st. ed., 1774).

**Perthshire,** co., N. centr. Scot.; area, 2,528 sq.m.; pop., 120,800; surface mountainous (*Grampians, Sidlaws, Ochils; Ben Lawers*, 3,984 ft.), watered by Riv. Tay; Lochs Tay, Earn, Ercht, Rannoch, Katrine; includes

Trossachs, Pass of Killiecrankie, Strathmore, Carse of Gowrie; grouse moors; deer forests; salmon-fishing, agric., sheep-farming; manuf. woollens, tartans, cottons, linens; dyeworks; distilling; coal and iron in Ochils. Includes territorial dists. of Atholl, Breadalbane, Gowrie, Menteith, Methven, Stormont, and Strathearn. Co. tn., *Perth*.

**Pertinax**, Pub. Helvius (c. 126-192-193), Rom. emp.; succ. Commodus; son of charcoal-burner; elected emp. agnst. his will; murdered in military mutiny. Name used as pseud. from 1917 by the Fr. journalist, André Géraud (b. 1882), in articles on war and international topics.

**Perturbation**, (astron.) deviation of a planet from its regular elliptic orbit, caused by attraction exercised by planets upon one another.

**Peru**, repub., S. Amer., bounded N. by Ecuador and Colombia. E. by Brazil and Bolivia, S. by Chile, and W. by Pacific Ocean. Area, c. 523,200 sq.m.; pop., 6,200,000 (500,000 whites). Coast-line uniform, with steep cliffs and few harbours; guano deposits on the various small islands. *Coastal Region*, 30-100 m. wide, fit for pasture and (with the help of irrigation) for agriculture; sugar, cotton, rice, grapes, and olives. Centr. region, or *Sierra*, is crossed from N. to S. by a section of the Andes, with high plateaux (up to 12,000 ft.) scored by deep gorges and bounded by ranges or cordilleras; several peaks (some volcanic) exceed 20,000 feet. In the S.W., on borders of Bolivia, is L. Titicaca. Coffee, cocoa, maize, and wheat are grown; the llama is characteristic animal. Farther E. extends the thickly forested *Montaña*, sloping down to the great riv. valls. (Amazon and its tribs., Huallaga, Ucayali, etc.); the rubber industry, once of capital importance, esp. in region of Riv. Putumayo, has declined. Mineral wealth only partially developed. Climate varies with altitude, from tropical to subarctic; rainfall equally variable. Exports, petroleum, copper, silver, gold, sugar, cotton, alpaca. Rlys., 2,810 m. Twenty-four depts. and three provs.; chf. tns.: *Lima* (cap.), Callao (port), Arequipa, Cuzco. Part of Inca Emp. from 13th cent. till 1531, when Pizarro conquered the country for Sp.; independent, 1821. New constitution, 1920; President (5 yrs.), Senate of 35, and House of Deputies of 110 members; Leguía, Pres. with semi-dictat. powers 1919-30, expelled by revolutionaries. See also TACNA.

**Peru, Balsam of**, obtained from *Myroxylon pericarpe*, used as perfume.



Peruvian Earthenware Vessel of Inca Period

**Perugia**, 1) prov. of Umbria, centr. It.; 2,550 sq.m.; pop., 500,000. 2) Cap., on E. Tiber; pop., 81,500; archiepiscopal see; cathed. (15th cent.); univ. (1308); observatory, fountain by Giovanni Pisano (c. 1285); academy of art; textile industry.

**Perugino**, Pietro Vannucci (1446-1510), Ital. painter; Umbrian school; perhaps studied under Fiorenzo di Lorenzo; taught Raphael; *Madonna and Child with St. John*; *Madonna and Child with SS. Jerome and Francis*; *Adoration of the Shepherds*.

**Peruvian bark**: see CINCHONA; QUININE.

**Peruzzi**, Baldassare (1481-1537), Ital. painter and architect, Villa Farnesina, Rome.

**Pesaro**, tn., It., on Adriatic Sea; pop. 35,000; cap. of province P. and Urbino (1,118 sq.m.; pop., 294,000); b.-place of Rossini.

**Pescadores**, *Hōkō tō*, group of 48 (11 inhabited) Japanese isls., W. of Formosa, China Sea; area c. 40 sq.m.; pop., 62,100 (mostly Chinese); ground nuts; oil cake.

**Pescara**, 1) riv. (c. 90 m.), centr. It., formed by confluence of Aterno and Gizio, flows into Adriatic. 2) Town, population, 43,000; Cistercian Abbey, founded 871, rebuilt 12th cent. 3) Prov. of the Abruzzi, on Adriatic coast of Italy; 472 sq.m.; pop., 192,600.

**Peseta**, 1) Span. silver coin, nominal value c. 9½d. (\$0.19), equiv. to franc, lira, etc., in Latin monetary union; also used in Peru. 2) Sudanese coin worth c. 15.11½d. (\$0.46).

**Peshawar**, cap., N.W. Frontier Prov., India, near entrance Khaibar Pass (q.v.); pop., 121,900; strategically important; rly. through Pass (projected to Kabul).

**Peshito**, 2nd-cent. Syriac transl. of Bible.

**Peso**, former Span. silver coin, equiv. to 5 pesetas (q.v.), worth c. 4s. (\$0.96); still used as monetary unit in Span. American countries, as equiv. to the dollar.

**Pessary**, (med.) 1) *Ring p.*, used for supporting the uterus in cases of prolapse. 2) Rubber cap wh. fits over the cervix of uterus and prevents conception. 3) Torpedo-shaped mass of medicated cacao butter or soft gelatin. Used for local treatment, or for contraceptive purposes, e.g., quinine pessary.

**Pessimism**, theory that world is irreclaimably bad; mental state in wh. the worst is anticipated. Ant. *optimism*.

**Pest**: see BUDAPEST.

**Pestalozzi**, Johann Heinrich (1746-1827), Swiss educationalist; propounded theories in *How Gertrude Teaches Her Children*, 1801.



Pestalozzi

**Pesto:** *see* PAESTUM.

**Pestweed, butterbur,** *Petasites vulgaris*, lilac-coloured flowers, on stem 12 ins. high, appearing before the leaves, wh. may be 2 or 3 ft. in diameter. Root is used in folk-med. as a tonic and cardiac stimulant.

**Pétain, Henri Philippe** (1856- ), Fr. soldier; defender of Verdun, Feb., 1916; Fr. c-in-c., 15 May, 1917; directed repulse of Ger. spring offensive, 1918; marshal of France, 21 Nov., 1918; supervised Fr. troops in Morocco in campaign agnst. Abdel Krim, 1925.

**Petal:** *see* FLOWER.

**Peter, 1) St. (N.T.)** apostle, also called Simon; son of Jonas, bro. of Andrew; fisherman of Sea of Galilee. Called to discipleship and named, by Jesus, Cephas (Rock), hence Peter. Became leader of Apostles and, after the Crucifixion, missionary to Jews; sd. to have been Bp. of Antioch and (later) of Rome and to have been condemned by Nero to be crucified head downwards (c. A.D. 65). **Epistles of P., 2** documents ascribed to P., but of doubtful origin. **Gospel of P.,** apocr. writing of N.T., dating from 2nd century A.D. 2) **P. Martyr, St.** (1206-52), Dominican; inquisitor-gen., 1232; prominent in suppressing heresy; slain by heretics near Milan. Canonised, 1253; commem., 29 April.

**Peter, a) Czars of Russia:** 1) **P. I, the Great** (1672-1725); Czar, 1682; created Russ. Navy; introd. W. Eur. culture after touring Europe; fought agst. Charles XII of Sweden (1703-21; Peace of Ny-stad); fndd. St. Petersburg (Leningrad). 2) **P. II** (1715-30), g.-s. of 1), Czar, 1727. 3) **P. III** (1728-62), g.-s. of 1), m. Catherine Alexyevna (*Catherine the Great* [q.v.]), succeeded Eliz. Petrovna, 1762; supplanted and imprisoned by Catherine; prob. murdered. b) *Span. Kgs.: see* PEDRO, of Aragon and of Castile. c) *Kg. of Serbia:* **P. I., Karageorgevich** (1844-1921), Kg., 1903.

**Peter the Hermit** (c. 1050-1115), priest of Amiens; leader in 1st Crusade.

**Peter Lombard,** (d. c. 1164), Bp. of Paris, 1159, scholar and theologian; *Senten-tiae*.

**Peter the Venerable** (1094-1156), Abbot of Cluny, 1122; reorganised the Benedictine Order; gave refuge to Abélard, 1140.



St. Peter



Peter the Great

**Peterborough, 1)** city in Northants, Eng., on Riv. Nene; pop., 43,600; 12th-14th-cent. cathed.; manuf. agric. tools, bricks. *Crozo-land*, with its 12th-cent. abbey and 14th-cent. triangular bridge, is 9 m. N. 2) City, Ont., Canada; rly. centre; pop., 21,000. **Soke of P.,** N.E. part of Northants, is a sep. admin. co.; 83½ sq.m., pop., 51,850.



Peterborough Cathedral

**Peterhead,** police burgh and port, Aberdeensh., Scot.; herring-fisheries; convict prison; pop., 12,500.

**Peterhouse,** St. Peter's College, Cambridge; fndd. 1284 by Hugh de Balsham. Oldest college in the university. Fam. known as "Pothouse."

**Peters, Karl** (1856-1918) Ger. African explorer, fndd. Ger. E. Africa, 1885, and Ger. E. Africa Company.

**Petersen, Jules** (1878- ), Ger. literary histor.; *Schiller and the Stage*.

**Peter's Pence,** English tribute paid to the Pope from early 8th to c. mid-14th cent., and finally abolished by Henry VIII, 1534; at first for endowment of Eng. Coll. at Rome; later, towards support of the Holy See; contributions for latter purpose still made voluntarily.

**Petition,** written demand, address. **P. of rights,** presented to Chas. I by Eng. Parl., 1628; incldd. demand that there shld. be no taxes without consent of Parl., no imprisonment without trial.

**Petitio principii,** logical term meaning a begging of the question; assumption, without proof, of a principle upon wh. a proposition is based.

**Petit-maltre** (Fr.), fop. **P.-point** (Fr.), embroidery consisting of very fine oblique stitch; practised in 18th and early 19th cents., recently revived.

**Petits-chevaux,** race-game in wh. bets are made on a number of miniature horses revolving round a table.

**Petőfi, Alex.** (1823-49), Hung. lyric poet.

**Petra,** ruined city, Transjordan, anc. cap. of the Nabataeans; rock-hewn temple, obelisks, and tombs. Gave name to Arabia Petraea; *see* ARABIA.

**Petrarch, Francesco** (1304-74), Ital. poet and humanist; pioneer of Renaissance in Italy; sonnets to *Laura*.

**Petrel,** group of oceanic birds, over 100 species, of world-wide distrib., black, grey, or white in colour; some emit strong musky smell, and one ("Mother Carey's Chicken") considered by sailors as harbinger of storms.

**Petri, Olaus** (1493-1552), Swed. reformer and author.

**Petrie**, Sir W. M. Flinders (1853– ), Brit. Egyptologist; fndd., 1894, Brit. School of Archaeology in Egypt; investigated sites of Memphis, etc., and various sites in S. Syria.

**Petrification**, turning into stone, or stone-like substance, by natural chemical process; see FOSSILS. **Petrified Forest**, nat. park (1906) in Arizona, U.S.A., 40 sq.m.; petrified coniferous trees of various colours.

**Petrograd**, name by wh. Leningrad (formerly St. Petersburg) was known, 1914–24.

**Petroleum**, rock oil; any of the liquid hydrocarbons occurring in neutral form (cf. BITUMEN), varying in colour, viscosity, and density; extracted from various geol. strata

PETROLEUM: WORLD PRODUCTION OF CRUDE PETROLEUM (IN MILLIONS OF BARRELS OF 42 U.S. GALLONS)

1913 U.S.A.	1920 U.S.A.	1929 U.S.A.	1930 U.S.A.
268 43	442 93	1007 32	898 00
29 90	163 54	44 69	39 53
62 83	46	137 47	37 08
11 17	25 43	103 00	135 17
13 56	17 53	38 07	40 15
186	7 44	34 69	41 68
8 80	12 23	42 14	45 42
12 78	11 68	23 49	24 73
	7 56	65 66	56 36
385 35	688 80	1497 53	1418 72
			TOTALS

World Prodn. has incrsd. very rapidly, but since 1929, fall of prices has restricted output. U.S.A. still produces more than half, but owing to short life of oil wells there is constant change in sphere of prodn. Thus important producing countries may in a few years become small producers (e.g. Mexico) and vice versa (e.g. Venezuela).

by boring; often conveyed from oil wells to reservoirs or market by pipe-lines, which sometimes extend to hundreds of miles; chf. sources of supply are U.S.A., Mexico, Russia, Persia, Rumania, Poland; chf. exporting country, Mexico; chf. importing countries: Gt. Brit., Canada, Fr., Germany. Refinement of P. yields petrol and many by-products, e.g., benzine, petroleum-ether, machine-oil; in the process of refinement by fractional distillation, heavier, less volatile fractions converted into lighter oils by *cracking*, i.e., heating to high temp. under pressure. **P.-ether**: see NAPHTHA.

**Petrology**, study of origin and structure of rocks.

**Petronius Arbiter** (d. c. A.D. 66), Rom. satirist; identified with C. Petronius of Tacitus, boon-companion of Nero; *Satirae*.

**Petropavlovsk**, 1) tn., Akmolinsk dist., Kazakstan, A.S.S.R., on Riv. Ishim; pop. 46,324. Kirghiz caravan centre. 2) Port E. coast, Kamchatka penins.; Russ. S.F.S.R.; pop., 1,710; fur trade. After bombardment by Fr. and Brit. fleet, Sept., 1854 (Crimean War), was abandoned by the Russians and occupied by the Allies, 1855.

**Petropolis**, tn. in State of Rio de Janeiro, Brazil; pop., 34,000; fashionable summer resort; cotton industry.

**Petrovsk**, tn., prov. Saratov, on Riv. Medvyeditsa, trib. of Riv. Don; pop., 21,200; oil pressing, agric. mach., flour mills.

**Petticoat insulator**: see INSULATION.

**P. Lane**, since 1830 officially called Middlesex St.), street in London's East End (Aldgate) famous for its market, held on Sunday mornings.

**Pettie**, John (1839–93), Brit. historical, portrait-, and genre-painter; studied under Scott Lauder; R.A., 1874; *The Vigil*; *Arrested for Witchcraft*; *Portrait of the Artist*.

**Petty larceny**, theft of articles of small value, orig. less than twelvpence; distinction abolished in 1861. **P. officers** (abbr. P.O.), N.C.O.'s (q.v.) in the navy; appointed by commander of their ship. **P. sessions**, ordinary sitting of magistrates to try minor offences, or give prelim. hearing of grave charges to be subseq. tried by quarter sessions or assizes (q.v.).

**Petunia**, tropical Amer. solanaceous plants. Several varieties are cultivated for ornamental purposes.

**Petworth**, mkt. tn., Sussex; pop. (rur. dist.), 8,400; *P. House* (Lord Leconfield) contains picture and sculpture galleries.

**Pevensey Castle**, 12th-cent. Norman castle, Sussex, Eng., 12 m. W. of Hastings; on site Rom. *Anderida*. **P. Bay**

was landing place of William the Conqueror.

**Pewter**, alloy of tin with various other metals, esp. lead, formerly in common use from late Mid. Ages to 18th cent. for domestic vessels, dishes, jugs, etc.; now almost obsolete except for tankards.

**Pfefferkorn**, Jakob (1469–1521), baptised Jew, demanded destruction of all Hebrew writings. Opposed by Reuchlin (q.v.).

**Pfennig**, obsolete German coin, one-hundredth of a mark (q.v.); par value 0.117 penny (0.237 cents); silver 50-pfennig coin in circulation.

**Pforzheim**, tn. in Baden, Ger., on Riv. Enz; pop., 80,400; principal centre of Germany's gold and silversmith industry.

**P<sub>H</sub>**, (phys.) symbol for the concentration of hydrogen ions (q.v.), in an aqueous solution. It is stated as log. of reciprocal



Petunia

of actual concentration, so that  $P_H = 6$  means an actual hydrogen ion concentration ( $1/1,000,000$  gram atom per litre).  $P_H$  of pure water is  $c. 7$ ; solutions less than this are acid, more than this alkaline. Now of great importance in medical work ( $P_H$  of blood), food preservation (corrosion of tins), agriculture (acid and alkaline soils). Measured by hydrogen electrode, or some equivalent, e.g., quinhydrone electrode.

**Phaeacians**, in Homer's *Odyssey*, inhab. of Scheria, hospitable to Odysseus (Ulysses).

**Phaedo**, Plato's (*q.v.*) dialogue on immortality, in form of conversatn. with his friend Phaedo.

**Phaedra** (Gr. myth.) wife of Theseus; in love with her stepson, Hippolytus.

**Phaedrus**, Rom. fabulist, 1st cent. B.C.

**Phaestus**, (anc. geogr.) Minoan city on S. coast of Crete; remains of great palace (*c.* 1800 B.C.); smaller and later palace at Hagia Triada, near by. Excavated by Sir Arthur Evans, 1908.

**Phaethon**, son of Helios; killed by Zeus while trying to drive the chariot of the Sun.

**Phaëton**, open car or four-wheeled carriage with adjustable hood.

**Phagocytosis**, (physiol.) property of white blood corpuscles of enveloping and digesting foreign bodies, e.g., bacteria, and rendering them harmless. Discvd. by Mechnikoff (*q.v.*).

**Phalange**, 1) (anat.) single bone of finger or toe (usually in plural). 2) (bot.) Bundle of stamens joined by their filaments.

**Phalanger**, fam. of marsupial mammals fnd. in Australian regions, small or medium-sized, thick-coated and gen. long-tailed; incl. koala, cuscus, and several so-called opossums.

**Phalanx** (Gr.), 1) heavy infantry in order of battle, specif. battalion of Macedonian troops drawn up in close order. 2) (Anat. and bot.) A phalange (*q.v.*).

**Phalarope**, bird of plover fam., frequenting coasts and lakes, with soft plumage and lobulated toes.

**Phaleron Bay**, inlet, Gulf of Aegina, 4 m. S. of Athens, Greece; orig. roadstead of Athens before fndn. of the Piraeus (*q.v.*); now a seaplane base. **Old and New P.**, S. suburbs of Athens, on Bay of P.; seabathing.

**Phallus**, male genital organ as a symbol of fertility in nature. *Phallic worship* is found in almost all religions of antiquity.

**Phanariotes**, inhab. of Gr. quarter (Phanar) in Constantinople.

**Phanerogams**, flowering, seed-bearing plants; ant.: *cryptogams* (*q.v.*).

**Phantasm**, figment of imagination, mislead. picture. **Phantasmagoria**, series of phantasms. **Phantom**, vision, creation of a morbid imagination; spectre, ghost.

**Pharaoh** (O.T.), designation of anc. kgs. of Egypt. **P.'s Daughter**, preserver of Moses (Exod. ii.); tradit. named Merhhis. **P.'s serpents**: see **THIOCYANATES**.

**Pharisees** (Hebr., Separatists), Jew. relig. party (from *c.* 120 B.C.); scrupulous observers of the religious traditions of the Mosaic Laws; represented the Puritanical element as against the Sadducees (*q.v.*). Term now applied to a hypocritical or over-righteous person.

**Pharmaceutist**, **pharmacist**, one skilled in the preparation of drugs and the dispensing of medicines. **Pharmacology**, science of the nature and actions of drugs. **Pharmacopeia**, book of official standards of doses, formulas, and methods used in preparation of drugs. **Pharmacy**, art and science of preparing drugs and medicines, also the place in wh. they are prepared or sold.

**Pharos**, penins. forming W. extremity of Alexandria, Egy.; site of the white marble lighthouse, Pharos, one of the seven wonders of the world, built by Ptolemy I and II, *c.* 260 B.C.

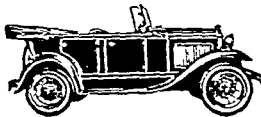
**Pharsalus**, anc. tn. in Thessaly. Scene of decisive defeat of Pompey by Caesar, 48 B.C.

**Pharynx**, (physiol.) back wall of nose and mouth cavity. **Pharyngeal catarrh**, inflammation of P. caused thr. taking cold.

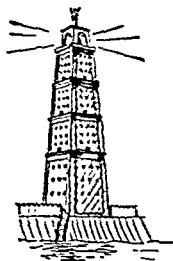
**Phase**, particular point or state in any periodically recurring phenomenon, e.g., the phase of the moon. In all vibration or oscillation, e.g., alternating electric current, phase is defined by angle,  $360^\circ$  being duration of complete oscillation. Hence one of two oscillations of equal period said to be so many degrees in advance of, or behind, the other. Important relation between phase of alternating electromotive force (voltage) and phase of current produced by it (*power factor*).

**Ph. D.**, abbr. *Philosophiae Doctor* (Lat.), Doctor of Philosophy.

**Pheasant**, gallinaceous bird of the subfamily *Phasianidae*, wh. includes the most widely distributed and gorgeously plumaged of the game-birds; fnd. throughout Europe, Asia, Malaya, Africa, and Centr. America. Bred in Gt. Brit. for



Phaëton



Reconstruction of Pharos Lighthouse



Chinese Pheasant

shooting. In all species it is the cock bird that assumes the resplendent plumage. The argus, golden, and Amherst pheasants are specially remarkable for their gorgeous courtship displays. **P.-shooting**, birds generally driven by beaters to guns standing outside covert. Season: Oct. 1st.-Jan. 31st. **P.'s-eye**, *Adonis autumnalis*, member of the ranunculus family; bright red flowers.

**Phenacetin**, synthetic drug derived from coal-tar; used to relieve headache, neuralgic, and rheumatic pains.

**Phenols**, (chem.) hydroxy-benzols, organic aromatic compounds occur in coal, lignite, and wood tars and in plants such as thyme. Carboic acid (phenol,  $C_6H_5OH$ ) most important. Used in manuf. of dye-stuffs, medicines, explosives, and synth. resins and for preserving woods. P.s are strong antiseptics, one of the most active being carvacol.

**Phenomenon**, that wh. is manifest to the senses, contrasted with its non-manifest cause or ground. **Phenomenalism**, doctrine that the mind cannot penetrate to what lies behind phenomena; see AGNOSTICISM. **Phenomenology**, inquiry into nature of P.; study of the relations of space and time with objects of sense (Kant).

**Phidias**, Gr. sculptor of 5th cent. B.C.; ivory and gold statue of Zeus at Olympia (one of the Seven Wonders of the World) and of Athena in the Parthenon at Athens (Athena Parthenos).

**Phil-, philo-**, Gr. prefix (as suffix, *-phile*) meaning friend of: e.g., Philhellenic, friendly to the Greeks; Anglophile, friend of England.

**Philadelphia**, cap., Pennsylvania, U.S.A., pop., 2,000,000; Atlantic port; cathed., univ. (1740), acad. of art; manuf. rolling stock, textiles; shipbuilding. Declaration of Independence, 4 July, 1776.



Egyptian Temple at Philae

**Philae**, islet in Riv. Nile, above Assuan, Egy.; ruins of Temple of Isis; flooded annually by Assuan Dam.

**Philately**, study and collection of postage stamps.

**Philemon**, **Epistle to** (N.T.), letter entrusted by St. Paul (*q.v.*) to the slave, Onesimus, for delivery to latter's master, Philemon.

**Philemon and Baucis** (Gr. myth.), happy old couple to whom Zeus granted a simultaneous death (*Ovid*).

**Philharmonic** (Gr.), music-loving, e.g.: *P. Orchestra*; *P. Society*.

**Philhellenes**, i.e., "friends of the Greeks," foreign supporters of Greece in her insurrection agst. Turk. sovereignty, 1821-29.

**Philidor**, pseudon. of François André Danican (1726-95), Fr.-Eng. musician, com-

poser (operas, *Tom Jones*, etc.), and famous chess master.

**Philip**, 1) (N.T.) a) one of 12 Apostles, native of Bethsaida in Galilee; prev. disciple of John the Baptist. b) P. surnamed the Evangelist; conversation with Ethiopian eunuch (Acts viii). See also HEROD 3). b) Kgs. of Macedonia: **P. II** (382-336 B.C.), Kg., 350; father of Alexander the Great; defeated Greeks at Chaeronea, 338. **P. V** (238-179 B.C.), Kg., 220; defeated by Romans under Flamininus at Cynoscephalae, 197. 3) Kgs. of France: **P. I** (1053-1060-1108), s. of Henry I. **P. II**, Philippe - Auguste (1165-1180-1223), joined Richard I of Eng. in Third Crusade, 1189. **P. III**, the Bold (1245-1270-1285), s. of Louis IX. **P. IV**, the Fair (1268-1285-1314), transfd. papacy to Avignon, 1309; sup-



Philip II of Spain

prsd. Order of Knights Templars, 1312. **P. V**, the Tall (1293-1316-1322), s. of P. IV. **P. VI** (1293-1328-1350), 1st Valois kg.; began Hundred Years' War with Eng., 1339-1453.

4) Span. kgs.: **P. I**, the Handsome (1478-1506), Kg. of the Netherlands, 1494, of Castile, 1504. **P. II** (1527-98), Kg. of Spain, 1556; s. of Emp. Charles V, who entrusted him with govt. of the Netherlands. On Charles's abdication (1554) P. acquired, in addition, Spain and Span. America, Naples and Sicily, Franche-Comté, and duchy of Milan; m. Qu. Mary of England, 1554. His polit. and relig. oppression of Netherlands provoked revolt, which ended in estab. of Dut. Republic. Sent Span. Armada agst. England, 1588.

**P. III** (1578-1598-1621), s. of P. II. **P. IV** (1605-1621-1665), s. of P. III. **P. V** (1683-1700-1746), g.-s. of Louis XIV of France; accession caused War of Spanish Succession (*q.v.*). 5) Ger. Kg.: Duke of Swabia (1195-1208), youngest s. of Frederick I, Barbarossa; rival of Emp. Otto IV. 6) Dukes of Burgundy: **P.**, the Bold (1342-1404), s. of John II of France, created Duke of Burgundy, 1363; regent for Charles VI of France. **P.**, the Good (1396-1467), succeeded, 1419; signed Treaty of Troyes (1420) as regent of France; inherited Netherlands. 7) Dukes of Orleans: see ORLÉANS. 8) Landgrave of Hesse (1504-67); ardent Protestant; introd. Reformation into Hesse; a fndr. of League of Schmalkalden; imprisoned by Emp. Charles V.

**Philippeville**, seapt., dept. Constantine, Algeria; pop., 47,800; port of Constantine.

**Philippi**, former city of Macedonia, 75 m. E.N.E. Salonica. Victory of Octavius over



Brutus and Cassius, 42 B.C. Christian Church fndd. by St. Paul.

**Philippians, Epistle to the** (N.T.), written by Paul during imprisonment in Rome (c. 63 A.D.) to Christian congregation in Philippi (scene of St. Paul's first preaching in Europe).

**Philippic**, passionately aggressive speech, after speeches of Demosthenes against Philip II of Macedon.

**Philippine Islands**, archipelago, N.E. of Borneo; 115,000 sq.m.; pop., 12,204,100; mountainous; volcanic; highest peak, *Mt. Apo* (9,600 ft.) on Mindanao Isl.; gold, silver, copper, coal, iron; sugar, hemp, tobacco, coconuts; timber; largest isl. Luzon (40,800 sq.m.) on N., on which is cap., Manila; group comprises 7,085 isls. of which 2,400 are named. Disc. by Magellan, 1521; named after Philip II of Spain; U.S.A. possession since 1898.

**Philippopolis, Plovdiv**, tn., Bulgaria, cap. of prov. P. (3,830 sq.m.; pop., 560,021), on Riv. Maritza; pop., 84,655; metal industry.

**Phillistine**, (O.T.) partly Semitic people, neighbours of the Israelites: chief cities, Ashdod, Ascalon, Gath, Gaza; partially subjugated by Saul and David. (Fig.) One who, in the opinion of the cultured, is uncultured. **Phillistinism**, term, coined by Matthew Arnold (q.v.), implying lack of sympathy with lit. and fine arts, lack of culture coupled with self-satisfied unconsciousness of deficiency.

**Phillips**, Stephen (1866-1915), Brit. poet and playwright; *Eremus*, 1894; *Poems*, 1897; plays: *Paolo and Francesca*, 1900; *Ulysses*, 1902; *Nero*, 1906.

**Phillipotts**, Eden (1862- ), Brit. novelist, playwright, and poet; novels: *The Human Boy*, 1899; *The Angle of Seventeen*, 1912; plays: *The Farmer's Wife*, 1917; *Yellow Sands*, 1926; poems: *The Iscariot*, 1912; *Brother Beast*, 1928.

**Philo**, Jewish-Hellenistic philosopher in Alexandria (c. B.C. 20-A.D. 54), united Greek and Jewish philosophy, forerunner of Neo-Platonism.

**Philoctetes**, Gr. legendary hero, inherited the bow and arrows of Hercules; abandoned for ten years on Lemnos with a poisoned wound, on way to the Trojan War; eventually reached Troy and killed Paris (q.v.).

**Philology**, science of language; study of etymology, grammar, rhetoric and literary criticism. **Comparative philology**, study of languages by comparison of history, forms, and relationship with each other.

**Phiomela**, (Gr. myth.) dau. of Pandion, Kg. of Athens; having been dishonoured by Tereus, Kg. of Thrace, she was changed into a nightingale.

**Philosopher** (Gr. "lover of wisdom"), one who studies (or practises) the right way of living and seeks to apprehend the nature of reality. **P.'s stone**, substance hypothesized and sought after in alchemy (q.v.); said to possess property of turning all substances into gold and of healing all diseases; see **ELIXIR**.

**Philosophy**, science of science, and the foundations of knowledge, of the root causes of all Being, Happening, and Knowledge; investigates in partic. the possibilities of knowledge, the ways, bases, laws, and forms of thought and perception, as well as the forms of consciousness. Operates by reason and experience. Chief branches: *Logic, Epistemology, Metaphysics, Ethics, Science of Values, Aesthetics, Social Philosophy*.

**HISTORY**: *Earliest*, that of Egy., India, Babylon; closely associated with religion and theology (priestcraft, magic, astrology).

**Chinese p.** (greatest period 600-500 B.C., Confucius, Lao-tse), no influence on Western P. **Greek p.**, rational reaction agst. popular religion. 1) *Ionian School* (Thales, Anaximander, Anaximenes), see **HYLOZISM**; ended with Persian conquest of Ionia. 2) *Pythagoras* (q.v.). 3) *Eleatic School* (q.v.). 4) *Greatest period of Gr. P.*: Sophists, Socrates, Cyrenaics, Cynics, Plato, Aristotle. 5) *Later ancient P.*: Epicurus (Hedonism); Zeno (Stoics); Carneades (Sceptics); Philo (Neo-Platonists); Cicero (Eclectics); ancient P. ended A.D. 529 with closing of school of P. by the Emperor Justinian. **Medieval p.**, ant. of Gr. P.; dominated by popular religion.

1) *Christian Theologians* (Patristic period), cf. Augustine. 2) *Arabian P.*: Avicenna, Averroes. See also **JEWISH P.** 3) *Scholasticism* (q.v.). **Modern p.**, 1) Transitional break away from subordination to eccles. authority (Paracelsus, 1493-1541; Montaigne, 1533-92); growth of scient. spirit (Copernicus, Galileo, Newton, Harvey); Francis Bacon 1561-1626. 2) Descartes, 1596-1650, father of mod. P.; Hobbes, 1588-1679. See **SENSUALISM**. Spinoza, 1632-77, 1st. compl. rationalistic system of mod. P.; Leibnitz, 1646-1716, idealistic monism. 3) Locke, 1632-1704, applied epistemology to mod. P.; Berkeley (pure Idealism); Hume (Scepticism. 4) Kant, 1724-1804, idealistic criticism basis of all sub. epistemology; Fichte, Schelling (romantic natural P.); Hegel, founder of logical Idealism, closely relating P. with politics and history. 5) Tendency twds. *Materialism* c. middle of 19th cent.; Schopenhauer, 1788-1860, P. of pessimism, identified ultimate reality with irrational will; Nietzsche, 1844-1900; Wundt, 1832-1921; Neo-Kantians. 6) *Positivism and Evolutionism*; Comte, 1798-1857; J. S. Mill, 1806-73; H. Spencer, 1820-1903. 7) *Recent and Contemporary P.*; Neo-Hegelians and revolt agst. empiricism (Green, Bradley, Bosanquet,

Haldane, McTaggart); *Pragmatism*; Wm. James, Bergson, Croce; Alexander (*Space, Time, and Deity*, 1928), embodying new conceptions of space-time. See RELATIVITY.

**Philosophy, Indian**, developed first in the *Vedas* and *Upanishads* (q.v.) in wh. philos. speculation is mingled with religious teaching; in 6th and 5th cents. B.C., rise of *Buddhism* and *Jainism* considerably affected development of ethics and tended towards materialist standpoint; later six great philos. systems took shape: *Nyaya*, concerned princ. with problem of Knowledge; *Vaisesika*, teaching individuality of particulars; *Samkhya*, reality of matter and of individual souls; *Yoga*, emphasising mental concentration and quietism; *Purva Munamsa*, concerned with duty; and *Vedanta*, which seeks to interpret the Upanishads in various ways, and comprises var. systems, esp. those of Samkara, Ramanuja, and Madhva; Indian phil. generally impregnated with belief that the visible world is illusion (*Maya*) and with the doctrine of transmigration of souls (q.v.).

**Philosophy, Jewish**, arose, after the dispersion, in attempts to interpret Jewish religion to Gentile world in wh. Jews were scattered, esp. at Alexandria, where Jews first encountered Greek philos. (see PHILO); then little distinctively J. Philos. until 9th and 10th cents., when under influence of Arab thinkers Neo-Platonist teachings influenced writings of Solomon ibn Gabirol (1021-58), Jehuda Halevi, etc.; later an Aristotelian movement influenced Moses Maimonides (1135-1204), opposed by the anti-rationalist Hasdai Crescas (1340-1410); in 15th cent. after Joseph Albo (1380-1444) Jewish P. declined, though many later philosophers (e.g., Spinoza) were Jews by race; princ. tasks of Jewish P. were to explain relation of revelation to reason, and nature and attributes of God.

**Phimosis**, (med.) contraction of the foreskin (q.v.).

**Phiz**: see BROWNE, HABLÔT KNIGHT.

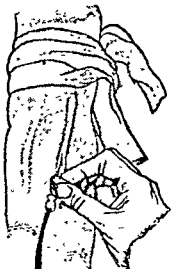
**Phlebitis**, inflammation of a vein; usu. applied to any of two larger veins of the leg.

**Phlebotomy**, obsolete method of purifying the blood of poison, bad matter, etc., by opening a vein.

**Phlegrean Fields**, volcanic region on N. shore of Gulf of Naples, containing cave of the Sibyl.

**Phlogiston**, (phys.) hypothetical substance formerly supposed to be present in all combustibles, disappearing on combustion.

**Phlogistic Theory**, (Stahl early 18th cent.) refuted by Lavoisier's explanation of combustion as oxidation.



Phlebotomy

**Phlox**, handsome garden plant with red, white, purple, or variegated flowers; originally imptd. from Texas.

**-phobe**, Gr. suffix, meaning fearing or disliking: e.g., Anglophobe, one who fears or dislikes England and the English.

**Phobos**, inner of the 2 satellites of Mars (q.v.).

**Phocaea**, anc. Ionian city on W. coast, Asia Minor, 28 m. N.W. Smyrna; its people fndd. many colonies, incl. Massilia (Marseilles).

**Phoebus**, epithet of Apollo (q.v.).

**Phoenicia**, (anc. geogr.) portion of Syrian seaboard betw. Mt. Lebanon (N.) and Mt. Carmel (S.), inhab. by Phoenicians (q.v.). Its cities included Tyre, Sidon, Byblos, Beirut, Acre. Conquered by Egyptians, 16th cent. B.C.; indept. 10th-9th cents.; under Assyrians, 876-605; later under Chaldaeans, Persians, and Macedonians; incl. in Rom. prov. of Syria, 64 B.C.

**Phoenician**: see LANGUAGE SURVEY, W. Semitic.

**Phoenicians**, Semitic merchant race inhabiting Phoenicia (q.v.). Famous seafarers, fndd. harbours and colonies as far as Atlantic coast. Dyeing (Tyrian purple) and glass manufacture.

**Phoenix**, cap. Arizona, U.S.A.; on Salt Riv.; pop., 48,100; health resort; cotton; fruit, vegetables.

**Phoenix**, 1) fabulous bird supposed to have lived in Arabian desert in cycles of 500 yrs., at end of each of wh. it burned itself and rose again from its own ashes with renewed youth and beauty. 2) (Astron.) Sthrn. constellation. See PL., ASTRONOMY, S.C.H., H.

**Phonetics**, science of sounds, esp. of human voice. *Phonetic spelling*, acc. to sound and not to derivation.

**Phonograph**, apparatus for reception and reproduction of acoustic waves (sounds) invtd. by Edison (1877); forerunner of gramophone (q.v.). Sounds registered on wax cylinder.

**Phonology** (Gr.), science of sounds of speech; study of changes occurring in a language in course of time.

**Phosgene**, (chem.) carbonyl chloride; sym. COCl<sub>2</sub>; colourless, very poisonous gas, with sharp smell; used in World War; formed by direct combination of carbon monoxide and chlorine (q.v.), or by decomposition of chloroform.

**Phosphates**, (chem.) compounds of bases with phosphoric acid, e.g., iron P.; used in "chemical food" as a tonic; superphosphate contains soluble acid P. of lime; used as a fertiliser.

**Phosphorescence**, emission of light without heat; also property of some mineral substances (e.g., phosphorus, zinc sulphide) of shining in the dark after exposure to light.

**Marine P.**, phenomenon caused by emission of light by minute marine organisms (*flagellata*), seen esp. in Tropics. See LUMINESCENCE.

**Phosphorus**, non-metallic chem. element, sym. P; at. wt. 31.02; occurs naturally as calcium phosphate (*sombrerite*) and with fluorine (*apatite*), also in bones. *Yellow P.*, sp. gr. 1.83, very poisonous; occurs as yellowish-white, wax-like substance, wh. glows and burns on exposure to air; must therefore be kept under water. Used in rat poisons and to slight extent in med. as a tonic (see ANTIDOTES). *Red P.*, sp. gr. 2.2, non-poisonous; used in manuf. of matches. *Phosphor-bronze* contains 1% P. with copper and tin; used for engine bearings.

**Photius** (c. 820-898), Gr. theolog.; Patriarch of Constantinople; promoted separation of Gr. from Rom. Church. *Bibliotheca*, notes on lost Gr. texts.

**Photocatalysis**: see PHOTOCHEMISTRY.

**Photochemistry**, deals with effect of light upon chemical action, wh. it may cause, accelerate (*photocatalysis*), or reverse. Fundamental: Einstein's "Law of Photochemical Equivalence," that for each quantum of radiation absorbed, one molecule is chemically transformed.

**Photo-electric cells**, photo-cells the electr. characteristics of which are changed by exposure to light enabling electrical currents to be varied by the action of light; a) elec. resistance of certain substances (selenium, antimonite, thallium compounds, etc.) alters when they are exposed to light; b) negative electrons are released by light from metals; cells are made by enclosing these in evacuated glass bulbs with electrodes (alkali cells), photo-cells in restricted sense; c) action of light on junction of metals with solid conducting compounds, e.g., copper oxide, prod. current. Small elec. effects are usu. *amplified by valves* (q.v.). Used in reprod. sound from film, for transm. in television, for photometry (q.v.), etc. See also SELENIUM CELL.

**Photo-electric effect**, (phys.) liberation of electrons from surface of metal when struck by light, esp. in alkali metals. Internal P.E. in selenium, release of electrons resulting in grt. decrease in its resistce. under action of light.

**Photo-engraving**, general term applied to printing (illustrations, etc.) by chemical and photographic means. See LINE BLOCKS; HALF-TONE PROCESS; THREE-COLOUR PROCESS.

**Photography**, production of images of objects by action of light on sensitive substances. Picture of object is formed in camera (orig. *camera obscura*, q.v.) by *objective* lens upon sensitive plate or film. *Objectives* of various kinds: aplanatic (rapid rectilinear) practically free from chromatic aberration (q.v.); anastigmat, in which astigmatism

(incorrect focusing of light rays falling on the lens at an angle) is corrected; double anastigmat, and triplet; telephoto, giving a magnified picture. Exposure by *shutters* of various kinds: roller-blind shutters, some with slit in blind which passes in front of plate (*focal-plane shutter*); lens shutters, leaves of metal worked by spring. Exposure may be varied from  $\frac{1}{2}$  sec. to about 1/4,000th sec. *Plate or film* consists of glass or transparent cellulose compound coated with gelatine "emulsion," containing silver bromide in minute grains. Light produces invisible change in these, such that when film is afterwards bathed in reducing liquid (developer), black metallic silver is formed only where light has acted. Unchanged silver bromide is removed by *fixing-bath*, leaving transparent gelatine with negative image in minute grains of silver, black where light parts of picture should be. *Positive print* made from this by placing in contact with sensitive paper and exposing to light; nearly all prints made on "gas-light" or "bromide" paper, with similar coating to plates and films, and are developed and fixed. For artistic work carbon, bromoil, and gum-bichromate processes (q.v.) are used. Colour of prints changed by *toning* (q.v.). Camera is usually provided with *finder* (for hand-camera) or focusing screen. Mirror reflex camera allows picture to be seen on focusing screen up to moment of exposure. Plate or film is shielded from light by mirror inside camera, which diverts light to focusing screen; mirror is then moved aside just before exposure. Glass plates coated with gelatin emulsion used for best work; otherwise coated film of cellulose compound (acetate, nitrate) in form of *roll* or *pack*. For *cinematography* cellulose nitrate (celluloid) film is used for professional work; very dangerous and inflammable, but cheaper and less subject to uncertain change in size. For amateur work "non-flam" film, or cellulose acetate, is used. Standard film is 35 mm. wide; amateur, 16 mm. and 9.5 mm. See PL., CAMERA; CINEMATOGRAPHY; COLOUR PHOTOGRAPHY, and separate headings.

**Photogravure**, an intaglio photographic printing process resembling aquatint. A resinous ground to form a grain is laid on a smooth copper plate which is fixed by heat. A carbon tissue tone negative is pressed to this, forming a "resist" to an etching fluid which erodes the unprotected copper and causes the picture to be sunk in the plate in depths varying according to the tones. After inking, the surface is cleaned and paper rolled over the plate with sufficient pressure to take the ink from the sunken portions. See also ROTARY PHOTOGRAVURE.

**Photo-lithography**, process by which a phot. made on or transferred to stone or zinc is printed off.

**Photometer**, (phys.) apparatus for measuring the illuminating power of a source of light. **Photometry**, the science of light-measurement. Unit of intensity: *International candle* (Gt. Brit., France, U.S.A.). Unit of luminous flux, the *lumen*, emitted by 1 internat. candle into unit solid angle. Unit of illumtn., the *lux* or 1 lumen per sq. metre. Brit. Unit foot-candle, or 1 lumen per sq. ft. = 10.76 metre-candles. Measurement by *photometers* on many different principles: Bunsen grease-spot, shadow, flicker, photo-electric, polarimetric.

**Photo-micrography**, photog. of very small objects by an apparatus consisting of microscope attached to a camera. Recently great improvement effected by use of *ultra-violet radiation* (*q.v.*), enabling much finer structure to be photographed than the eye can see.

**Photon**, modern name for light-corpuscle, existence of wh. is establd. by Compton, and Photo-electric effects (*q.v.*), where wave-theory (*q.v.*) fails. Mass in grams  $2.19 \times 10^{-38} \times$  wave length in centimetres.

**Photosphere**, the incandescent envelope surrounding the sun.

**Photostat**, camera designed to reproduce drawings, documents, printed pages, etc.; makes negative print (white on black) directly on a bromide paper; copy of negative print made in same way gives positive print; also a facsimile so produced.

**Photo-telegraphy**, transmission of pictures by wire or wireless (perfected by A. Korn). Transparent print is wrapped round transp. cylinder, which is revolved exactly in step with similar cylinder covered with sensitive film at receiving end. Point of light is focused on film and passes thr. to light-sensitive (photo-electric or selenium, *q.v.*) cell, being diverted by prism inside cylinder. Point of light is travelled along by screw so that every point of picture is covered in turn. At every moment photo-electric cell adjusts strength of signal sent to receiving end, where it affects galvanometer, wh. modifies brightness of similar light-spot falling on sensitive paper, and travelling in step with light-spot at transmitting end. Each point of receiving-film thus exposed to light so as to reproduce depth of image at corresponding point at transmitting end.

**Phototype**, (printing) half-tone (*q.v.*) printing process in wh. a special screen is used.

**Phrasing**, (mus.) arrangement, joining or separating of musical passages.

**Phrenology**, pseudo-science, professing to find relationship betw. outlines of skull and mental and moral attributes.

**Phrygia**, (anc. geogr.) country, Asia Minor, of varying extent; in narrowest sense an inland table-land (over 3,000 ft.) lying

betw. rivs. Sangarius (Sakaria; N.E.), Her-mus (W.), and Macander (S.); in widest sense the whole of N.W. Asia Minor. Phry-gians migrated into Asia Minor c. 1500 B.C., displacing the Hittites; after 1000 B.C. (zenith of their power) they lost W. Asia Minor to Gr. colonies and to Lydia, and Black Sea coast to Bithynia; after Cimmerian invasion (7th cent. B.C.) subject to Croesus of Lydia; after fall of Sardis (546), to Persians. After Alexander the Great's conquest (334), split up betw. Syria, Pergamon, and the invadg. Gauls (whose portion became known as Galatia). Part of Rom. prov. of Asia, 133 B.C. In Rom. poets, Phrygian often syn. with Trojan.

**Phrygian cap**, cap with point falling forward; orig. worn by rogues sentenced to the galleys; later, symb. of Fr. Revolution.

**Phryne**, (4th cent. B.C.) Gr. hetaira; model of Praxiteles the sculptor.

**Phthiosis and Phocis**, prov., centr. Greece, N. of Gulf of Corinth, contains Delphi and *Mt. Parnassus*; 2,238 sq.m.; pop., 193,671; cap., *Lamia*; pop., 15,000.

**Phthisis**: see TUBERCLE.

**Phylactery**, small square case containing texts on parchment from Exod. and Deut., worn by Jews on forehead and left arm during certain services (Deut. vi, 8).

**Phyllite**, a dark, slaty rock of the earliest geological formation.

**Phyllocactus**, genus of cacti (*q.v.*) with broad, leaf-like stems; large red or white flowers.

**Phylloxera**, genus of plant lice, partic. that species wh. attacks roots and leaves of wine grape; by grafting it is possible to produce a vine immune from its attacks.

**Phylogenesis**, history of development of a species or a race.

**Physical culture**, regular practice of physical exercises, sports, and games as a means to health. See GYMNASTIC EXERCISES.

**Physician**, one trained in and practising medical profession, esp. one who diagnoses and treats disease but does not perform surgical operations. **Royal College of P.s.**, London, fndd. in 16th cent., chfly. by T. Linacre (*q.v.*), who obtd. letters patent from Cardinal Wolsey and was 1st President. Premises in Warwick Lane destroyed in Great Fire; rebuilt to Wren's designs, 1674-98; new premises in Trafalgar Sq. opened, 1825.

**Physics**, science of all natural phenomena not involving chem. change or life. P. of *matter* in bulk: mechanics, heat, sound; of *electricity* and *electro-magnetic radiation*: heat, light, etc. **Atomic P.** Theory of constitution of matter and its relation to radiation and to properties of matter in bulk; *quantum theory*, *wave mechanics*; **relativity**, science of general nature of space and all events taking

place in it. **DEVELOPMENT OF P.** Grks. (Archimedes) discvd. laws of statics, lever, hydrostatics. Galileo, laws of motion of falling bodies. Kepler, motion of planets (c. 1600). Newton, gravitation (1686); optics, spectrum (experimental); theory of force, mass, inertia. Huygens (1678), wave theory of light. Faraday, electrolysis, electromagnetic induction, concept of field of force (c. 1830). Maxwell, theory of electromagnetic radiation, kinetic theory of gases (c. 1860). Robt. Meyer (1842), energy principle. Hertz, electric waves (1888). Planck, quantum theory (1900). Einstein, relativity (1905). Bohr-Rutherford, atom (1913). Wave mechanics, de Broglie, Schrödinger, Heisenberg (1925). In latest development, fundamental conception of classical P. of atomic mechanism with motion strictly determined by law, is replaced by probability of atomic motion as fundamental. See also separate headings.

**Physiocratic system**, (econ.) first systematic theory of Economics (q.v.) propounded by group of 18th-cent. Fr. econ. philos. headed by Quesnay and Turgot, who opposed theory of mercantilism (q.v.), claiming that true wealth of nations is abundance of necessities and luxuries among the people, and that agric. is the only productive form of labour.

**Physiognomy**, art of judging character from outward appearance, esp. from features, expression, etc. Also, gen. appearance, type of face.

**Physiological salt solution**, solution of sodium chloride (0.9%) having the same osmotic tension as blood-serum; used for intravenous injection after severe hæmorrhage.

**Physiology**, science of functions of the body.

**Pi**, Gr. letter  $\pi$ , see LUDOLPH'S NUMBER. See also PIE.

**Piacenza**, tn., It., on Riv. Po, cap. of prov. P. (1,035 sq.m.; pop., 290,387); pop., 65,712; cathedral (1133).

**Piano**, (mus.) abbr. p, softly; pp. = *pianissimo*, very softly.

**Pianoforte**, (mus.); percussive mus. instr. with keyboard; in its essentials "a large dulcimer with a keyboard." Formerly *clavichord* (strings struck by metal strips) and *harpsichord* (strings plucked by quills attached to key-lever). Fundamental innovation *hammer clavier* (Cristofori, 1700); principle still applied; strings struck by hammers rebounding automatically; usual range, 7 octaves.

**Piano-player**, piano with mechanism, detachable or incorporated, fed by rolls of perforated paper; perforations corres. to notes of composition. By working pedals, air is pumped through the slots, causing levers to strike the notes. Also, P.P. operated

by elec. Proprietary names: Pianola, Phonola, etc.

**Piarists**, regular clerks of the *Scuole pie* (religious schools), an institute of secondary educ. fndd. at Rome, 16th cent.; sanctioned as relig. order in 1621; houses estab. in various Ital. towns and in Moravia; chf. centres of activity, Italy, Austria, Hungary, Spain.

**Piastre**, 1) small silver coin current in Turkey, Egy., etc., worth 2d. to 6d. (\$.04-\$.11). 2) Span. silver coin worth abt. 4s. (\$.97), Span. dollar.

**Piave**, riv. N. Italy (135 m.), rises in Carnic Alps, Treviso; flows into Adriatic; scene of much fighting betw. Italians and Austrians in World War.

**Piazza** (It.), square, esp. market place.

**Piazzi**, Giuseppe (1746-1826), Ital. astron.; disc. first asteroid (Ceres), 1801.

**Pica**, 1) (zool.) small, active rodent chfly. inhabtg. the Himalaya highlands of Centr. and N. Asia, also species in S.E. Eur. and N. Amer.; social, dwelling in crevices in rocks; has a shrill, whistling cry. 2) (Print.) A size of type equal to 12-point (see POINT SYSTEM; TYPE). It is the standard of measurement for leads, rules, printers' "furniture," and also for width and length of printed pages. Small P. is equal to 11-point.

**Picador**, mounted bullfighter, who allows bull to charge his horse, at the same time stabbing him with a short pike (*garrocha*).

**Picardy**, former French prov., now included in dépts. Pas-de-Calais, Somme, Oise, and Aisne. Contains battlefields of Agincourt, Crécy, and many of those of World War.

**Picaresque romance**, fiction dealing with adventures of a clever and amusing rogue, represented in a sympathetic light; orig. in Spain with *novelas de picares*, e.g., *Life of Lazarillo de Tormes* (c. 1554), attrib. to Mendoza.

**Picasso**, Pablo (1881- ), Catalan painter, settled in France; co-fndr. of Cubism, 1906-10.

**Picayune**, 1) anything of trifling value. 2) Name in Louisiana for a small obsolete silver coin,  $\frac{1}{8}$  of dollar or half Span. real.

**Piccadilly**, one of main thoroughfares of W. London, running for abt. 1 m. E. and W. betw. Haymarket and Hyde Park. Name in use from early 17th century. **P. Circus**, space terminating E. end of P., from wh. also radiate Regent St., Haymarket, Shaftesbury Avenue, and Coventry St. In centre of circus, fountain surmounted by statue of *Eros*, by Sir Alfred Gilbert, a memorial, erected 1893, to E. of Shaftesbury (1801-85). Beneath P. Circus is the circular Underground



Picasso, Self-portrait

booking-hall with shop-windows, and series of escalators to lower stations.

**Piccard**, Auguste (1884- ), Belg. physicist and meteorologist; professor at Univ. of Brussels; made two balloon ascents



Piccadilly Circus

into the stratosphere (*q.v.*), reaching height of over 10 miles (May, 1931), and 16,700 metres (nearly 10½ miles) in Aug., 1932, during which he found that "cosmic rays" came from all directions with equal intensity and probably had stratospheric origin.

**Piccinni**, Niccolò (1728-1800), Ital. composer; rivalry betw. P. and Gluck gave rise in Paris to parties of Piccinnists and Gluckists.

**Piccolo**, small flute with high, shrill notes.

**Piccolomini**, Ital. noble family: 1) **Aeneas Silvius**, see PIUS II. 2) **Octavio** (1559-1656), Austr. gen. under Wallenstein, whose downfall and murder he contrived.

**Pick**, (text.) thread of web in a fabric.

**Pickelhaube**, spiked helmet, formerly worn by Prussian infantry.

**Pickering**, Edward Charles (1846-1919), Amer. astronomer; prof. of astron., Harvard, 1877; fndd. observatory at Arequipa, Peru, where he disc. new satellite of Saturn, 1899.

**Picket**: see PICQUET.

**Pickling**, 1) (tech.) process of soaking metals in liquid which attacks surface, for purpose of cleaning or preparing them, *e.g.*, iron, in acid, to remove scale. 2) (Culinary) Curing of meat, fish, vegetables in vinegar and spice.

**Pick-up**, (phys.) appar. forming 1st stage in electr. reproductn. of sound records; it delivers a variable elec. current of very low intensity but corresp. to sound, and suitable for being amplified; or it can be heard directly on ear-phones. Usu. form of P.-u. is the *balanced armature*, tongue of soft iron attached to needle, and vibrating in coil; magnetised by small permanent magnet; magnetism, and hence current in coil, varies with movement of armature.

**Pico della Mirandola**: see MIRANDOLA.

**Picquet**, or **Picket** (milit.) 1) foremost defensive position of the outposts (*q.v.*) of a body of troops. 2) Small body of troops to whom definite duties are allotted, *e.g.*, fire

*picquet*. 3) Group of strikers detailed to dissuade blacklegs from entering factory.

**Picric acid**, *trinitrophenol*,  $C_6H_3(NO_2)_3OH$ , yellow crystals, m.p. 122° C, very explosive (*lyddite*, *melinite*), now superseded by *trinitrotoluol*; see TOLUOL. P. A. also used as an antiseptic for burns and wounds; formerly as dye for wool, but colour is not fast.

**Picts**, aborig. inhab. of Scot.; poss. survivors from Bronze Age; first mentioned A.D. 300.

**Picul**, eastern unit of weight between 130 and 140 lbs. In Singapore, Siam, and China = 133.3 lbs.; in Dut. E. Indies 139.16 lbs., and in Japan 132.28 lbs.

**Piddock**, marine bivalve mollusk that bores into limestone rocks and cement-work of piers, often causing considerable damage.

**Pidgin English**, mixture of corrupted Eng. words with some Port. and Malay, following Chinese idiomatic use; spoken in Chin. seaports, and Straits Settlements as means of communicatn. betw. foreigners and native Chinese.

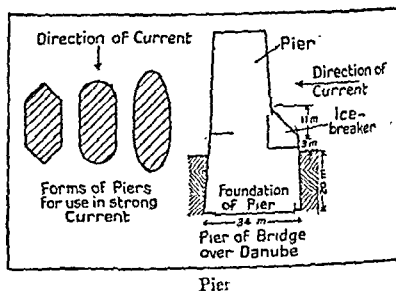
**Pie**, **pi**, (print.) printers' name for type disarranged and in confusion.

**Piebald**, col. of horse; white with irregular patches of black. See SKEWBALD.

**Piece**, (text.) measure of cloth. Muslin P. = 10 yds.; cotton = 28 yds.; Irish linen = 25 yds.; term also applied to bundle of raw flax = abt. ¼ lb. **Pièce de résistance** (Fr.), chief dish at dinner; also (fig.) most important achievement, most valued possession, etc. **Piece of eight**, former Span silver dollar, equiv. to 8 reals (*q.v.*). **P-work**, work paymt. for which is based on the amount executed, not on the time spent in execution (ant.: *payment by time*).

**Pied-à-terre** (Fr.), lodging, quarters to which one can always return.

**Piedmont**, terrl. divn. N.W. It. on Fr and Swiss frontiers; 11,400 sq.m.; pop.



Pier

3,495,427; grain, wine, and fruit; cap., Turin other tns.: Alessandria, Cuneo, Novara Aosta.

**Pied Piper**, charac., in Ger. legend; freed Hamelin from rats by his piping, but, cheated of his reward, lured the town's children into

he Koppelberg, where they vanished forever; subj. of poem by Browning.

**Pier**, (bldg.) vertical mass of stone, brick, or steel, supporting weight; esp. of bridges, arches, etc.; rectangular thickening of a wall or reinforcement, esp. in Gothic archit.; see PILASTER. **P.-glass**, tall wall-mirror, esp. hangg. betw. windows.

**Pierce**, Franklin (1804-69), 14th Pres. of U.S.A., 1853-57.

**Pierre**, cap. South Dakota, U.S.A., on Missouri Riv.; pop., 3,650; granite; shipping centre.

**Pierrot**, tragi-comic figure of Fr. pantomime, taken from It. *Commedia dell'Arte*; em., *Pierrette*.

**Piers Plowman**, Vision of William concerning. Allegor. satirical Eng. poem, attrib. to Langland; begun c. 1362; revised and enlarged in various recensions till c. 1393.

**Pierson Pearson**, Henry Hugo (1815-73), Eng. composer; operas, oratorios, and songs.



Pietà

**Pietà**, in art, representn. of the Virgin with body of the Crucified Christ on her knees.

**Pietermaritzburg**, cap. Natal, S. Africa, c. m. N.W. Durban; pop., 40,000 (21,600 Europeans); univ. coll.; commercial centre.

**Pietists**, relig. revivalists in Lutheran Ch. in 17th century.

**Piezoelectric effect**, the production of electrification in certain crystals (e.g., quartz) by mechanical strain.

**Pig**, domesticated breed of wild swine; males produce large number of young at birth; characterized by the peculiar form of the snout, which terminates in an oval, fleshy disc; feet, although actually furnished with four toes, have the outward appearance of divided hoofs.

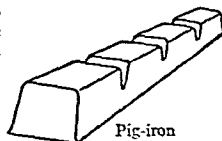
**P.-iron**, iron with more than 1.7% of carbon; brittle, not malleable either when hot or cold: a) **White p.-i.**, p.-i. in wh. carbon is pres. as iron carbide; hard, silvery white, manuf. for converting into malleable iron; b) **Grey p.-i.** contains much carbon in form of graphite; grey, softer and tougher than white; used partly for manuf.

of cast-iron, also for conversion into malleable



Fat Sow with Litter

iron (see PUDDLING). Pig-iron is produced in blast-furnaces. Pig-iron rich in silicon, lacking in phosphorus and sulphur, is made by smelting hematite. **P. of ballast**, 56 lb. **P.-on-Pork** or **Pig-upon-Bacon**: see HOUSE



Pig-iron

**BILL. P.-sticking**, pursuit of wild boar (chfy. in N. India); hunters are mounted and armed with spears. **P.-tail**, (colloq.) plait of hair, esp. long queue worn by Chinamen up to revln., 1912. Orig. applied in 18th cent. to plaited end of men's wigs.

**Pigalle**, Jean-Baptiste (1714-85), Fr. sculptor; *Mercury*.

**Pigeon**, dove member of large order of birds (*Columbiformes*), divided into two sub-orders: *Columbae*, or true P., and the now extinct *Dodo* (q.v.). **Ring-dove**, or wood p., is found all over Europe. **Rock dove** is ancestor of the domesticated P., of wh. there are many varieties, e.g., *Pouter*, with large gullet, capable of inflation; *Tumbler* (q.v.), *Fan-tail*, *Carrier* (q.v.), etc.; also various wild species, such as fruit, painted, giant, ground, crowned, tooth-billed, etc. **Passenger p.** of N. Amer. is now extinct.



Pigeon

**P.-breast**, malformation of thorax with keel-shaped projection of breast-bone, and lateral flattening. **P.-shooting**, sport of shooting either at live birds released from traps or at artificial (clay) birds; see TRAP-SHOOTING.

**Pigmy**: see PYGMY; DWARF RACES.

**Pike**, 1) (ichthyol.), large predatory freshwater fish, unsurpassed in greediness and voracity: mouth large, well armed with teeth; body long, covered with small cycloid scales, olive-green above, silvery-white belly, and mottled with pale spots; length 2 to 4 ft. or over; weight 10 to 30 lb. 2) (Mil.) Long infantry spear (up to late 17th century).



Pike

**Pike's Peak**, highest mtn. of Rampart range, Colorado, U.S.A.; 14,110 feet. **P. P. Ocean to Ocean Highway**, from New York City to San Francisco, U.S.A., 3,564 miles.

**Pilaff**, or *Pilau*, meat or veg. dish prepared with rice and spices.

**Pilaster**, (archit.) pillar-shaped support gen. attached to wall and usu. ornamented.

**Pilate, Pontius**, Roman governor of Judea, A.D. 26-36; civil judge by whom Jesus was tried.

**Pilatus Mountain**, Switz., S.W. of Lake Lucerne; 6,990 ft.; cog-wheel rly. to summit from Alpnachstad.

**Pilchard**, or *sardine* (*Clupea pilchardus*), fish of the herring family, fnd. on Atlantic coasts of N. Europe; a smaller species is fnd. in Mediterranean. Live in shoals, feeding on minute organisms. Large species may be 10 ft. long; the smaller varieties form the sardine industries of France and Portugal; these fish are placed in oil and tinned, and to them the use of word is commercially and pop. confined

**Pilcomayo**, trib. (c. 684 m.) of Riv. Paraguay; rises in Bolivian Andes, S. Amer.; forms part of frontier betw. Argentina and Paraguay.

**Pile**, fine hairs on cloth, particularly those woven with upstanding shaven surface, e.g., velvet, carpets, etc. **P.-driver**, heavy drop-hammer, raised by hand or machinery, drops down and, by its weight (up to 8 tons), drives piles, posts, stones, etc., into the ground. **P.-planking**, (bldg.) walling formed of piles, for enclosure of foundation trenches when buildg. in ground-water; usuy. temporary. **Piles** (med.): see HAEMORRHOIDS.

**Pilgrim**, one who undertakes journey to a shrine or object of relig. veneration. **P. Fathers**, Puritans who sailed to N. America from Plymouth in the "Mayflower," 1620, establd. themselves in Massachusetts Bay, and founded New England. **P. Trust**, body establd., 1930, to administer fund of £2,000,000 presented by Edward Stephen Harkness, of U.S.A., "for benefit of Gt. Brit. and N. Ireland"; trust deed allows use of funds for any charitable purpose; 1st chmn. of trustees, Stanley Baldwin, M.P. In 1932 £135,665 was handed to nat. institutions, learned societies, social centres, etc. **P.s' Way**, anc. road, Surrey and Kent, Eng., along chalk Downs; part of route from Winchester to Canterbury (shrine of Becket). See CANTERBURY TALES.

**Pilgrimage of Grace**, Cath. rising in Eng., 1536; suppr. Mar., 1537, when 74 persons were executed.

**Piling**, (bldg.) foundation device for bldgs., consistg. of wood or concrete posts driven deep into soil where ground is of poor draining capacity (marshes; sand).

**Pillar**, 1) (archit.), column (q.v.) of varying thickness and height used to support a superstructure, as pedestal for a statue or standing alone as a monument. 2) (Mining) Column of coal left as support of roof in a mine. **P. Hermits**, imitators of Simeon Stylites (q.v.).

**Pillars of Hercules**, anc. name given to the peaks of Gibraltar and Ceuta, forming the Gate of the Mediterranean (acc. to Gr. mythology, torn asunder by Hercules).

**Pillory**, instr. of punishment formerly in use in Eng.; wooden frame erected on post with hole through wh. head and hands of criminal were put to expose him to pub. view; finally abol. 1837.

**Pillow-lace**, **bobbin-lace**, made by interweaving threads wound on wooden spools or *bobbins*. The *pattern* is traced on parchment and attached to a *pillow*; threads are fastened to pillow by means of pins.

**Pilot**, 1) (naut.) licensed person taken on board a ship to conduct it thr. difficult channel or river or to direct its course into, or out from, a port. 2) (Aeronaut.) Person qualified to control air-craft in flight. Pilotage of a ship entering or leaving port usu. compulsory; regulated by P. Acts (latest 1913, amended 1918). **P. balloon**, small air-balloon without passengers, sent up before ascent of large balloon to ascertain strength and direction of wind. **P. cloth**, thick, blue woollen matl., esp. for seamen's overcoats. **P. fish**, fish of trop. and sub-trop. seas, so called from its habit of accompanying ships and shoals of sharks; related to horse-mackerel. **P. wire**, any small wire laid alongside a cable, to allow it to be tested at a certain point from a distance, to operate relays or switch-gear, etc.

**Pilpay**: see BIDPAL.

**Pilsen** (Czech, *Plzeň*), 2nd largest in Bohemia, Czechoslovakia; noted for beer works; pop., 108,250.

**Pilsudski**, Joseph (1867- ), Polish soldier and statesman; sentenced to E. Siberia, 1887-92, for alleged complicity in anti-Czarist plot; fndd. Polish Socialist Party, 1892; sided with Austria at outbreak of World War. Min. of War in new Polish Council of State, 1916; after Russ. defeat turned agst. Central Powers, imprisoned, 1917; elected Chf. of State and 1st Marshal of Pol., 1918; deftd. Bolsheviks,



Pilaster (French Renaissance)



Pillory



Pilsudski



1920; refused presidency, 1926, but accepted Ministry of War and other posts wh. made him virt. dictator.

**Piltown skull**, skull of a sub-man (*Eoanthropus*), found in 1912 at Piltown, Sussex, Eng.; referred to Third Inter-glacial Period (see PALAEO-LITHIC PERIOD: PRE-HISTORY).

**Pimento**, allspice, Jamaica pepper, the dried, unripe fruit of *Pimenta officinalis*, myrtle-like tree indigenous to the W. Indies; contains a volatile oil used in cookery as a spice and in med. as an aromatic stimulant and carminative.

**Pimlico**, district in city of Westminster, S.W. London; includes Belgravia and Buckingham Palace. Originally marshy, the land was reclaimed c. 1825-35.

**Pimpernel**, small plant of order *Primulaceae*, with heart-shaped, stalkless leaves and scarlet, blue, or white flowers; ind. in temperate regions.

**Pin**, (meas.) small cask,  $\frac{1}{2}$  imperial gallons ( $\frac{1}{2}$  firkin;  $\frac{1}{4}$  barrel). **P.-money**, wife's allowance for her personal expenses.

**Pinacotheca** (Gr.), collection of pictures; name applied to a wing of the Propylaea on the Acropolis at Athens; also to private picture galleries in houses of ancient Rome; also to public galleries, e.g., at Bologna and Turin. Two galleries at Munich are named *Old* and *New Pinakothek*.

**Pincers**, tool for extracting nails, sim. to small tongs with semi-circular jaws.

**Pinchbeck**, gold-plated copper-zinc alloy used in manuf. of imitation jewellery; often used to denote the cheap and shoddy. Named from its inventor, Christoph. P. (d. 1732), a London watchmaker.

**Pincian Hill** (*Mons Pincius*), hill in N. Rome (not one of the Seven Hills), close to the Quirinal.

**Pindar** (522-422 B.C.), Gr. lyric poet: *Odes of Victory*, four books celebrating victors in the Olympic, Pythian, Nemean, and Isthmian games. **Pindaric**, ode in imitation of Pindar's, i.e., one of irreg. metre.

**Pindar**, Peter, pseud. of John Wolcot (q.v.).

**Pindus**, mtn. chain dividing Thessaly and Epirus, Greece; rises to 7,800 feet.

**Pine**, designation of genus of evergreen coniferous trees (*Pinus sylvestris*), of N. hemisphere, having sheathed clusters of needle-like leaves; c. 75 species, most of them yielding valuable timber, resin, turpentine, etc. The most com-

mon species in Gt. Brit. and N. Europe is *Pinus sylvestris* or *Scotch Fir*, timber of wh. is largely used in construction of houses in Scandinavia. The N. Amer. red P. (*P. resinosa*) grows to a height of 120 ft.; Italian stone P.s (*P. pinca*), and that of Siberia and Central Europe (*P. cembra*) are valued for their edible seeds (p.-kernels). **P. hawk-moth**, reddish moth with white marks found in Europe; the caterpillars are destructive to pine trees. **P.-oil**, light liquid obtained from fresh leaves of coniferous trees; used in med. as inhalant for catarrh. **P.-sap**, or yellow bird's nest, *Monotropa Hypopitys*, low-growing, fragrant plant with yellowish flowers.

**P. Tree State**: see MAINE.

**Pineal gland**, ductless gland situated in the brain; possibly a vestigial eye.

**Pineapple**, large deep yellow multiple fruit of *Ananas sativus*, a tropical plant, somewhat resembling an aloe; sometimes cultivated in hot-houses chfly. imported from the Azores, Canaries, W. Indies, and S. Africa.

**Pinero**, Sir Arthur Wing (1855- ), Eng. playwright: *The Second Mrs. Tangueray*.

**Ping-pong**: see TABLE TENNIS.

**Ping-yang**, **Phyong-yang**, riv. port, Korea, on Riv. Tai-dong, destroyed in Chin.-Jap. war of 1894 (Jap. victory, Sept. 15th).

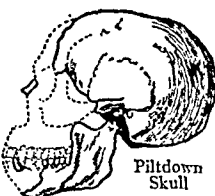
**Pinhole camera**, (photog.) camera in which lens is replaced by a very small hole in a thin metal plate. Free from all aberration effects, but requires very long exposure. The smaller the hole, the sharper the image.

**Pinion**, cog-wheel with small number of teeth, of all sizes; about 8 teeth is minimum for spur gearing.

**Pink**, flowering plants of the genus *Dianthus*; several wild varieties, e.g., deftford-pink, *D. armenia*, rose-coloured scentless flowers; cheddar pink, *D. casius*, rose-coloured scented flowers. The common garden pink is *D. plumarius*. See CLOVE.

**Pinkerton**, Allan (1819-84), Amer. detective; fndd. P. National Detective Agency.

**Pink-eye**, 1) (vet.) contagious conjunctivitis (q.v.) occurring especially in horses. 2) Acute contagious conjunctivitis occurring in man; epidemics not uncommon among school children.



Piltown Skull



Pine Hawk-moth



Pineapple



Sir Arthur Pinero



Scotch Fir: *Pinus sylvestris*



Pink

**Pinkie, Battle of**, 10 Sept., 1547; defeat of Scots by Eng.; named after a place nr. Inveresk (*q.v.*).

**Pinnace**, auxiliary ship's boat, esp. on warships, usu. with steam or motor engines.

**Pinnipeds**, sub-order of mammals having fin-like extremities adapted for aquatic life; includes the eared or fur-seals, elephant seals, sea-lions, walrus, all the true or earless seals.

**Pint**, 1) dry meas.,  $\frac{1}{2}$  quart. 2) Liquid meas., 4 gills,  $\frac{1}{2}$  quart, .57 litre. 3) Apothecaries' liquid meas., 20 fluid oz. (in U.S.A. 16 fluid oz.). Old Scots pint = 4 Eng. pints; see MUTCHEIN.

**Pintail**, 1) species of wild duck (*q.v.*) with long, centr. tail-feathers. 2) Species of sand-grouse with similar tail.

**Pinturicchio**, Bernardino (1454-1513), Ital. painter of Umbrian school; frescoes (Siena), altar-pieces (Perugia).

**Pinxit** (Lat.), abbr. *pinx.*, *pnt.*, *p.*, painted (it); word placed on a picture after the artist's name.

**Piombo**, Sebastiano del (1485-1547), Ital. painter of Venetian school; portraits and frescoes.

**Pioneers**, 1) sappers, fighting troops spec. trained for engin. duties; carpentry, bridge-building, mining, etc. 2) (Fig.) Fore-runners; leaders in action or thought.

**Piozzi**, Hester Lynch, *née* Salusbury (1739-1821); Eng. author; m. 1) Henry Thrale, a brewer (1763), and 2) Gabriel Piozzi, an Ital. musician (1784); *Anecdotes of Dr. Samuel Johnson*, 1786; etc.

**Pip**, (vet.) disease of fowls, characterized by accumulation of mucus in throat.

**Pipe**, 1) (tech.), tube for conducting liquid or gaseous substances, manufltd. of various materials; *iron* and *steel* P.s are cast, rolled (Mannesmann rolling process), drawn, welded (with straight or spiral longitudinal seam); *metal* P., e.g., lead pipes, also extruded; glass pipes are drawn; rubber pipes cemented; wooden pipes bored; thin sheet metal pipes riveted or folded over. 2) (meas.) Large cask; Brit. 105 gallons (standard); marsala Pipe Connections 108, port 113, brandy 114 gallons; U.S. 126 gallons. 3) Device for smoking tobacco, opium, etc.; hollow tube with bowl at one end in wh. material to be smoked is placed; tobacco pipes usu. of clay, wood (briar), or meerschaum. See BRIAR-ROOT; MEERSCHAUM; NARGHILÉ. **P. fish**, genus of tropical fish of family *Syngnathidae*, related to sea-horse (*q.v.*), having long, slender body, bony scales, and straight, tube-like snout; carries eggs in pouch until they develop.



Bend



Angle



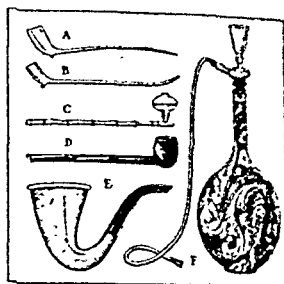
T-piece



Cross-piece

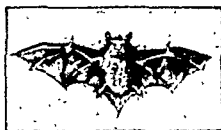
Pipe Connections

**P.-wrench**, tool for gripping and twisting pipes in fitting them; with solid, self-locking jaws or with steel chain.



Types of Pipe

**Pipette**, graduated glass tube open at both ends, for measuring small quantities of fluids; filled by sucking liquid into tube with the mouth and adjusting to graduation mark on tube by stopping with the finger.



Pipistrel

**Pipistrel**, a common brown bat, of the Old World, *Vespertilio pipistrellis*.

**Pipit**, small passeriform bird of sombre brown colour; some 35 species; fnd. in almost every part of the world. Common meadow-pipit and tree-pipit are familiar English species.

**Pippin**: see PEPIN.

**Piqué**, heavy, corded, cotton fabric.

**Piquet**, card-game for 2 players, with pack of 32 cards (piquet pack), all in the full pack below 7 (ace excepted) being omitted.

**Piræus**, tn., Greece, seapt. of Athens, on N. E. coast of Gulf of Aegina; principal naval base and harbour; pop., 251,330. Fndd. by Themistocles and Pericles, c. 490 B.C.; connected with Athens by the "Long Walls" (now by rly.), 5 m.; destroyed by Sulla, 86 B.C., and later rebuilt.

**Pirandello**, Luigi (1867- ), Ital. dramat.: *Six Characters in Search of an Author*.

**Piranesi**, Giambattista (1720-78), Ital. engraver: *Views of Rome*.

**Pirithous**, (Gr. myth.) Kg. of the Lapiths (*q.v.*).

**Pirkheimer**, Willibald (1470-1530), Ger. humanist, friend of A. Dürer.

**Pirouette** (Fr.), quick turn in dancing or riding.

**Pirquet**, Clemens von (1874-1929), Aust. physician. **P. reaction**, a test for tuberculosis.



Pirkheimer, after Dürer

**Pisa**, cap. of prov. of P. (960 sq.m.; pop., 334,800), Tuscany, It.; 5 m. from mouth of Riv. Arno; pop., 78,000; cathed. (11th cent.) with Leaning Tower (179½ ft. high, over 15 ft. out of perpendicular); univ.; agric. and veterinary schools; cotton industry.

**Pis aller** (Fr.), makeshift; the next best thing; something done or taken for want of a better.

**Pisanello** (c. 1380-1451), pseudon. of Vittore Pisano, Ital. painter and medallist.

**Pisano**, 1) **Andrea** (c. 1270-1348), Ital. sculptor and archit.; executed bronze door on S. side of baptistry, Florence; apptd. archit. of Orvieto cathedral; completed Campanile at Florence begun by Giotto. 2) **Giovanni** (c. 1250-1320), Ital. sculpt. and archit., son of Niccola; designed cloisters of Campo Santo, Pisa; apptd. archit. at Siena cathed. (1284). 3) **Niccola** (c. 1225-c. 1278), Ital. archit. and sculpt.; ch. and monastery of Holy Trinity, Florence; bas-reliefs in Siena cathed. and ch. of San Martino, Lucca.

**Pisces**, the "fishes", zodiacal constell.; ♋ 12th sign of Zodiac (q.v.); see PL., ASTRONOMY, N.C.H., A.; *Piscis australis*, the Southern Fish, constell. containing star Fomalhaut; see PL., ASTRONOMY, S.C.H., A.

**Piscina**, (eccles.) stone basin with drain, in wall of chancel on Epistle side of altar, used by priest for cleansing his hands before or during Mass.

**Pisgah**: see NEBO.

**Pishpek**: see FRUNZE.

**Pisistratus** (c. 600-527 B.C.), Athen. gen. and statesm.; friend of Solon (q.v.); made himself tyrant of Athens, 560; succeeded by his sons, Hippias and Hipparchus (*Pisistratids*; overthrown, 510 B.C.).

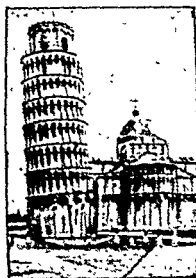
**Pissarro**, Camille (1830-1903), Fr. impressionist painter.

**Pistachio**, genus of Mediter. trees. True P. (*Pistacia vera*) yields the greenish, almond-flavoured nut used in confectionery, etc. Other varieties: mastic tree (*P. lentiscus*); terebinth tree (*P. terebinthus*), from wh. Chian turpentine is obtained.

**Pistil**, female sexual appar. of flowering plants; formed from carpellary leaves; consists of ovary, style, and stigma.

**Pistoia**, tn., Tuscany, It.; pop., 70,000; cap. of prov. P. (282 sq.m.; pop., 201,801); word "pistol" prob. dervd. from P.; iron ware; macaroni.

**Pistol**, fire-arm used with one hand, dating



Pisa, Leaning Tower

from 16th century. *Automatic p.*, with magazine. Force of recoil of the first shot opens breech, ejects empty cartridge, and allows a fresh round to be pushed up into the chamber. See also REVOLVER: BROWNING.

**Pistole**, obsolete Span. silver coin, equiv. to ½ doubloon (q.v.); worth c. 16s 2d.

**Pitcairn Island**, Brit. isl. in the S. Pacific; 2 sq.m.; pop., 175; descendants of the mutineers of the "Bounty."

**Pitch**, 1) (tech.) residue of distillation of wood-tar (resinous) and coal-tar (non-resinous). Term also incorrectly used for natural asphalt or bitumen. P. is employed for waterproofing roofs, caulking seams of ships, as a wood-preservative, etc. 2) (Mus.) Degree of highness or lowness in tones, determined by number of vibrations p. second. Limit of audible sound lies betw. c. 20 and 20,000 vibrations p. second. **Concert p.**, in Eng., based on A = 435 vibr.; now abandoned in fav. of *diapason normal*, i.e., A = 435 vibr. Military and brass bands still use a high P., A = 452.4. 3) (Bldg.) Height of an arch, measured vertically from the level of springing up to the crown; of a roof, angle of inclination to the horizontal. **P.-blende**, mineral oxide of uranium found in Bohemia, Hung., Cornwall, parts of N. Amer., etc.; original base for the extraction of uranium (q.v.), and chief source of radium (q.v.). **P. Lake**, circular depression (114 ac.), S.W. Trinidad, yielding asphalt. **P., mineral**: see BITUMEN; ASPHALT. **P.-pine**, 1) any species of pine yielding pitch, e.g., *P. palustris*. 2) Variety of hard wood obtnd. from conifers; extensively used in building.

**Pitcher plant**, *Nepenthes*, climbing plant from Malay Archip.; leaves terminate in pitcher-like formations containing a watery liquid in wh. insects are digested. See INSECTIVOROUS PLANTS.

**Pithecanthropus erectus**, name given to walking ape-man whose skull was found in 1891 at Trinil, Java; referred to Later Pliocene or Lower (Early) Palaeolithic Period (q.v.); see PREHISTORY.

**Pittochry**, vill., N. Perthsh., on Riv. Tummel; tourist resort; pop., 2,500; Pass of Killiecrankie (q.v.), 3 m. north.

**Pitman**, Sir Isaac (1813-97), Brit. phonographer; inv. system of shorthand, 1837.

**Pitt**, Wm. (1759-1806), 2nd s. of 1st Earl of Chatham (q.v.); Brit. statesm.; Chanc. of Excheq., 1782; Pr. Min., 1783-1801 and 1804-06; formed coalitions of Powers agst.



Pistachio



Pitcher Plant



William Pitt the Younger

dioxide of the air into sugar and starch under the action of light, thus subsisting entirely on inorganic matter; term includes lower forms, such as mosses and aquatic algae having no roots. *Fungi* (in wh. chlorophyll is absent) differ from Ps. in requiring organic nourishment. See BOTANY; CRYPTOGAMS; PHANEROGAMS; FUNGI, etc.

**Plantagenet**, name given to Angevin dyn. of Eng. (1154-1399); sprung from Geoffrey, Ct. of Anjou, and Empr. Maud; divided into Hse. of Lancaster and Hse. of York.

**Plantain**, *Plantago major*, small plant growing by wayside; green flowers in spikes, collected for canary food. Used in folk med. as a diuretic; fresh leaves rubbed on an insect- or nettle-sting will relieve the pain.



Plantain

**Plantation**, 1) area devoted to cultivation of crops, esp. cotton, coffee, tea, tobacco. 2) (Hist.) Colonization, esp. of N. Amer. in 17th cent. 3) Land reserved for cultivation of trees for timber.

**Plantigrades**, mammals that walk on the sole of the foot, i.e., bears, badgers, etc.

**Plantin**, Christophe (1514-89), Fr. printer, settled in Antwerp; *Polyglot Bible*, 1569-73. **P. Museum**, establ. by town of Antwerp (1876) in the orig. house used by P. as printing-works; contains press, type, etc., used by Plantin and his successors.

**Plant lice**, *Aphidae*, small insects of order Hemiptera; may be winged or wingless; they suck the juices of plants and are serious insect-pests on hops, roses, etc.

1 Wingless 2 Winged  
Plant Louse

**Plaque**, disc or slab of metal, porcelain, or ivory, usu. ornamented with enamelled picture; memorial tablet.

**Plaque**, small rectangular plaque used for portraiture; delicate design engraved or struck upon a small plaque.

**Plasma**, (physiol.) fluid portion of the blood.

**Plasmodium**, (med.) parasite, genus of protozoa, found in the blood of sufferers from malaria.

**Plassey**, vill., Bengal, India, on Riv. Hugli, 80 m. above Calcutta. At *Battle*



Italian Plaque, 16th cent.

of Plassey (Seven Years' War), 23 June, 1757. Clive routed forces of Suraj-ud-Dowla, and supremacy in India dates from this battle.

**Plaster**, (med.) piece of cloth or other material on wh. is spread an adhesive substance for application to the surface of body. **P. of Paris**, calcium sulphate; when mixed with water forms paste wh. dries hard; used in surgery to keep a broken bone fixed in desired position, and in dentistry to obtain casts of mouth and gums.

**Plastic**, that which may be moulded or modelled, as sculptor's clay. **P. surgery**, the transplanting of skin or muscles from one part of the body to another, in order to fill gaps made by bullet wounds, etc. Also employed in beauty culture.

**Plastron**, chest-pad worn in fencing, etc.

**Plataea**, anc. city in Boeotia, Greece, scene of defeat of Pers. by Greeks (479 B.C.).

**Plata, Rio de la, River Plate**, estuary of rivs. Paraná and Uruguay, S. Amer.; length 170 m., width 25-140 m.; bounded N. by Uruguay (with cap., Montevideo) and S. by Argentina (with cap., Buenos Aires). Discovered by Juan Diaz de Solis, 1516.

**Plate, River**: see PLATA, RIO DE LA.

**Plateau**, elevated plain, table-land.

**Plate clutch**, device for connecting moving parts of a machine by interlocking plates on the driving and driven parts.

**Plate-glass**, glass poured molten on to iron table, rolled flat, annealed, ground, and polished. Used where freedom from distortion is essential; e.g., shop-windows, mirrors; see GLASS.

**Plate press**, printing press in which iron plate (platen) oscillates against a vertical forme, inked by means of rollers. See P. press known as "jobber."

**Plating**: see ELECTRO-PLATING.

**Platinum**, metallic element, sym. Pt; at. wt. 195.23; sp. gr. 21.5, m.p. 1769°; heavy malleable metal, occurring naturally and in assoc. with other rare metals (iridium, osmium, palladium, rhodium) strongly resistant to chem. action; used in jewelry and for its phys. properties in many chem. appar.; and also (P. sponge and P. black) as catalyst (q.v.); attacked by aqua regia. **P. blonde**, person with extremely fair, nearly white hair.

**Platitude**, trite remark; truism; evasion saying nothing not already known.

**Plato** (B.C. 427-347), Gr. philos., pupil of Socrates and teacher of Aristotle; lived at Athens the 1st Academy (q.v.).

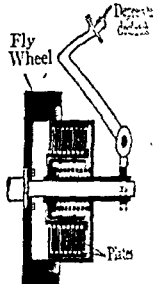


Plate Clutch

orks: 35 *Dialogues*, incl. *Phaedrus* (doctrine Ideas), *Symposium*, *Phaedo* (concerning immortality), *Apology*, *Republic*. **Platonism**, philos. of Plato; form of idealism; visible world of sense is illusive and obscures real world lying beneath to thought alone; objects of sense are defective embodiments of ideas, wh. have independent, perfect existence of an intelligible world lying above the phenomenal; idea of God the highest of all, and foundation of all being; immortality of the soul. **Platonic love**, philos. attraction, free from sexual desire, felt for one of opposite sex. **Platoon**,  $\frac{1}{4}$  company of infantry, usu. comm. by a subaltern, assis. by a P-sergeant. **Platt**, nat. park (1902) in Oklahoma; 378 sq. m.; hot medicinal springs. **Platte**, riv. system draining W. centr. region of U.S.A.; North P. and South P. join S. centr. Nebraska to form main stream, which joins Missouri below Omaha. **Plauen**, tn., Saxony, Ger., on Riv. Weisse; pop., 114,300; important lace and embroidery industry. **Plautus**, Titus Maccius (c. 254-184 B.C.), rom. comic dramatist; *Miles Gloriosus*, *Ampitruus*, *Trinummus*. **Playfair**, Lyon P., 1st bn. (1818-98), Eng. chemist and politician; prof. of chemistry, Manchester, 1843; School of Mines, 1845; Edinb. Univ., 1856-69; M.P., 1868-73; postmaster-gen., 1873; deputy-speaker, 1880-83; created bn., 1892. **P., Sir Nigel** (1874- ), Brit. actor-manager; produced notable revivals of *Beggar's Opera* and other 19th-cent. plays, at Lyric Theatre, Hammer Smith, London. **Plays, Examiner of:** see LORD CHAMBERLAIN. **Pleading**, 1) any petition or summons, written statement of claim or demand of plaintiff and defence thereof, with all written statements arising out of them which define issue of either party to a suit. 2) Argument of advocate before court. **Pleated**, laid in even folds. Pleating of cloth formerly effected by hand, now usu. with heat by machine (*accordion-pleating*). **Plebeian**, in anc. Rome one of the **Plebs**, i.e., section of community with limited political rights), as opposed to *patrician*, member of the ruling section; term now applied to *proletariat* (q.v.). **Plebiscite**, orig. law enacted by people without recourse to regular legis. method. Now, vote by electorate on constitutional issue. See CONSTITUENT ASSEMBLY; REFERENDUM. **Plectrum**, small thin plate of tortoise-



Plato

shell or metal for plucking stringed instruments.

**Plehve**, Viacheslav Konstantinovich (1846-1904), Russ. statesm.; supporter of tsarist autocracy; assassinated.

**Pleiad**, name given to group (see next article) of 7 particularly brilliant persons, esp. to the poets at the court of Henry III of France—Ronsard, Du Bellay, Remi Belleau, Jodelle, Dorat, Baif, and Pontus de Thiard.

**Pleiades**, 1) (astron.) close group of 6 conspicuous stars (traditionally 7), in constellation Taurus; largest of them, Alcyone. 2) (Gr. myth.) 7 daughters of Atlas, sisters of Hyades, named Alcyone, Merope, Celaeno, Electra, Sterope, Taygete, Maia.

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**Pleonasm**, fig. of speech containing a redundancy, as a noun accomp. by adj. of sim. meaning, e.g., *a wrong mistake*.

**Plesiosaurus**, marine reptile, found as fossil, of the Jurassic and Cretaceous epochs, up to 40 ft. long; very small brain, long neck, all 4 limbs furnished with paddles for swimming.

**Pless**, adminis. dist. (pop., 5,500), Upper Silesia; Polish since 1919.

**Pleura**, (physiol.) membrane lining inner wall of the chest and covering surface of lungs. **Pleural cavity**, (physiol.) potential space betw. the two layers of the pleura, the membrane covering the lungs. In health, the two layers are in contact. **Pleurisy**, inflammation of the *pleura*; *wet p.*, variety in wh. inflammation is accomp. by presence of fluid betw. the two layers of the pleura; *dry p.*, in wh. there is no fluid, characterized by severe stabbing pain in chest at end of each inspiration, caused by friction of the dry, inflamed surfaces of pleura.

**Pleuronectoidae:** see PLAICE.

**Plevna**, **Pleven**, tn. in dept. of P. (29,607 sq. m.; pop., 430,000), N.E. of Sofia, Bulgaria; pop., 29,000; weaving, tobacco industry.

Napoleon; introd. Income Tax. 1798; effected union of Ireland with Gt. Brit., 1800.

**Pitti**, **Palazzo**, royal palace, Florence, built by Brunelleschi, c. 1430; contains world-famous gallery of paintings; connected with Uffizi Gallery by covered way over Ponte Vecchio across Riv. Arno.

**Pittsburgh**, tn., Pennsylvania, U.S.A., on Allegheny Riv.; pop., 669,800. Carnegie Institute; univ. (1787); coal and oil; manuf. steel and glass.

**Pituitary body**, a ductless gland situated in the brain; exerts an influence on growth of the body, development and activity of genital glands, the renal secretion, and muscular tone. Disorders of the P. gland may give rise to *obesity*, with arrest of sexual development; *acromegaly*, a disease characterized by excessive growth of hands, feet, and face; or *diabetes insipidus*; see DIABETES.

**Pitz Palü**, peak of *Bernina Alps*; 11 m. S.E. Pontresina; 12,835 feet.

**Più**, (mus.) more.

**Plus**, name of 11 popes, of whom the most important, historically, are: **P. II** (1458-64), *Aeneas Silvius*; humanist, writer, diplomat; served in chancery of Emp. Fred. III; bull *Execrabilis*, 1460, agnst. doctrine that councils were superior to Pope and forbidding appeal to them. **P. IV** (1559-65), issued *Tridentine Confession*, 1564. **P. V**, **St.** (1566-72), rigorous efforts to exterminate heresy; excommunicated Qn. Eliz. of Eng. **P. VII** (1800-23), anointed Napoleon I at coronation, 1804; Rome and all papal territ. annexed to Fr. Empire, 1809; restored Order of Jesuits, 1814. **P. IX** (1846-78), suffered loss of Papal States to kgdm. of It.; declared himself a prisoner in Vatican; proclaimed dogma of the Immaculate Conception of the Virgin Mary, by bull *Ineffabilis Deus*, 1854; Vatican Council, 1869-70, proclaimed Infallibility of



Pope Pius XI

Pope. **P. X** (1903-14), encyclical agnst. Modernism, and separation of Ch. and State in France. **P. XI** (1922- ), with co-operation of Mussolini closed breach betw. Ch. and State; see VATICAN CITY.

**Pizarro**, Francisco (1475-1541), Span. soldier; discovd. and conqd. Inca Empire (Peru and Ecuador), 1524-32; assass. by own followers.

**Pizzetti**, Ildebrando (1880- ), Ital. composer; opera, *Debora e Jael*.

**Pizzicato**, (mus.) indication that strings of instruments are to be plucked, instd. of played with the bow.

**Placenta**, (anat.) the organ which connects the circulatory system of the mother with that of foetus (q.v.), thus providing the latter with nourishment. P. is attached to

the wall of uterus and is expelled shortly after birth of child.

**Placer**, surface alluvial or eluvial deposit containing gold or other valuable mineral particles, which are obtainable by washing. **P.-mining**, method of washing etc. etc., from alluvial deposits.

**Placet** (Lat.), it pleases; signifies assent or approval of decrees, etc.

**Plagiolastic**, term applied to crystal rock, esp. feldspar (q.v.), tending to break along oblique planes; cf. ORTHOCLASTIC.

**Plague**, dangerous, very contagious disease, carried by rats. Causes formation of buboes (*bubonic P.*), in which inguinal lymph glands discharge pus. Owing to war control, has now almost disappeared from Eur., though cases are occas. discovd. by germ. officers in ships from East. In M. Ages was of regular occurrence in Eur. and caused great mortality. **Plagues, The Ten** (O.T.), series of punishments inflicted on Egyptians when Pharaoh refused to permit departure of Israelites.

**Plaice**, common marine fish belonging to the large family *Pleuronectoidae*, which includes all the different species of sole, flounder, dab, halibut, and turbot; all characterized by unsymmetrical conformation of head, bringing the two eyes to one side of the body—left or right—and thus enabling the fish to rest with the other side of the body on the sea floor. In plaice, flounder, dab, halibut, and sole, the eyes are on the right side of the head, and the fishes rest on the left side of their bodies; in the turbot, bass, and topknos, the eyes are on the left side. The side of the body that is uppermost is always heavily pigmented.



Plaice

**Plaid**, rectang. woollen cloth, usu. with tartan (q.v.) pattern; part of Scottish Highlanders' national dress. Term also used to describe pattern of tartan.



Planchette

**Plainsong**: see GREGORIAN CHANT.

**Planaria**, flat worms, incldg. both free-living and parasitic forms; some find. in sea, or in fresh water; others on land.

**Planchette**, small, heart-shaped board supported by 2 wheels at broad end and having pencil run through pointed end; on being lightly touched by 2 or more persons it appears to write automatically. Sometimes forms part of equipment at spiritualist séances.

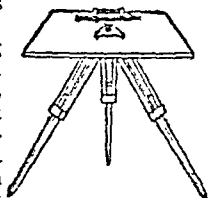


Max Planck

**Planck**, Max (1858- ), Ger. physicist.

pioneer of *Quantum Theory* (q.v.); discovrd. P.'s *Law of Radiation*, 1901; Nobel Prize (physics), 1918.

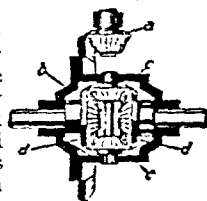
**Plane**, 1) carpenter's tool with interchangeable blades used to smooth wood. **Planing-bench**, stand on wh. wood to be planed is clamped. **Planing-machines** are worked by means of revolving blades, or cylinders to wh. knives are attached. 2) (Geom.) Figure having two dimensions, length and breadth. **P.-table**, surveying instrument consisting of drawing-board mounted on a tripod, and fitted with ruler for pointing at object under observation. **P.-tree**, *Platanus*, broad-leaved, wide-spreading tree, with globular fruit and



Plane-table

reproduction of the celestial hemispheres on large concave domes wh., by mechanical and electrical means, revolve and show principal motions of celest. bodies; also the apparatus and mechanism itself. By regulating speed of P., observer can see in an hour motions wh. wd. occupy many years in the heavens. Several now in existence; best known, constructed by Bauersfeld (Zeiss Works), in German Museum at Munich.

**Planetary gears**, (machin.) toothed gears in wh. one or more wheels, instd. of being fixed in space, rotate as a whole while gearing into 2 others. Used as variable gear



Planetary Gears

- a) Driving pinion
- b) Casing
- c) Bevel wheels
- d) Driving wheels

## COMPARATIVE STATISTICS OF THE PLANETS

	NAMES AND SYMBOLS	MEAN DIST. FR. SUN IN MILLS. OF MILES	PERIOD OF ORBIT	AXIAL ROTATION D. H. M. S.	COMPAR. DIAM. (EARTH = 1)	APPROX. PERCENTAGES: EARTH = 100			NO. OF SATEL LITES
						VOL.	MASS	DEN.	
Inner	Mercury ☿	36	88 days	87 23 15 43	0.37	5.5	5.5	95	—
	Venus ♀	67	225 days	224 16 49 9	0.99	91	79	86	—
	EARTH ☉, ♂	93	365½ days	23 56 4	1.00	100	100	100	1
	MARS ♂	42	1 yr. 322 days	24 37 23	0.53	15	10.5	73	2
Planetoids									
Superior	JUPITER ♃	482	11 yrs. 315 days	9 55 41	11.1	130,572	31,440	24	9
	SATURN ♄	886	29 " 167 "	10 14 24	9.5	72,597	9,412	13	9(10?)
	URANUS ♅	1782	84 " 7 "	11 5 -	4.2	6,343	1,456	23	4
	NEPTUNE ♆	2791	164 " 250 "	7 42 -	3.8	7,215	1,701	24	1
	PLUTO	3800	c. 250 years	- - -	0.31	—	—	—	—
	(discovd. 1930)								

deciduous bark; thrives well in cities. The sycamore tree is *P. occidentalis*.

**Planet**, "Wandering Star," celest. body of solar system, revolving in regular orbit round, and deriving its light from, the sun; orbits of P's. are ellipses, with sun in one of the foci (q.v.). **Major Ps.** are 9: Mercury and Venus, **inferior Ps.** (within Earth's orbit); Earth; Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, **superior Ps.** (outside Earth's orbit). Betw. orbits of Mars and Jupiter is a belt of Planetoids (q.v.); Ps. also classified as **INNER** and **OUTER** (within or without the Planetoid belt). See also **KEPLER'S LAWS**; **PERTURBATION**; and **III., SOLAR SYSTEM**.

**Planetarium**, building housing an artificial



Plane-tree

(differential) on bicycles and motorcars; see illustration.

**Planetoids**, or "Asteroids," group of minor planets, measuring from c. 6 to 250 m. in diameter; astron. designation, number enclosed in circle; c. 1,100 so far discovered, and some hundreds assigned specific names; orbits of all Ps. except Eros (q.v.) lie betw. those of Mars and Jupiter.

**Planimeter**, mathemat. instrument for measuring the area of plane surfaces however irregular in outline they may be. **Planimetry**, plane geom.; mensuration.

**Plankton**, collective term for minute plant and animal organisms found on or just below surface of sea, rivers, and lakes.

**Plant**, living organism whose roots extract water and mineral salts from the soil, and whose green leaves transform the carbon

dioxide of the air into sugar and starch under the action of light, thus subsisting entirely on inorganic matter; term includes lower forms, such as mosses and aquatic algae having no roots. *Fungi* (in wh. chlorophyll is absent) differ from Ps. in requiring organic nourishment. See BOTANY; CRYPTOGRAMS; PHANEROGAMS; FUNGI, etc.

**Plantagenet**, name given to Angevin dyn. of Eng. (1154-1399); sprung from Geoffrey, Ct. of Anjou, and Empr. Maud; divided into Hse. of Lancaster and Hse. of York.

**Plantain**, *Plantago major*, small plant growing by wayside; green flowers in spikes, collected for canary food. Used in folk med. as a diuretic; fresh leaves rubbed on an insect- or nettle-sting will relieve the pain.



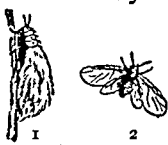
Plantain

**Plantation**, 1) area devoted to cultivation of crops, esp. cotton, coffee, tea, tobacco. 2) (Hist.) Colonization, esp. of N. Amer. in 17th cent. 3) Land reserved for cultivation of trees for timber.

**Plantigrades**, mammals that walk on the sole of the foot, i.e., bears, badgers, etc.

**Plantin**, Christophe (1514-89), Fr. printer, settled in Antwerp; *Polyglot Bible*, 1569-73. **P. Museum**, establ. by town of Antwerp (1876) in the orig. house used by P. as printing-works; contains press, type, etc., used by Plantin and his successors.

**Plant lice**, *Aphidae*, small insects of order Hemiptera; may be winged or wingless; they suck the juices of plants and are serious insect-pests on hops, roses, etc.

1 Wingless 2 Winged  
Plant Louse

**Plaque**, disc or slab of metal, porcelain, or ivory, usu. ornamented with enamelled picture; memorial tablet. **Plaquette**, small rectangular plaque used for portraiture; delicate design engraved or struck upon a small plaque.

**Plasma**, (physiol.) fluid portion of the blood.

**Plasmodium**, (med.) parasite, genus of protozoa, found in the blood of sufferers from malaria.

**Plassey**, vill., Bengal, India, on Riv. Hugli, 80 m. above Calcutta. At *Battle*



Italian Plaque, 16th cent.

of Plassey (Seven Years' War), 23 June, 1757, Clive routed forces of Suraj-ud-Dowlah. Brit. supremacy in India dates from this battle.

**Plaster**, (med.) piece of cloth or other material on wh. is spread an adhesive substance for application to the surface of body. **P. of Paris**, calcium sulphate; when mixed with water forms paste wh. dries hard; used in surgery to keep a broken bone fixed in desired position, and in dentistry to obtain casts of mouth and gums.

**Plastic**, that which may be moulded or modelled, as sculptor's clay. **P. surgery**, the transplanting of skin or muscles from one part of the body to another, in order to fill gaps made by bullet wounds, etc. Also employed in beauty culture.

**Plastron**, chest-pad worn in fencing (q.v.).

**Plataea**, anc. city in Boeotia, Greece; scene of defeat of Pers. by Greeks (479 B.C.).

**Plata, Río de la, River Plate**, estuary of rivs. Paraná and Uruguay, S. Amer.; length 170 m., width 25-140 m.; bounded N. by Uruguay (with cap., *Montevideo*) and S. by Argentina (with cap., *Buenos Aires*). Disc. by Juan Diaz de Solis, 1516.

**Plate, River**: see PLATA, RIO DE LA.

**Plateau**, elevated plain, table-land.

**Plate clutch**, device for connecting moving parts of a machine by interlocking plates on the driving and driven parts.

**Plate-glass**, glass poured molten on to iron table, rolled flat, annealed, ground, and polished. Used where freedom from distortion is essential; e.g., shop-windows, mirrors; see GLASS.

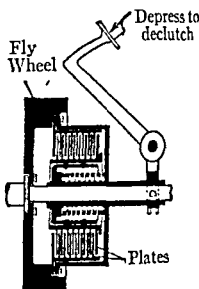


Plate Clutch

**Platen press**, printing press in wh. an iron plate (platen) oscillates against a vertical forme, inked by means of rollers. Small P. press known as "jobber."

**Plating**: see ELECTRO-PLATING.

**Platinum**, metallic element, sym., Pt; at. wt. 195.23; sp. gr. 21.5, m.p. 1764°; white, heavy malleable metal, occurring naturally and in assoc. with other rare metals (iridium, osmium, palladium, rhodium) strongly resistant to chem. action; used in jewellery, and for its phys. properties in manuf. of chem. appar.; and also (**P. sponge** and **P. black**) as catalyst (q.v.); attacked by aqua regia. **P. blonde**, person with extremely fair, nearly white hair.

**Platitude**, trite remark; truism; observation saying nothing not already known.

**Plato** (B.C. 427-347), Gr. philos., pupil of Socrates and teacher of Aristotle; his school at Athens the 1st Academy (q.v.). Chief



works: 35 *Dialogues*, incl. *Phaedrus* (doctrine of Ideas), *Symposium*, *Phaedo* (concerning immortality), *Apology*, *Republic*. **Platonism**, philos. of Plato; form of idealism; visible world of sense is illusive and obscures real world lying open to thought alone; objects of sense are defective embodiments of ideas, wh. have independent, perfect existence in an intelligible world lying above the phenomenal; idea of God the highest of all, and foundation of all being; immortality of the soul. **Platonic love**, philos. attraction, free from sexual desire, felt for one of opposite sex.



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Captured by Russians from Turks following five months' siege, 1877; Bulgarn. since 1878 (Treaty of Berlin).

**Pliers**, tool for holding and manipulating small objects; flat-nosed, pointed-nosed, cutting, etc.

### Plimsoll,

Sam. (1824-98), Brit. politician. devoted to improvmt. S) of condition of W) seamen, and WNA) Winter North Atlantic

advoc. of load-line reform; the **P. line**, mark on hull showing to what depth a vessel may legally be submerged when loaded; made compuls. (Gr. Brit.) by Merch. Shipp. Act, 1876.

**Plinth**, (bldg.) pedestal; base of a pier or column; often used of a whole façade.

**Pliny**, Rom. authors: **P. the Elder** (Gaius Plinius Secundus), A.D. 23-79, killed in the eruption of Vesuvius; *Natural History*. His nephew, **P. the Younger** (Gaius Plinius Caecilius Secundus); c. 62-113; *Letters*.

**Pliocene**, uppermost strata of Tertiary period; see GEOLOGICAL FORMATIONS.

**Plougsteert**, vill., W. Flanders, Belgium, on Fr. frontier, 3 m. N. of Armentières; adjoined by **P. Wood**; part of Brit. front line in World War; involved in battle of the Lys (9th-29th April, 1918). Brit. memorial to 11,449 missing.

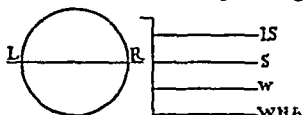
**Ploësti**, tn., Rumania, 35 m. N. Bucharest; pop., 60,840; centre of oilfield; petroleum refineries.

**Ploodry**: see PHILIPPOLIS.

**Plotinus** (A.D. 205-270), Neo-Platonist philos. of Alexandria and Rome; *Enneads*. Doctrine of mysticism; expounded the method of ecstatic union of the Soul with the Absolute.

**Plough**, 1) agric. implement drawn by horses or oxen, now freqtly. driven by steam or petrol power; loosens soil and cuts furrows for seed-planting, by means of blades (coulters) either fixed or rotating. Where large areas are under cultivtn. (e.g., Canada, U.S.A.), **cable p.** is used, P. being hauled by cable across the land. **Disk p.**, with rotating discs instead of blades, is suitable for heavy ground. See AGRICULTURE. **Snow p.**, device for driving tracks through deep snow. 2) (Astron.): see URSA MAJOR.

**Plover**, small, shore-frequenting bird of the order *Charadriiformes*; numerous, widely distributed species. **Ringed p.** com-



Plimsoll Mark

LR) Load Register  
IS) Indian Summer  
S) Summer  
W) Winter  
WNA) Winter North Atlantic



British War Memorial, Plougsteert Wood



Ringed Plover

mon on stretches of sand and shingle on British coasts. **Golden p.** found at all times of year in British Isles, breeding freely on the moors of N. England and Scotland.

**Plug gauge**, (tech.) instr. for checking internal diam. of holes. **Limit g.** with 2 ends slightly diff.; one must enter, the other not, if hole is correct within set limits.

**Plum**, tree of genus *Prunus*, bearing smooth, oval, edible fruit. Wild species native to S. Europe and Asia are the wild P. (*P. domestica*), bullace (*P. insititia*), and sloe or blackthorn (*P. spinosa*). Cultivated varieties include greengage, damson, and egg-plum. In S. Europe a large variety is dried and exported as *prunes*.

**Plumbago**, 1) mineral composed of carbon, iron, etc., used for pencils, crucibles, etc.; graphite, black-lead. 2) (Bot.) Genus of herbs with greyish-blue or violet flowers; leadwort.

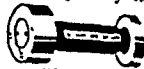
**Plumb-line**, (math.) perpendicular from point *p* (see Illus.) dropped on a straight line AB for testing vertical position of something; small wt. of brass or lead on a thin thread suspended over a point (Illus. 2); also *plumbet* (q.v.) used in building; wooden triangle, the base of which is horizontal when working; also instrument for sounding, i.e., measuring the depth of water; *nautical lead line* with wt. (see Illus. 2); *Thomson line*

measures the water pressure (which increases with the depth). *Depth-sounder* (see Illus. 3), containing cavity underneath for picking up specimens of the bottom. *Echo-sounder*: (A. Behm), measures the time betw. the firing of a cartridge and the return of the echo which has been reflected back from the ground or sea-bottom; used in navigatn. and aviation.

**Plumbum** (Lat.), lead (q.v.).

**Plume moth**, a small moth with wings divided into feathery lobes.

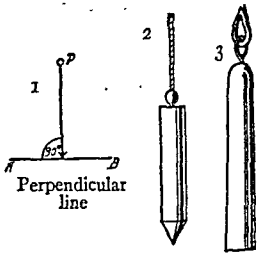
**Plumer of Messines**, Herbert Charles Onslow P., 1st. bn. (1857-1932), Brit. F.M.; commd. II Army, 1915 (Messines, 1917), and



Plug Gauge



Plum Blossom



Hand line Depth-sounder

Plumb-lines



Plume Moth

Brit. troops in Italy, 1917; Gov. of Malta, 1919-25; High Commr., Palestine, 1925-28.

**Plummet**, sounding-lead; heavy, pointed weight suspended by cord, usu. in frame with fixed point, so placed that when point of weight hangs over it, frame is exactly vertical. Used in erecting buildings, machinery plant, etc. Also fixed to instruments such as fine balances to assist levelling.

**Plunge**, (natat.) standing dive made with obj. of moving as far as poss. on surface without raising face from water.

**Plunkett**, Sir Horace Curzon (1854-1932), Irish writer and agriculturist; promoter of agric. co-operation fr. 1889; M.P., 1892-1900; chairm. of Irish convention to enquire into relations with Eng., 1917-18; fndd. *Horace Plunkett Foundation* for promotion of agric. developmt., 1919; Senator, Irish Free State, 1922-23.

**Pluperfect**, tense of verb indicating completed action in past time, e.g.: *he had laughed*.

**Pluralism**, theory that explanation of the world requires assumption of sev. independent substances wh. cannot be reduced to any single principle; see MONISM; DUALISM.

**Plural voting**, system according to certain electors extra votes for income, properties, etc., or other priv., e.g.: vote for business premises or univ. in addtn. to residence, under Representation of the People Act, 1918

**P. v. shares**, preference shares (q.v.), holders of wh. have plural voting rights, usu. with limited dividends.

**Plus** (Lat.: more), (math.) the sign of addition (+) and the description of positive numbers as against negative (-). **P. sign** in quotations of a stk. exch. shows that shares so marked have risen in price.

**Plush**, silk or cotton cloth, like velvet but with longer and more open pile.

**Plutarch** (A.D. 46-120), Gr. author; 46 *Parallel Lives*, biographies of Gr. and Rom. notabilities in pairs.

**Pluto**, 1) (Gr. and Rom. myth.) god of underworld. 2) (Astron.) The 9th planet, discovered Feb., 1930; see Table: PLANETS.

**Plutocracy**, rule by the wealthy, or by means of big capital.

**Plutonism**, theory that geological phenomena are, in the main, attributable to volcanic action.

**Plutus**, Gr. god of Riches.

**Pluvial Age**, term used to denote a phase of the later Tertiary Period (see GEOLOGICAL FORMATIONS) in wh., owing to the formation of such great condensers as the Caucasus, Carpathians, and Alps, heavy rains became general over large areas of earth's surface.

**Pluviometer**: see RAIN-GAUGE.

**Pluviöse**, Jan. 20th-Feb. 18th in Fr. Repub. Calendar (q.v.).

**Pluvius** (Lat.), rain-maker, epithet of Jupiter.

**Plymouth**, 1) co. bor. and seapt., Devon, Eng., on the Plym and Tamar estuaries and at the head of *Plymouth Sound*; with *Stonehouse* and *Devonport* forms the "Three Towns" (largest tn. in Devonsh.; pop., 208,200); important naval station and fortress; great port; shipb., foundries, flour mills, fisheries. The *Hoc* a famous esplanade overlooking P. Sound. 2) Seapt., Mass., U.S.A.; fisheries; landing-place Pilgrim Fathers, 1620; pop., 13,000. 3) Cap., Montserrat, Brit. W. Indies; pop., 1,700. **P. Brethren**, Protestant Calvinistic sect, followers of J. N. Darby (d. 1882); also known as Darbyites. **P. rock**, var. of domesticated fowl, of hardy breed, large, with yellow legs and flesh; orig. in U.S.A.

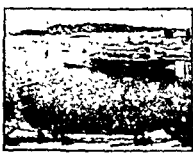
**Plynlimmon**, mtn. in Cardigansh. and Montgomerysh., Wales; 2,468 feet.

**Ply-wood**, boards made by glueing together several layers of very thin wood with the grain crossed.

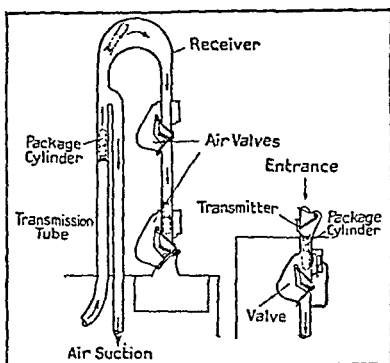
**P.M.**, abbr. 1) *post meridiem* (Lat.), after noon; 2) *pro mille* (Lat.), per 1,000; 3) *pro memoria* (Lat.), for remembrance.

**Pneuma** 1) (Gr.: "breath"), spirit, universal soul. 2) (Eccles.) The Holy Ghost (*P. Hagion*). 3) (Mus.) Anc. sequence of notes to which the last syllable is sung in certain R.C. prayers, etc.

**Pneumatic post**, pneumatically driven despatching-device with suction or com-



Plymouth, The Sound



Pneumatic Post

pressed air; for sending letters or small parcels. **P. tyre**: see TYRE.

**Pneumonia**, inflammation of the lungs. An acute, infectious disease characterized by fever, difficulty in breathing, pain in chest, and blood-stained expectoration. The crisis

occurs about the 7th day, when temperature falls to normal.

**Pneumothorax**, the presence of air in the pleural cavity (*q.v.*). **Artificial p.**, process of admitting air into the pleural cavity at one side betw. the chest-wall and the lung, in order to allow a lung, diseased with tuberculosis, to collapse and rest. During rest, the infection may be overcome, and the lung then slowly resumes its function.

**Pnom-penh**, cap. of Cambodia, Fr. Indo-China, on Riv. Mekong; pop., 84,600 (600 Eur.); trading centre for Siam, Upper Burma, Laos.

**Po**, 1) longest riv. in It. (410 m.); rises on N. slopes of Monte Viso; traverses Plain of Po and falls into Adriatic; navigable. from Turin; broad delta; many dams in lower reaches to prevent flooding. 2) (Chem.) Sym. for polonium (*q.v.*).

**Poaching**, trespassing on land for purpose of illegally killing or catching fish or game (*q.v.*).

**Pocahontas** (d. 1617), N. Amer. Indian heroine; tradit. saved life of Capt. Jn. Smith condemned to death by her father, chf. Powhatan; converted to Christianity; m. John Rolfe, an Englishman; came to Eng. (1616), and d. at Gravesend.

**Pochard**, bird of duck fam., found gen. in N. Hemisphere, with pendent lobe on first toe; expert diver; sexes usually differ in colour.

**Pocket**, (mining) small isolated mass of ore, e.g., gold. **P. of hops**, 168–224 lb.

**Poco**, (mus.) It., a little; *p. a p.*, little by little.

**Pod**, (bot.) seed vessel of leguminous plants, such as pea, bean, etc.

**Podestà**, in the Mid. Ages, chief of police of the Ital. city republics; since 1926, mayor appointed by the State.

**Podophyllum**: see MANDRAKE.

**Poe**, Edgar Allan (1809–49), Amer. story writer and poet; *Tales of Mystery and Imagination*.

**Poelcapelle**, vill., W. Flanders, Belgium, in N.E. of Ypres salient during World War.

**Poeni**, Roman name for the Carthaginians; hence, "Punic" Wars.

**Poeta nascitur, non fit** (Lat.), "a poet is born, not made."

**Poet Laureate**, state poet, "crowned with laurels"; office still conferred in England. **Poetics**, part of aesthetics concerned with poetry (see ARISTOTLE); technique of verse.

**Poetry**, in general any artistic expressn. of imaginative feelg.; in partic., as a lit. art, expressn. of thought and emotions in rhythmic lang. with appropriate diction, wh.,

accordg. to Milton, is more "simple, sensuous, and passionate" than logic.

**Pogrom** (Russ.), persecution or massacre of a class of the pop., esp. the Jews.

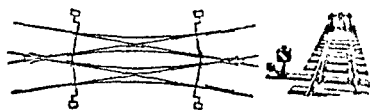
**Poilu** (Fr.: "hairy"), nickname for Fr. soldiers.

**Poincaré, Henri**

(1854–1912), Fr. analytical mathematic. **P., Raymond** (1860– ), Fr. statesm.; Pres., 1913–20; Pr. Min., 1912 and 1922–29; ordered occupation of Ruhr, 1923; stabilized franc, 1926–28.

**Poinsettia**, garden plant, native to Centr. Amer., with white or brilliant scarlet flowers.

**Point**, 1) (naut. and scientif.) one of 32 marks into wh. compass (*q.v.*) is divided; degree, as of temperature: *boiling, freezing* point. 2) (**decimal p.**), mark dividing fractional parts from integral numbers. 3) (Math. and geom.) Accordg. to Euclid, that wh. has no parts or magnitude, only position. 4) (Rly.) Tapered rail moved by switch (*q.v.*) for changing



Double Crossing

Single left-hand

Railway Points

ing train from one set of rails to another. 5) (Sport) Position of fielder in cricket, facing batsman on off-side. **P. discharge**, (phys.) discharge of high-tension electr. into the air from pointed conductors. **P.-lace** (Ital. *punto*), lace made with the needle (*needle-P.*); see LACE. **P.-to-point**, horse-race across country, not over a prepared course.

**Point Conception**, promontory of California, U.S.A., W.N.W. of Los Angeles.

**Point d'appui** (Fr.), fulcrum; supporting point; base of operations.

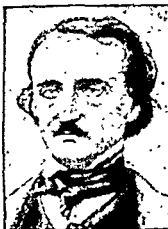
**Pointer**, sporting dog, resembling lightly built foxhound (*q.v.*), trained to indicate presence of game by "pointing."

**Pointillism**, method of painting in juxtaposed spots of pure colour, which, seen from a proper distance, blend into a natural atmospheric effect.

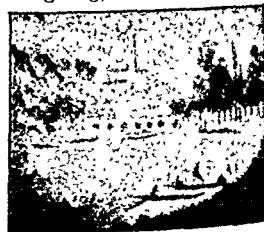
**Point system**, a standard system of measurement of printing type bodies. A point = about  $1/72$  or .01388 (actually



Raymond Poincaré



Poe



Pointillism

Landscape by Stanislas

.013837) of an inch, and all type bodies are multiples of this. (See TYPE.)

**Poiré**, Emmanuel: see CARAN D'ACHE.

**Poison**, substance which acts injuriously on living organisms (also on catalysers, *q.v.*) when present in relatively small quantity. P.s acting on animals and human beings may be divided into: *Corrosive P.*, destroying tissue directly, esp. internally, *e.g.*, mineral acids and alkalis, carbolic acid, corrosive sublimate; *irritant P.*, causing inflammation, *e.g.*, arsenic compounds, phosphorus, oxalic acid; *systemic P.*, acting injuriously on particular organs so as to disturb their function, *e.g.*, alkaloids, prussic acid, alcohol, ether, hypnotic drugs, trinitrotoluene, etc.; also *gases* such as carbon monoxide (*q.v.*). *Allergic P.s* are all proteins (*q.v.*). So-called food-poisoning or ptomaine-poisoning is due to presence of a bacillus which causes gastro-enteritis; plants containing poisons (gen. systemic) may be accidentally eaten, *e.g.*, fungi.

**Poisoning, treatment of**, must depend upon nature of poison. *Prussic acid* and *cyanide of potassium*, effects of wh. are very rapid and deadly: apply fumes of strong ammonia, drinks of hot and cold water, rubbing of limbs, artificial respiration (*q.v.*), injection of atropine (*q.v.*). *Strychnine* causes tetanic spasms, wh. necessitate chloroforming patient in order to wash out stomach. *Opium*, administer coffee, brandy, keep patient awake. *Coal-gas*, give air, artific. respiration, oxygen, brandy; administer strychnine and digitalin hypodermically. See also: ANTIDOTES; EMETICS.

**Polisy**, Colloquy of, abortive attempt by Catherine de' Medici, 1561, to reconcile Catholics and Protestants of France.

**Poltiers**, cap. of dépt. of Vienne, France; pop., 42,500; cathed., 1160-1380; univ. fndd. 1431; wine, wool, leather; agric. produce. Charles Martel defeated Saracens, 732; defeat of the Fr. by Eng. under Black Prince, 1356.

**Poitou**, former prov. W. Fr., now divided betw. Vienne, Deux-Sèvres, and La Vendée.

**Poker**, card-game for any number up to 8, in wh. each player receives 5 cards and (usu. after exchanging some or all of them) backs his hand to beat that of any other player.

**Pola**, naval base on Adriatic, S. of Istrian penins., It.; pop., 55,618; prior to World War principal arsenal and station for Austria-Hungary's fleet; occupied by Italians, 1918.

**Poland**, republic, E. Europe; bounded N. by Prussia, Baltic Sea, Free State of Danzig, E. Prussia, Lithuania, and Latvia; E. by U.S.S.R.; S. by Rumania and Czecho-

slovakia; and W. by Prussia. Area, 149,960 sq.m.; pop., 31,148,000 (69.1% Poles; 4 million Ukrainians, 2 million Jews, 1 million Germans, 1,800,000 Russians). Access to the sea is obtained through the Polish Corridor, leading to the new port of Gdynia (*q.v.*), on W. coast of the Gulf of Danzig. Interior occupied by the Polish Plain, except in the S., where the land, diversified by hills and plateaux, rises to the Carpathians, on the frontier of Czechoslovakia. Extensive forests and marshes in the east. The chief riv. is the Vistula, which, with the Bug, San, and other tributaries, drains the centr. plain. Other rivers include the Dvina, Viliya, and Niemen, all flowing through the Baltic re-



publics; the Pripet (E. into the Dnieper); the Warta or Warthe (W. into Germany); and the Dniester (S.E. into the Black Sea). Climate, Continental. Chief occupation, agriculture: rye, oats, barley, wheat, potatoes, sugar-beet, flax, hops, hemp; forestry; livestock; poultry; coal, lignite, iron, lead, zinc, potassium; petroleum and natural gas (Galicia). Manuf.: cement, paper, chemicals, textiles (Lodz). Rlys., 12,450 m. Country divided into City of Warsaw, and *Voivodeships* of Warsaw, Bialystok, Cracow, Kielce, Lodz, Lublin, Lwow (Lemberg), Nowogródek, Polesie, Pomorze, Poznan (Posen), Silesia, Stanislawow, Tarnopol, Wilno (Vilna), and Wolyn. Chf. tns.

Warsaw (cap.), Lodz, Lwow, Poznan, Cracow, Wilno, Katowice, and port of Gdynia.

**Constitution** of 1921 provided for Parliament of two chambers, *Sejm* and Senate, both elected by universal suffrage; the two houses unite as a National Assembly to elect the President (for 7 yrs.). Amended after Marshal Pilsudski's *coup d'état* in 1926, when the executive was made stronger at the expense of the legislature.

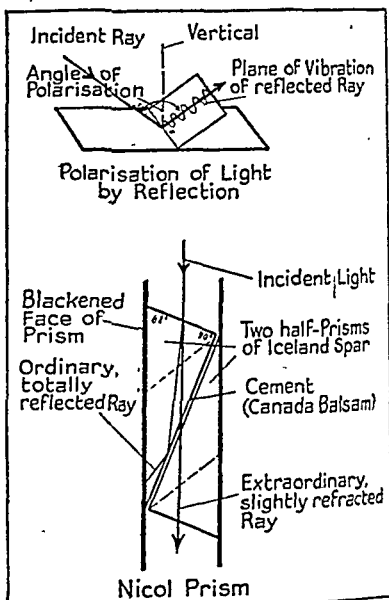
**History:** Boleslav I (992-1025), first Kg. of Poland, ruled over a territory extending as far W. as the Elbe; after 1138 the country was split up into several small and mutually hostile principalities (Great and Little Poland, Mazovia, Silesia, Pomerania, etc.). In 1241 the Mongols under Batu defeated the Poles and Germans at the battle of Liegnitz (*q.v.*). After the Tatar invasion there was considerable immigration of German traders, many of whom were absorbed as Poles. In 1201 the Knights of the Sword, and in 1208 the Teutonic Knights, settled in what is now E. Prussia. The Teutonic Knights were defeated by Wladislaus I in 1332, after he had reunited Great and Little Poland in 1309. Casimir III, the Great (1333-70), left Poland to his nephew, Louis of Hungary. In 1386 Jagiello, Grand Duke of Lithuania, married Louis's daughter Hedwiga and became Kg. of Poland, thus uniting the two countries. Moldavia was acquired c. 1400. In 1410 the Teutonic Knights were decisively defeated by Jagiello at Tannenberg, and E. Prussia temporarily became a Polish dependency. The Turks were expelled from Moldavia in 1485. Religious controversies during the Reformation. From 1572 to 1791 the power of Poland declined under a succession of foreign kgs.; electoral monarchy, oligarchy, and *liberum veto* (*q.v.*). Wars with Sweden, Russia, and Turkey. John Sobieski (1674-96) saved Vienna from the Turks in 1683. Under Augustus II of Saxony (1697-1733) Poland suffered severely in the war with Sweden (1700-20). **First Partition of Poland** (1772) distributed one quarter of the country betw. Russia, Austria, and Germany. **Second Partition** (1793) left Poland with one-third of her former territory; unsuccessful revolt and war with Russia under Kosciuszko, 1794. After **Third Partition** (1796) Poland disappeared as a nation for 120 years. Grand Duchy of Warsaw erected by Napoleon after Peace of Tilsit, 1807. "Congress Poland," a portion of centr. Poland, forming a kgdm. (with Tsar of Russia as kg.), created at the Congress of Vienna, 1815; absorbed in Russian prov., 1863. Unsuccessful revolt at Warsaw, 1830. After the World War, Poland became an indept. republic, formed out of territory previously belonging to Russia (Russian Poland, etc.), to Austria

(Galicia), and to Germany (parts of E. Prussia, Silesia, etc.). Vilna (Wilno) was annexed in 1920 (*see* LITHUANIA and WILNO). Poland joined Yugoslavia, Rumania, and Czechoslovakia in Little Entente in 1921.

**Polish Literature:** Important religious and historical literature in Mid. Ages. "Golden Age," in 16th century, inspired by Court and by University of Cracow. Has felt the influence of the baroque, classic, romantic, and modern movements. Little known outside Poland.

**Polar angle**, formed by meeting of 2 meridians at N. or S. Pole. **P. axis** of an astronom. instrument is set parallel to that of the earth. **P. lights**, the Aurora Borealis and A. Australis; *see* AURORA. **Polar night**, period when, in either of the circumpolar regions, the sun does not appear above the horizon; *cf.* MIDNIGHT SUN. **P. regions:** *see* ARCTIC and ANTARCTIC CIRCLES. **P. distance**, (astron.) arc of celest. meridian contained betw. celest. body and N. or S. pole, according to hemisphere in wh. it is.

**Polarimeter**, (phys.) apparatus for measuring rotation of the plane of polarization



Polarization

(*q.v.*) of light substances, usu. solutions, e.g., of sugar; strength of solution can then be determined.

**Polaris:** *see* POLE-STAR.

**Polarity**, tendency of a body to exhibit opposite properties in opposite directions; possession of 2 poles with contrasting characters, e.g., attraction and repulsion.

**Polarization**, (electrolytic) passage of current thr. liquid electrolyte (*see* ELEC-

TROLYSIS) causing deposition of different products (e.g., hydrogen and oxygen, metal, etc.) on two electrodes. This gives back electromotive force (E.M.F.) of polarization, which must be deducted from E.M.F. of circuit in calculating current by Ohm's law. If orig. E.M.F. is removed, polarization will send current in reverse direction. In **P. of light** vibrations of light occur at right-angles (to direction of propagation); if direction of vibrations in all points of the ray lie in the same plane (*plane of P.*), light is said to be plane-polarized. Natural light (e.g., sunlight) is unpolarized; direction of vibrations irregular. *Nicol's prism* (q.v.) generally used to produce polarized light; passes only light vibrating in a single direction. **P.** also occurs on reflection of light. Polarized light used for examination of crystals. Sugar solutions rotate the plane of polarization.

**Polder**, tract of land in Holland lying below sea-lvl., reclaimed from sea and protected by dykes (q.v.).

**Pole, Reginald** (1500-58), Eng. cardinal; papal legate to Qn. Mary (1554), and abp. of Canterbury (1556); devoted his life to restoration of Ch. of Rome in England. **P., Richard de la** (d. 1525), E. of Suffolk, pretender to Eng. Crown; went to the Continent, 1504, whence he planned an invasion of England.

**Pole**, (phys.) 1) of a magnet, point within magnet from wh. external lines of force appear to emanate. 2) (Geog.) Point of intersection of axis of the Earth with its surface and also with all meridians and circles of longitude. The geograph. poles of the Earth are "true" N. & S.; magnetic poles, towards which magnetic compass needle points, are not situated at geograph. poles; N. is at Boothia Felix, 70° N. lat.; S. at Victoria Land. See also NORTH. 3) (Measure): see ROD, POLE, or PERCH. **P.-star**, (astron.) variable double or triple star  $\alpha$  in constell. Ursa Minor (q.v.); 1° 3" from true N., used for finding direction at night; nearly in line with  $\alpha$  and  $\beta$  of Ursa Major; centre of N.C.H.; see PL., ASTRONOMY.

**Polecat**, small, active carnivore closely related to weasels, martens, and stoats. Found throughout Europe.

**Pole jump**, high or long jump made with aid of a long pole. Rec.: *High*, by Hoff (Oslo), 14 ft. 2 in. (1931); *Long*, by Platt Adams (N.Y.), 28 ft. 2 in. (1910).

**Polemics**, literary, scientific, or political controversy.

**Polenta**, Ital. dish; thick porridge of coarse-ground maize or groats.

**Poles of maximum cold**, those parts of the earth where the cold is most intense, e.g., Verkhoyansk, Siberia (lowest annual mean temp. -50° C., -58° F.).

**Police**, force establd. for keeping internal

order. In many countries, controlled by both Govt. and local auth.; in Eng., the London (Metropolitan) police (except in the City itself), controlled by Govt. alone, but provincial police by county or town councils. **P. court**, court where magistrates (q.v.) sentence for minor offences and give prelim. hearing to charges tried subseq. by higher courts. See PETTY SESSIONS.

**Policy**, (insur.) a document whereby an insurance is effected.

**Polish**, to make smooth and bright by rubbing, often with abrasives; *French polishing* of wood, by many successive coats of shellac dissolved in spirit. Metals polished by high-speed buffs or mops charged with putty powder, etc.

**Polish**: see LANGUAGE SURVEY, *Slavonic Language*. **P. Corridor**, strip of Pol. terr. giving Poland access to Baltic Sea (see DANZIG; GDNIA) and separating E. Prussia from rest of Germany. **P. Legion**, Polish troops raised in Milan, 1796. Later, similar formations (e.g., by Pilsudski in World War).

**Politian**, Angelo Ambrogini Poliziano (1454-94), Ital. humanist and writer: *Orfeo*.

**Political economy**, the science of the administration of communities. **P. science**, collective name for all branches of knowledge relating to conduct of State, statesmanship, polit. econ., nat. finance.

**Politics**, science and practice of art of ruling communities, partic. States; tactics and theory of electoral parties or societies.

**Polk**, Jas. K. (1795-1849), 11th Pres. U.S.A., 1845-49; Mexican War.

**Polka**, lively ball-room dance of Czech orig. in 2/4 time, characterized by rest on 2nd beat.

**Pollack**, fish of cod tribe, with long lower jaw, no barbel, and marked power of withstanding tides and currents; found in Brit. and northern waters; a dark-coloured var. is known as the *coal-fish*.

**Pollaiuolo, Antonio** (1429-98), and his bro., **Piero** (1443-96), Ital. goldsmiths, engravers, sculptors, and painters.

**Pollen**, (bot.) powdery substance discharged from anthers of flowers (q.v.); the male fertilizing elem. of flowering plants and grasses, either brought direct to ovules (q.v.) or carried to them by bees and other insects.

**Pollice verso** (Lat.: with thumb turned down), sign given by the emp. and spectators in the Rom. amphitheatre, signifying their wish that a victorious gladiator should kill his vanquished opponent.

**Poll-tax**, form of tax levied on individs. without regard to circs. Govts. of Gt. Brit. and U.S.A. charge shipping cos. a P.T. (*head-tax*) on passengers brought into the country.

**Pollux**, 1) (Gr. myth.) *Polydeuces*, one of the Dioscuri (q.v.), bro. of Castor; a boxer. 2) (Astron.) Star in constell. *Gemini* (q.v.).

**Polo**, mounted ball-game of Persian origin now played by 2 teams of 4 with a wooden



Polo: from an Old Persian Miniature

ball, which is driven through the opponents' goal by means of a long-handled mallet.

**Polonaise**, stately process. dance of Pol. orig., in  $\frac{3}{4}$  time; also form of mus. comp. used by *Bach*, *Handel*, *Beethoven*, and esp. *Chopin*.

**Polonium**, (chem.) rare radio-active element; occurs in pitchblende; sym., Po; at. wt., 210.

**Poltava**, tn., Ukraine, on Riv. Vorskla; noted for annual fair; pop., 92,000. Victory of Peter the Great over Charles XII of Sweden, 1709.

**Polyandry**, custom of women having sev. husbands, amongst primitive people with excessive male population.

**Polyanthus**, cultivated flower, between primrose and cowslip, blooming in spring; prevailing colour, blackish or reddish, laced with yellow.

**Polybasic acids**, acids which contain more than one atom of hydrogen replaceable by base; when not all hydrogen is replaced we have acid salt, such as acid sodium sulphate ( $\text{NaHSO}_4$ ).

**Polybius** (c. 204-120 B.C.), Gr. historian; *Histories*: 40 books (5 extant) of Rom. history, 220-146 B.C.

**Polycarp**, St., Bp. of Smyrna; martyr, c. 156. *Epistle of Polycarp* (to the Philippians).

**Polychrome**, having many colours; used esp. of anc. Gr. statues or vases.

**Polyclitus**, Gr. sculptor, 5th cent. B.C., *Doryphorus* (canon for proportions of ideal human form), *Diadumenos*, *Hera*.

**Polycrates**, tyrant of Samos and patron of art and letters, 6th cent. B.C.; built a fleet and made himself master of the Aegean; ally of Amasis, Kg. of Egypt.

**Polygamy**, custom of marrying more than one spouse. Includes polygyny (*q.v.*) and polyandry (*q.v.*).

**Polyglot**, havg. many langs.; **P. Bibles**, with text in sevrl. languages.

**Polygon**, (geom.) any plane figure bounded by straight lines.

**Polygyny**, custom of marrying more than one wife at same time. Widespread among primitive peoples, esp. in Africa, and in Mohammedan countries.

**Polyhedron**, (geom.) solid body bounded by more than four equal planes.

**Polyhymnia**, Gr. muse of the sacred song.

**Polymerisation**, (chem.) change of a compound into another of same per-  
centage composition, its molecular weight

being sev. times that of parent substance. Compounds (usu. organic chem.) are called polymers of orig. substance.

**Polymorphism**, 1) (chem.) quality of matter having the same chem. constituents of appearing in various forms (e.g., carbon as graphite and diamond). 2) (Biol.) Existence of several types among members of same species.

**Polynesia**, groups of isls. in E. Pacific, partly volcanic, partly coral; c. 183,000 sq.m.; pop., 570,000; climate trop., but healthy; see OCEANIA. **Polynesian**: see LANGUAGE SURVEY, *Malay-Polyn. Languages*. **Polynesians**, fair aborigines of Polynesia, akin to the Malays.

**Polynomial**, (math.) expression consisting of several terms arranged in ascending or descending powers of the variable considered. The degree of the P. is that of the highest-powered term, e.g.,  $a + bx + cx^2 + dx^3$  is a polynomial of the 3rd degree.

**Polyp**, general term for fresh-water hydra (*q.v.*) and its marine allies, the *hydrozoa*; obsolete term for cuttle-fish (*q.v.*).

**Polyphase (multiphase) current**, (elec.) alternating current (*q.v.*); phase current is carried by 3 or more conductors, potential of each of wh. alternates rapidly (usu. 50 times p. sec.) accdg. to sine curve, the phases of curves in each conductor being diff. by a fixed amt. relatively to the others. See THREE-PHASE CURRENT.

**Polyphemus**, (Gr. myth.) a one-eyed,



Blinding of Polyphemus: Greek Vase Painting

man-eating Cyclops; blinded by Odysseus and his companions.

**Polyphonic**, many-voiced: each having melodic significance. **Polyphony**, counter point (*q.v.*).

**Polypodium**, genus of fern (*q.v.*), also known in Gt. Brit. as *adder's fool*, or *wood fern*; many varieties.

**Polypus**, (med.) stalked growth of mucous membrane. P. of nasal cavity hinders breathing.

**Polytechnic** (Gr.), many crafts; institution for encouragement of arts and sciences, esp. by means of technical educn. **Royal P. Institution**, Regent St., London, fndd. 1838, for display of scientific inventions, etc.; closed, 1880; re-opened, 1882, by Quintin Hogg, as social institute and technical school.



**Polytheism**, belief in many gods; ant.: *monoltheism* (q.v.).

**Polytonality**, in modern music the simultaneous use of two or more keys or tonalities.

**Polyvalent**, (chem.): *see* VALENCY.

**Polyzoa**, (zool.) group of minute marine and fresh-water organisms known as *moss-animals*; polyp-formed animals living in intimate association as colonies, often numbering thousands of individuals. The common sea mat, or broad-leaved hornbrack (*Flustra foliacea*), fnd. on the seashore after rough weather, is a familiar example. Many species secrete limy structure of great beauty, often popularly called lace-corals.

**Pomade**, scented unguent, mostly used for the hair.

**Pomegranate**, (bot.) *Punica granatum*, has round fruit, with hard rind and purplish pulp of a pleasant acid flavor; rind is used in med. as an astringent and to expel tapeworm.



Pomegranate

**Pomerania**, Pruss. prov. on Baltic, divided by Riv. Oder, bordered on E. by Polish Corridor; 12,000 sq.m.; pop., 1,900,000; many lakes in Eastern P.; agric., cattle-breeding, fishing, shipb.; cap., Stettin.

**Pomeranian**, small rough-coated dog (white or black), with sharp muzzle and pointed ears.

**Pommard**, commune (pop., 880) nr. Beaune, in Côte d'Or, France; also fine red wine produced there.

**Pomology**, science and art of fruit-growing.

**Pomona**, Mainland, largest of the Orkney Isls., sep. from Hoy by Scapa Flow; 190 sq.m.; pop., 14,100; prehist. remains; cap., *Kirkwall*.

**Pomorze, Pommerellen**, county, forms part of Polish Corridor (q.v.); 6,300 sq.m.; pop., 1,086,144 (mostly Germans); woods; potatoes, sugar-beet; cap., *Thorn* (Torun). Polish, 1466-1772; then German until 1919.



Marquise de Pompadour

**Pompadour**, Jeanne Antoinette Poisson, Marquise de (1721-64), mistress of Louis XV.

**Pompeian red**, reddish-brown pigment.

**Pompeii**, ancient city, 13 m. S.E. Naples, It.; destroyed by earthquake and eruption of Vesuvius, A.D. 79. Excavations since 18th cent. expose many parts of town.



Pompeii

**Pompeius**, Gnaeus Magnus (106-48 B.C.), Pompey the Great. Rom.

statesm. and gen.; in 1st Triumvirate, 60 B.C.; deft. by Caesar at Pharsalus, 48 B.C.; murdered in flight to Egypt.

**Ponce de León**, Juan (1460-1521), Span. soldier; companion of Columbus; conquered Puerto Rico (1510) and disc. Florida (1513).

**Poncelet**, Jean Victor (1788-1867), Fr. mathemat. and engineer; treatise on projective geometry; improved construction of water-wheels.

**Poncho**, Span.-Amer. cloak consisting of an oblong piece of material with slit in middle for the head.

**Pondicherry, Pondichéry**, 1) Fr. colony on the Coromandel coast, India, S. of Madras; 112 sq.m.; pop., 188,000; weavg.; ground nuts. 2) Cap. and seat of govt. of the Fr. possessions in India. Pop., 47,650.

**Pond-lily**: *see* WATER-LILY.

**Pondoland**, dist., on coast of Kaffraria, S.E. Cape Prov., S. Africa; 3,900 sq.m.; pop. (white), 2,100.

**Pongee**, fine soft unbleached Chinese or Indian silk fabric, for clothes, decoration, and linings.

**Poniatowski**, Polish princely family: 1) **Stanislaus** (1732-98), Kg. of Poland, 1764-95. 2) **Joseph** (1762-1813), Pol. gen. and Marshal of France; killed after battle of Leipzig.

**Pons asinorum** (Lat.: the bridge of asses); name given to prop. v, Book I of Euclid's *Elements* from its difficulty; der. from phrase in Caesar meaning of wh. is very obscure.

**Pontac**, red wine of claret type, named Basses-Pyrénées, from Pontacq, Fr., where it is produced; also cheap red wine from Cape Province, S. Africa.

**Pont-à-Mousson**, tn., dépt. Meurthe-et-Moselle, France, on Riv. Moselle; pop., 12,000; coal and iron mines; scene of fierce fighting in World War in 1915.

**Pontchartrain, Lake**, landlocked bay in S. Louisiana, U.S.A., 40 m. long; max. width, 25 miles.

**Pontefract**, munic. bor., W. Riding, Yorks.; pop., 19,100; in Norman cas. Richard II murdered, 1400. Noted for "Pomfret" cakes, flavoured with liquorice.

**Pontiac** (c. 1712-69), N. Amer. Indian chf. of Ottawa tribe; supported the Fr.; attacked Eng. frontier settlements and garrisons; submitted to Eng., 1766; murdered in Illinois.

**Pontianus, St.**, Pope (230-235), exiled to Sardinia by Emp. Maximinus.



Pompey the Great



Bishop in Pontificals

**Pontifex Maximus**, title of highest priest in anc. Rome, later of the Emp.; title of pope since 5th cent. A.D.

**Pontifical**, (R.C.) 1) book containing the rites (e.g., ordination, confirmation) wh. can be performed only by a bp. 2) **Pontificals**, a bp.'s vestments (see Ill. prev. page).

**Pontine or Pomptine Marshes**, dist. in Lazio, S. of Rome; malarial and uninhabitable until late 19th cent., when it was drained and converted into pasture-land.

**Pontius Pilate**: see PILATE.

**Pontoon**, 1) light framework or floats forming bridge for quick passage of troops, etc., across river. 2) (Naut.) Low, flat vessel, with cranes, capstans, etc., used in careening ships. 3) Gambling card-game allied to Vingt-et-un.



a) rafts b) boats

Pontoon Bridge

**Pontoppidan**, Henrik (1857- ), Danish author; Nobel Prize (Lit.), 1917.

**Pontormo**, pseudon. of Jacopo da Carrucci (1494-1557), Ital. painter of Florentine School.

**Pontresina**, health resort in canton Grisons, Switzerland, by Bernina Pass, Upper Engadine; alt., 6,000 feet.

**Pontus**, (anc. geogr.) N.E. dist., Asia Minor, on coast of Black Sea; kgd. c. 300 B.C.; gt. power under Mithridates (q.v.); Rom. prov. A.D. 62. **P. Euxinus**, anc. Gr. name for Black Sea. See EUXINE.

**Pontypool**, mkt. tn., Monmouthsh., on Riv. Avon; coal and iron; pop., (urb. dist.) 6,800.

**Pontypridd**, tn. in Glam., S. Wales, at confluence of rivs. Taff and Rhondda; pop., 42,800; manuf. iron, brass, chemicals.

**Pony**, 1) horse of any small breed (usually under 14 "hands"). 2) (Slang) = £25.

**Pood**, Russ. wt., 36.11 lbs. (16.38 kilograms).

**Poodle**, very intelligent dog, resembling lightly built spaniel (q.v.); its long curly coat is often fantastically clipped.

**Pool**, 1) (finan.) agreemt. to regulate market conditions, e.g., Canad. Wheat P.: union of farmers in order to maintain prices.

**P. of companies**, agreemt. betw. sev. cos. to share profits. **Shipping p.**, distribution of traffic of var. shipping cos. to regulate fares and freight charges. 2) (Game) Collective stakes in cards or betting. In *billiards*, game for any number of players, in wh. only 3 hazards count (see HAZARD). Each

player uses a ball of diff. colour, winner taking pool.

**Poole**, Engl. Channel port, in Dorset on landlocked *P. Harbour*; pop., 57,300; shipb.; *Brownsea Isl.* lies in mouth of *P. Harbour*.

**Poona**, 1) dist., Bombay, India; 5,400 sq.m.; pop., 1 million. 2) Cap. of dist.; alt., 1,850 ft. (summer residence, Govr. of Bombay); govt. colleges; cotton, rice, sugar, and paper mills; pop., 163,100 (incl. cantonment of *Kirkee*).

**Poop**, deck raised above aft part of spar deck, reaching forward to mizzen-mast.

**Poor Clares**, the 2nd order of St. Francis, fndd. by Clara Scefi, 1212; later divided into Urbanists and Clarisses; nuns bound by vows of great austerity.

**Poor Laws**, Acts of Parl. from reign of Elizabeth, providing for public assistance (q.v.).

**P. Law Institution** (formerly *workhouse*); building where recipients of public assistance reside, with facilities for work, treatment of sickness, etc.

**Poor persons**, (legal) those qualified by lack of means to bring or defend a case in court without paying court fees, and to have solicitor and counsel assigned to them free of charge. Such procedure has been recognized since *temp.* Henry VIII; in order to sue or defend *in forma pauperis*, a person must prove that he is not worth more than £50, or in receipt of usual weekly income of £2; in special circumstances, these amounts may be raised up to £100 and £4 respectively.

**Popcorn**, parched, or burst "popped" Indian corn or maize, eaten as a sweetmeat.

**Pope** (Lat., *papa*), title orig. given to any ecclesiastic, still used of a parish priest in Gr. Orthod. Ch.; restricted by Gregory VII (1073) to Bp. of Rome, considered by R.C. Ch. successor of St. Peter, and, as such, the Vicar of Christ, the visible head of the Ch., the doctor and teacher of all the faithful. Elected by the College of Cardinals (q.v.) in Conclave; addressed as "Your Holiness"; insignia: straight crosier, pallium, and tiara; exercises spiritual authority over the whole Ch., and temporal authority over the Vatican State (q.v.). See INFALLIBILITY.



Pope

**Pope**, Alexander (1688-1744), Eng. poet; Essay on Criticism, *Rape of the Lock*, *Dunciad*, *Essay on Man*.

**Poperinghe**, tn. in prov. W. Flanders, Belgium (pop., 11,500), W. of Ypres; hop-fields; Brit. railroad and important centre during most of World War, when tn. suffered

much damage; b.-place of Toc H. (q.v.).  
**Popish Plot** (1678), an imaginary Cath. plot agst. Charles II; invented by Titus Oates, on account of whose so-called revelations many Catholics were executed.

**Poplar**, met. bor., E. London, Eng., N. bank Riv. Thames; incl. *Isle of Dogs*; docks, shipb.; working-class dist.; pop., 155,500.

**Poplar**, *Populus*, family of trees related to willow; male and female flowers, catkin-bearing. Varieties: *Lombardy P.* (*P. nigra italica*), aspen (*P. tremula*), cotton-wood, or *American P.*, soft wood of wh. is used for turnery.

**Poplin**, silk fabric, watered or brocaded; *Irish p.* woven of fine worsted and silk.

**Popocatepetl**, volcano (dormant), 40 m.



Poplar



Popocatepetl, Mexico

S.E. Mexico City, Mexico; rim of crater c. 2,000 by 1,300 ft. across.

**Popolari**, members of Ital. Cath. Popular Party; adversaries of Fascism; headed by Don Sturzo; eliminated after Fasc. success.

**Poppet**, (tech.) term used in various senses: *P. head* of a lathe (q.v.) carries back centre; can be slid along bed and clamped in any position; in a mine, the frame over a shaft, carrying the pulleys for hoist. **P. valve**, valve carried by a vertical sliding rod, passing through centre of valve seat.

**Poppy**, *Papaver*, tribe of herbaceous plants. *Papaver rhoeas*, common field P. with pinnatifid leaves and large red flower, often black at base. The garden *Shirley P.*, of many delicate shades, was originally cultivated from this poppy. *Opium* (q.v.) is obtd. from *P. somniferum*, white or pale purple; seeds contain an edible oil. **P. oil**, light yellow oil, pressed out of poppy seed; employed in cooking in East; also used by artists.

**Populares** (Lat.), the popular party, opp. to *optimates* (nobles) in ancient Rome; appl. to the followers of the Gracchi and later Marius, who relied on the popular comitia



Poppy

agst. the Senate; advoctd. redistribution of farms and relief by corn doles to the poor; later became tools of ambitious generals. See *OPTIMATES*.

**Population**, total number of inhabitants in a given country or area. World P. has been estmd. at approx. 1,850,000,000, with

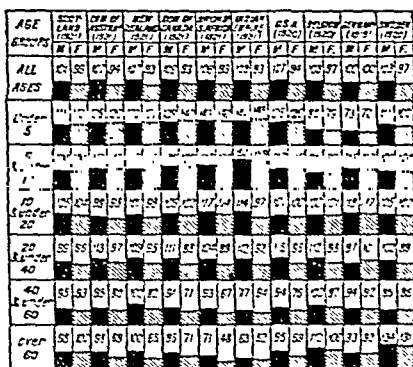
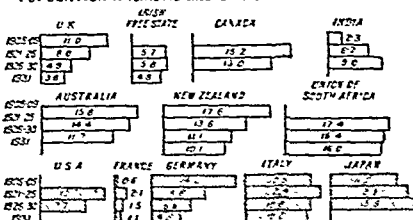


Diagram shows age distribution of pop. of various countries as percentage of age distribution of Eng. and W. in 1921. Thus: ratio that proportion of total Scot. males under 5 yrs. bears to proportion of those of Eng. and W. multiplied by 100 gives figure 101. All countries shown (except Belg. and Ger.) have larger proportion of children than Eng. and W. Sweden has high proportion of "over 60." With exception of Ger., all have greater proportion of males than Eng. and Wales.

#### POPULATION INCREASE PER 1000 INHABITANTS

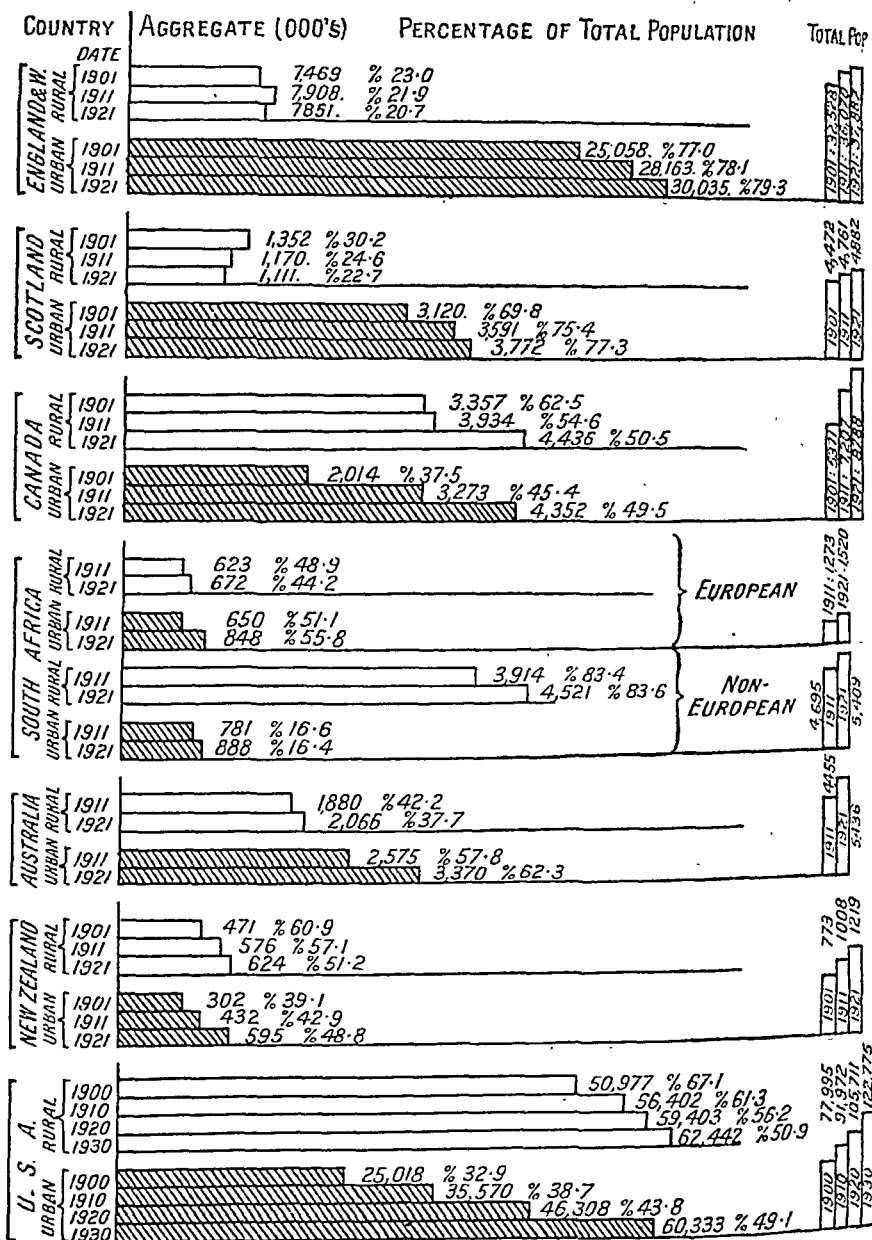


All countries, excepting Japan and India, show decreasing rate. Population of France almost stationary; U.K. and Ger. show very low rate of increase.

average density of 33.3 per sq.m. of land area. Density of P. in a given area depends on climate, amt. of food available at low cost, occupation of inhabts., etc. Accdg. to doctrine of Malthus (q.v.) expounded in *Essay on the Principle of Population* (1798), ratio of increase of P., if unchecked, exceeds ratio of increase of means of subsistence. Modern practice of birth control (q.v.) has tended to bring about a decline in rate of incr. in P. in most civilized countries. Total P. of U. K. (1931) estmd. at approx. 46,000,000; of Brit. Empire, 485,400,000; of U.S.A., 122,776,000. See *CENSUS*; *EXPECTATION OF LIFE*; *LONGEVITY*.

**Porcelain**, translucent ceramic ware made of kaolin (*china clay*) mixed with feldspar or marble and quartz sand, shaped in a wet, plastic state on the potter's wheel or by great pressure in nearly dry state, and fired twice in a special kiln, the 2nd time at a very high temperature, after being dipped in

glaze. The feldspar, or other "frit," melts and forms with kaolin an impervious semi-glass. *Hard p.* contains a large proportion of kaolin. Uses: for utensils and electric insulators. **P. painting** is done under the glaze, before 2nd firing, with refractory colours (cobalt, chromium, uranium, gold,



RATIO BETWEEN URBAN AND RURAL POPULATIONS

Apart from non-European pop. of S. Africa, which shows stationary percentage in rural districts, all countries above show declining percentage, while in Scotland there has been absolute decline. Urbanization reached highest point in Gt. Britain.

etc.); *over-glaze*, with other ("muffle") colours. P. known in China since 7th cent. A.D., highest perfection, 15th and 16th centuries. In Europe since early 18th century. See CERAMICS; POTTERY.

**Porcupine**, large rodent fnd. in S. Eur., Africa, India, Malay Archip., in wh. hairs on back and tail are develpd. into long or short spines, sharp-pointed and formidable; burrowing animals, nocturnal in habit. **Tree p.** of trop. Amer. confined to forests; has long, prehensile tail.



Porcupine

**Pordenone, IL** (Giovanni Antonio Licinio, 1483-1540), Ital. painter; imitator of Giorgione; *San Lorenzo with John the Baptist*.

**Pores**, openings of the sweat-glands on the surface of the skin.

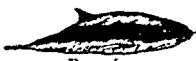
**Porjus**, state power-works on the Luleälv, Lapland, Sweden, the Falls (2 m. long and 185 ft. high) being used for generation of electricity; electro-chem. factory; iron foundry.

**Pork**, flesh of domestic pig used for food without being previously cured; forbidden to Jews and Mohammedans. For division into joints, see MEAT.

**Porphyrogenitus**: see MICHAEL III.

**Porphyry**, a red-and-white rock of crystalline structure; esp. one containing crystals of quartz, feldspar, or mica; classified as *quartz-P.* and *quartzless P.* according to presence or absence of quartz.

**Porpoise**, small Cetacean of genus *Phocaena*, closely related to true dolphins and similar in habit and general appearance.



Porpoise

**Porridge**, Scot. dish. Oatmeal cooked in boiling water; served with cream and salt, or sugar.

**Porsena, Lars**, Kg. of Etruscan tn. of Clusium; besieged Rome, 507 B.C.; thwarted by Horatius Cocles.

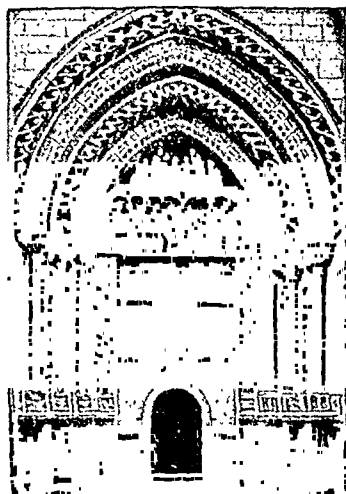
**Porson**, Richard (1759-1808), Brit. classical scholar; editions of Gr. authors; textual criticism.

**Port**, 1) harbour, place where ships may ride secure from storms, part of harbour or navigable water where vessels may discharge or receive goods. 2) Left-hand side of ship, facing forward; ant.: *starboard*; port light *red*; starboard light *green*. 3) Opening in ship's side through wh. to discharge cannon. **P.-hole**, circular, window-like aperture in ship's sides and deck houses. 4) (Mach.) Passage controlled by valve through which fluid is admitted or escapes in any apparatus, e.g., steam engine.

**Portage la Prairie**, tn., Manitoba, Canada, on Assiniboine Riv.; pop., 6,510; centre agric. dist.; rly. junction.

**Porta hepatis**, place of entrance of portal vein (q.v.) into the liver.

**Portal**, (archit.) princ. entrance to a bldg. possessing distinct architectural features. **P. vein**, (physiol.) the vein wh. drains blood



Gothic Church Portal

from stomach, intestines, and spleen and carries it to liver.

**Port Arthur**, 1) port on L. Superior, Ontario, Canada; pop., 16,000; rly. terminus; lumber and grain. 2) (*Rioyounko*) fortified, ice-free harbour on S. point of Liao-tung penins.; pop., 28,870; terminus of S. Manchurian Rly.; leased by China to Russia, 1898; ceded to Japan (Treaty of Portsmouth), 1905.

**Port-au-Prince**, cap. and port of Negro repub. of Haiti, West Indies; pop., 125,000 (90% Negroes); destroyed by earthquake, 1751 and 1770.

**Portcullis**, device used in Mid. Ages to secure entrance of castle or stronghold, consisting of iron grating hung on chains running in a vertical groove, so that it could be raised or lowered at will.

**Porte**: see SUBLIME PORTE.

**Port Elizabeth**, seapt., Cape Prov., on Algoa Bay, S. Africa; pop., 63,000 (43,800 Europeans); exports: wool, diamonds.

**Porteous Riots**, popular outbreak in Edinburgh, 1736, when mob broke into Tolbooth prison and hanged John Porteous, who, after having been sentenced to death for ordering his men to fire on an unruly mob at the execution of two smugglers, had been reprieved.

**Porter, Mrs. Gene Stratton** (1868-1924), Amer. novelist and illustrator; pub. *Freckles*, 1904; *A Girl of the Limberlost*, 1909;

*Laddie*, 1913; etc. **P., Wm. Sydney:** see HENRY, O.

**Porter**, dark brown beer, brewed formerly from highly kilned brown malt and hops; sometimes coloured with sugar.

**Portfolio**, 1) portable case for loose papers orig. large enough to contain folio sheets; *ministerial P.*, office of a min.; *minister without P.*, min. for special purposes, not apptd. to any definite office. 2) (Finan.) Term applied to collection of bills held by a bk. or discount house at any given time.

**Port Glasgow**, police burgh and seapt., Renfrewsh., Scotland, on Riv. Clyde; pop., 19,600; shipb., engineering.

**Portico**, (archit.) line of columns, often at princ. entrance to a building.

**Portland**, Earls and Dukes of, titles in peerages of Eng. and Gt. Brit.: **William Bentinck** (c. 1645-1709), page of honour to William of Orange; visited Eng. in connexn. with m. of William and Mary, 1677; accomp. *William to Eng.*, 1689; in same yr. cr. Baron Cirencester, Visc. Woodstock, and Earl of P.; his s., **Henry**, 2nd E. (1680-1724), cr. Marq. of Tichfield and Duke of P., 1716; his s., **William**, 2nd Duke (1709-62), m. Margaret, heiress of Duke of Newcastle; his s., **William Henry Cavendish**, 3rd Duke (1738-1809), inherited, through his mother, Welbeck Abbey; Pr. Min., 1783-84; Pres. of the Council, 1801-05; his s., **William Henry**, 4th Duke (1768-1854), m. dau. of General John Scott; his s., **William J. C. Bentinck-Scott**, 5th Duke (1800-79), built underground halls at Welbeck; succ. by cousin, **William Cavendish-B.** (1857- ), Lord-Lieut. of Nottingham; Prov. Grand Master, Notts. Freemasons, since 1898; appoints two family trustees of Brit. Museum.

**Portland**, 1) largest city of Maine, U.S.A.; pop., 70,000; Atlantic port on Casco Bay; observatory; library; Maine Gen. Hosp.; exports wheat, flour, and meat; fisheries, shipbuilding. B.-place of Longfellow, whose home is now a museum. 2) Tn., Oregon, U.S.A., pop., 301,800, on Willamette Riv.; port; lumber and grain docks; furniture; wheat and fruit; hides; wool.

**Portland, Isle of**, limestone penins., Dorset, Eng.,  $4\frac{1}{2}$  m. long, ending in *Portland Bill* and connected with the mainland by Chesil Bank. Forms an urb. district (pop., 12,000); limestone quarries (*P. Stone*); *P. Breakwater* at N. end; *P. Prison* now a Borstal institution. **P. cement**, so called from its resemblance to P. stone, manuf. on Thames and Medway from white chalk and clay, and elsewhere from limestone and clay, mixed, burned in kilns, and ground.

**Portland vase**, vase (1st cent. B.C.) of dark-blue glass on wh. layer of lighter glass has been cut away in design of great beauty; discovd. in Rome in 16th cent.; bought,

1786, by Duke of Portland; preserved in Brit. Museum, where (1845) it was broken into fragments by a maniac; pieces subsequently rejoined; offered for sale by auction, but withdrawn (1929).

**Port Louis**, cap., Mauritius, on N.W. coast; pop., 54,400.

**Port Mahon**, cap., Minorca, Balearic Isls.; pop., 20,000; fortified port.

**Port Moresby**, cap., Papua (Brit. New Guinea), on S. coast.

**Porto Alegre**, city and port, Brazil, cap. of State of Rio Grande do Sul, on estuary Guahyba; pop., 250,000.

**Portobello**, watering-place on Firth of Forth; E. suburb of Edinburgh.

**Portoferraro**, cap. of Isle of Elba, It.; pop., 11,500.

**Port of Spain**, cap. Trinidad, on N.W. coast; pop., 66,000.

**Porto Rico:** see PUERTO RICO.

**Porto Santo**, see MADEIRA.

**Port Royal**, 1) fortified tn., near Kingston, Jamaica; most important city in Jamaica until destroyed by earthquake in 1692. 2) Cistercian convent, near Versailles, found. 1204; refuge of Jansenists in 17th cent.; for a time intellectual centre of France. Pulled down, 1710. See JANSENISM.

**Portrush**, seapt. and summer resort, co. Antrim, N. Ire.; pop., 2,100; elec. tramway (1883; first in U.K.) to Giant's Causeway (q.v.).

**Port Said**, seapt., Egy., at N. entrance Suez Canal; coaling station; pop., 105,000.

**Portsmouth**, 1) seapt. tn. and co. borough, Hants, Eng., on *Portsea Isl.*; pop., 249,300; chief naval station in U.K., strongly fortified. Includes

Portsmouth proper, *Portsea* (Royal Dockyard), *Southsea* (residential quarter), and *Landport*. Magnif. harbour; ferry to Gosport; b.-place of Charles Dickens (museum). 2) Seapt., New Hampshire, U.S.A.; naval

yard; pop., 14,500. 3) City, Virginia, U.S.A.; naval yard; pop., 45,700. **Treaty of P.** (1905), betw. Russia and Japan on cessation of Russo-Jap. War, signed here. 4) City, Ohio, U.S.A.; manuf. iron; pop., 42,600.

**Port Sudan**, Red Sea port, Anglo-Egypt. Sudan; pop., 30,000; exports raw cotton, gum arabic, ivory, ebony, hides, coffee.

**Port Sunlight**, model vill. and soap-works of Lever Bros., Cheshire, Eng., 4 m. S. of Birkenhead; pop., 5,000.

**Port Talbot**, munic. bor., Glam., S. Wales; copper works; docks; pop., 40,700. Includes *Aberavon*.

**Portugal**, republic, W. Europe, part of



Guildhall, Portsmouth

the Iberian Penins.; bounded on the landward side (N. and E.) by Spain and on the seaward side (W. and S.) by the Atlantic. Area (incl. Madeira and the Azores), 35,500 sq.m.; pop., 6,700,000. Coast-line indented by estuary of the Tagus (Rio de Lisboa), Lagoon of Aveiro, and by other inlets: Cabo de Roca is westernmost point of continental Europe; in extreme S. is Cape St. Vincent. Surface and scenery vary greatly; sand-dunes along the coast, moorland plateaux, mountain ranges (*Serra da Estrela*, 6,530 feet). The four chief rvs. (Minho, Douro, Tagus, Guadiana) all rise in Spain; the Minho forms part of N. frontier; the Douro and Tagus flow E. to W. across Portugal into the Atlantic; while the Guadiana, on reaching Portuguese territory, turns S. and follows the frontier for the rest of its course (except for a deviation midway).



Climate temperate; rainfall heavy. Country fertile, about half being under cultivation: cereals, vines, potatoes, olives, cork; cattle-breeding; fisheries (sardines, tunny fish); textiles, woollens, silks, porcelain tiles. Exports: wines (by far the most important), cork, fish, fruits. Rlys., 2,130 miles. Country divided into six provinces: Entre-Minho-e-Douro, Tras-os-Montes, Beira, Estremadura, Alentejo, and Algarve; the Atlantic isls. (Madeira and the Azores) are treated, not as colonies, but as an integral part of the republic (Madeira one dist., the Azores three districts). Dependencies and colonies in Africa, India, China, and E. Indies. Kiplin. since 1730. Voyages of discovery in 15th century (W. Africa; route to the Indies) made Portugal a rich trading country for a brief period. Absorbed by Spain, 1580-1640 (sixty years' captivity); regained independence under House of Braganza. Deposition of King Manoel (d. 1932) and proclamation of Republic, 1910. Gr. Brit.'s oldest ally.

**Portuguese:** see LANGUAGE SURVEY, Romance Languages.

**Portuguese East Africa, Mozambique.** Port. colony on E. coast of S. Africa, opp. Madagascar (Mozambique Channel); bounded N. by Tanganyika Terr.; W. by Nyasaland, N. and S. Rhodesia, Transvaal, and Swaziland; and S. by Natal; 268,000 sq.m.; pop., 3,700,000 (Bantu Negroes). Drained by rvs. Zambezi and Limpopo; L. Nyasa on N.W. frontier. Marshy coasts hot and unhealthy (malaria); interior plateaux temperate, with mtn. ranges (6,000-8,000 feet). Exports sugar and maize. Rlys. from cap. and port *Lourenço Marques* to Transvaal, and from Beira to S. Rhodesia; former cap., Mozambique (q.v.).

**Portuguese Guinea, Portug. col.** (since 1963) in W. Africa, on Guinea coast betw.

Gambia and Fr. Guinea; 12,000 sq.m.; pop., 300,000 (400 whites). Exports rubber, ivory, skins, wax, nuts; unhealthy climate; cap., *Bulama*, on *Bukama* Id.

**Portuguese India**, comprises colonies of *Goa* (since 1570), on Malabar Coast; *Daman* (1538), at entrance to Gulf of Cambay; and *Diu* (1536), at S. extremity Kathiawar penins.; total area, c. 1,635 sq.m.; pop., 570,400. See sep. articles.

**Portuguese man-of-war**, (port.) one of the best-known species of the Siphonophora, a free-swimming hydroid colony consisting of a gelatinous float, beneath which are attached the various locomotory, nutritive, and sexual polyps. Exquisite in colour and common in tropical seas.



**Portunus**, anc. Rom. god of gates and entrance-ways (cf. JANUS); later be. Portuguese Man-of-war came protector of harbours and was specially venerated by mariners and travellers.

**Port wine**, red or white wine from upper Douro Valley, shipped through Oporto; no other wine may legally be called port; fortified with brandy during fermentation; classified as Vintage, Tawny, and Ruby. **P. W. Mark**, or **stain**, purplish discoloration of skin at birth (see MALVUS).

**Poseldon**, Gr. sea-god; see NEPTUNE.

**Posen, Poznan**, 1) co. of Poland, 10,240 sq.m.; pop., 2,112,000 (largely German). Formerly part of Poland, assigned to Prussia on partitions 1772, 1793, incorp. with Duchy of Warsaw, 1807, returned to Prussia, 1815, and to reconstructed Poland, 1910. 2) Cap. of P.; pop., 248,000 (25% German); fortress and mfg. tn. on Riv. Warthe.

**Positive**, definite, absolute. (Math.) Number greater than nought, designated by sign + (e.g. +4).

**Positivism**, school of philos. wh. rejects the metaphysical and accepts as real only what can be perceived; found. by Comte (1798-1857); precursor, *Hume*; chief exponents: J. S. Mill, Dühring, Richl. Fredk. Harrison. **Phenomenalist p.**, considers sensation as the only datum of knowledge. Out of P. arose an attempt, in late 19th c., to found a religion of humanity, based on Comte's philosophy.

**Posse comitatus** (Lat.), power of the county; citizens who may be summoned to assist authority in effecting arrests, etc.; hence, a *force* of police.

**Possession**, state of having land or any other property in occupation and power; may be actual or legal, when it is conferred by law, though actual occupation has not

been taken; may be combined with ownership and separate from it.

**Post** (Lat.), after. **P. equitem sedet atra cura** (Lat.), black care rides behind the horseman. **P. hoc, ergo propter hoc** (Lat.), after this, therefore because of this; the fallacy in logic by which something is assumed to be the effect of that which it follows. **P. meridiem** (Lat.), *p.m.*, afternoon. **P.-mortem** (Lat.), after death; examination of a body to determine cause of death. **P. obit**, or **p. obitum** (Lat.), after death. Bond in which the obligor undertakes, in consideration of a sum of money, to pay a much larger sum to the lender on the death of a specified person from whom the borrower has expectations.

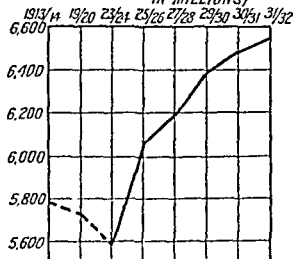
**Post**, official conveyance, dispatch and delivery of letters, parcels, etc., at first by a series of *posts* or stages; later, by rail, motor, etc. Postal service existed under Rom. Empire, and even earlier in Egy. and Persia. In Eng., State control of the service was establd. by Post Office Act, 1657, when

office of Postmaster-General was inaugurated. London Penny Post introduced by Wm. Dockwra, 1680; rates according to distance (4d. for 15 m.), until introduction by Rowland Hill, 1840, of Penny Post throughout U.K.; Imperial Penny Post throughout Brit. Empire, 1899. In 1918, as result of World War, minimum rate was raised to 1½ d., and in 1920 to 2d.; reduced to 1½ d. (for 2 ozs.). 1928. See POSTAL UNION.

**Postage stamps**, pictorial labels, of varying value, used for franking letters, parcels, etc., sent by post.

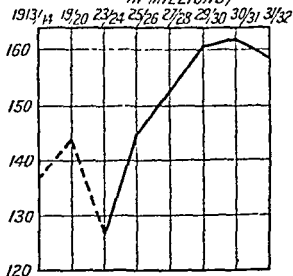
**Postal Union**, internat. agreement, including nearly all civilized countries, in regard to postal rates and services. Inaugurated at Congress of Berne, 1874, resulting in Internat. Postal Convention, 1875. Central Bureau of P.U. at Berne, wh. issues a monthly journal and all nec. information;

LETTERS ETC. (DELIVERED IN U.K. IN MILLIONS)



Increase within last 30 years indicates effect of compulsory elementary education.

PARCELS (DELIVERED IN U.K. IN MILLIONS)



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Convention reconsidered at a Congress held at intervals of 5 years and attended by delegates from all countries interested.

**Post Office Savings Banks**: see SAVINGS BANKS.

**Poste restante** (Fr.), to be called for at a post office; formula used in addressing a postal packet which does not designate the residence of the addressee.

**Posthumous** (Lat.: after burial), used of child born after death of father, or of writings published after death of author.

**Postil**, (eccles.) short sermon or homily, esp. on the Epistle or Gospel for the day; also a marginal note in the Bible.

**Postilion**, rider of near horse of a pair-horsed carriage (or of pair of leaders in 4-horsed) when there is no driver; also, a post-boy.



Postilion

**Post-Impressionism**, term applied to a group of loosely allied French painters, of whom the most prominent (Cézanne, Van Gogh) were at first influenced by Impressionism (*q.v.*), but who aimed at self-expression rather than the exact rendering of external nature, and, in some cases, developed an ultra-simplified technique (Matisse).

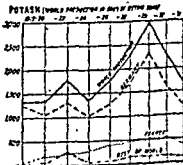
**Post-Tertiary**, same as Quaternary (*q.v.*).

**Postulate**, assumption wh. is philosophically unproven or unprovable, but is presumed to be true.

**Postumia-Grotte**, Adelsberg, tn. in prov. Venezia Giulia, It., betw. Alps and Karst; pop., 4,600; famous for its *Grotto*, the largest stalactite cave in Eur., formed by underground working of Riv. Piuca.

**Potash alum** ( $Al_2(SO_4)_2 \cdot K_2SO_4 \cdot 24 H_2O$ ), common alum (*q.v.*).

**Potassium**, chem. element of grp. of alkali metals; sym., K, at. wt., 39.10, m.p., 63.50; lustrous, white, soft metal; compounds widely diffused in nature; chf. sources of salts of P. are the chloride (sylvine), double chloride with magnesium (carnallite), and as kainite (sulphate of P. and magnesium), largely used as a potash manure. Metal reacts with water, liberating hydrogen and catching fire; import. salts of P. are: **P. carbonate**, formerly made from wood ashes, used in making soft soaps; **P. bicarbonate**, used in some



Prior to World War Ger. practically sole supplier, but transference of territory has enabled France to become important producer. In peak year of 1930 world production was double pre-war figure, but had dropped to half 1929 production by 1932



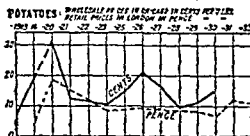
baking-powders; **P. cyanide**, very poisonous solid used in extraction of gold and for killing insects; **P. chromate** and **bichromate**, used for dyes, inks, and tanning; **P. citrate**, valuable diuretic in med.; **P. chlorate**, used in explosives and matches; tablets used for throat affections; **P. nitrate**, saltpetre used as fertilizer, in pickling, and in manuf. of gunpowder; **P. permanganate**, dark red crystals used as disinfectant; an **oxalate**, known as salts of lemon, used for removing ink and rust-stains from fabrics; **P. tartrate**, constit. of some baking-powders; **P. sodium tartrate** (Rochelle salt), constit. of seidlitz powder, has purgative properties; **P. ferri-cyanide** (red P. prussiate) and **P. ferro-cyanide** (yellow P. prussiate) are poisonous crystals used in dyeing; latter used in making Prussian blue.



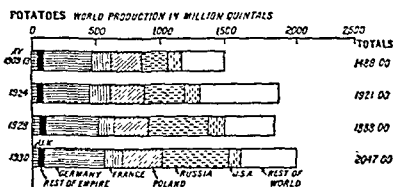
Potato  
Flower,  
Tuber

**Potato**, *Solanum tuberosum*, plant of nightshade family, indigenous to S. Amer., introduced into Eur. in 16th cent.; now widely cultivated for its fleshy, starchy tubers wh. form an important article of diet; also grown for production of alcohol. **P. blight**, disease of potato-plant due to attacks of a fungus.

**Pot-au-feu**, soup made from brown stock, i.e., beef bones, vegetables, etc., slowly boiled in water for sevrl. hours; basis of many different soups.



Price reached high level during World War, but fell with ret. to normal conditions. Cost of transport being high to value, discrepancy between prices in different countries must be great before international movements occur.



Europe accounts for bulk of production and Ger., Russia and Poland for nearly  $\frac{1}{2}$  of total; Russia now produces  $2\frac{1}{2}$  times her pre-war average.

**Potchefstroom**, tn., Transvaal, fndd. 1838; 90 m. S.W. Johannesburg; pop., 9,400; univ. coll., agric. school.

**Poteen** (little pot), illicitly distilled Irish whiskey.

**Potemkin**, Grigori Alexandrovich, Pr. (1739-91), Russ. statesm. and gen.; favourite of Catherine II.

**Potential, Difference of**, (elec.) driving force wh. causes flow of electr.; also called

electromotive force, and voltage; measured in *volts*. Corresps. to pressure or head of water; the greater the pressure (voltage) the greater the flow (current). See OHM'S LAW. **P. energy**, (phys.) energy stored and inactive, as opposed to energy in motion; more narrowly, energy of position (weight raised against gravity, stretched spring, etc).

**Potentiometer**, (elec.) properly, instr. for measuring electr. differences of potential by balancing them through a galvanometer agst. a source of variable potential, gen. series of resistances and/or slide wire, traversed by constant current, so arranged that tapping of continuously variable potential is possible. In wireless, term often used for simple resistance with slide giving variable tapped potential. See POTENTIAL, DIFFERENCE OF.

**Potenza**, cap. of prov. P. (2,391 sq.m.; pop., 348,150) on Riv. Basento, It.; pop., 25,481.

**Pot-hole**, 1) (geol.) deep hole in river-bed, in limestone or other rocks, caused by action of loose stones agitated by water. 2) Any hole in surface of road caused by friction.

**Potiphar**, (O.T.) Pharaoh's chief executioner and captain of guard, to whom Joseph was sold (Gen. xxxvii); celeb. for episode betw. Joseph and P.'s wife.

**Potomac**, riv. U.S.A., 400 m., flowing from Alleghenies into Chesapeake Bay.

**Potosí**, cap. of prov. P. (45,000 sq.m.; pop., c. 540,000), Bolivia, at foot of Cerro de Potosí (14,820 ft.), pop., 34,000; silver mines.

**Potpourri** (Fr.), 1) vessel containing dried flowers and leaves; 2) mixed dish of meat and vegetables; 3) piece of music consisting of an arrangement of several popular melodies.

**Potsdam**, cap. of Brandenburg, Prussia, Ger., on Riv. Havel; pop., 70,000; Palace of Sans-Souci, formerly royal and imperial residence; observatory; Brandenburg Gate. Voltaire lived here several years.

**Potter**, Paul (1625-54), Dut. animal painter; *The Bull* (The Hague).

**Potteries**, coalfields in N. Staffs, Eng.; c. 10 m. by 3; manuf. potteries and china of all descriptions; chf. tn., *Stoke-on-Trent* (q.v.).

**Potter's field** (N.T.), bought by chief priests with 30 pieces of silver returned to them by Judas Iscariot (q.v.). **P.'s wheel**,



Sectional View of Pot-hole



Potomac

rapidly revolving disk, used by potter; nec. for shaping (thrawing) round vessels.

**Pottery**, ceramic ware, made of clays of all qualities from finest kaolin downwards, mixed with quartz sand and (for porcelain and stoneware) a

frit, e.g., feldspar; very plastic, shaped either by hand or machine on potter's wheel; see PORCELAIN; CERAMICS.



Potter at His Wheel

other strains; *Orpington*, buff or whit (famous for egg-productn.); *Dorking*, heavy birds, reared for table; *Plymouth Rock*, favourite breed in U.S.A.; *Game*, for table; *Old Eng. Game*, breed used for cock-fighting (q.v.). See CAPON; COCKEREL; PULLET; DUCK; GOOSE, etc. **P.-farming**, rearing of P. for sale of eggs, or of birds for table. Industry in Great Britain 1st organised, 1877; now represntd. by National Poultry Council (established 1920), to wh. P. clubs, societies, etc., are affiliated. See NATIONAL MARK.

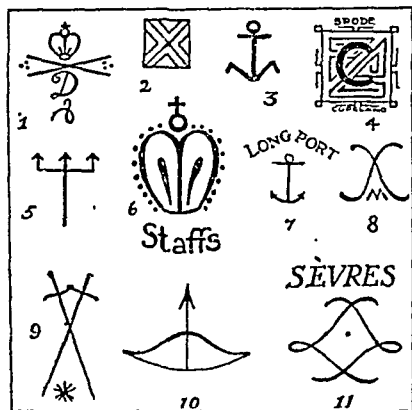
**Pound**, 1) measure of weight. Brit. standard unit of wt., abbr., "lb". **Saxon p.**, later known as **tower p.**, was earliest Eng. wt.; equalled 5,400 grains, the wt. of silver coined into 240 pence or 20 shillings (hence term P. as used in 2) below). In 16th cent. tower P. replaced by *P. troy* (= 12 ounces or 5,760 grains). Standard **P. avoirdupois** (= 16 ounces or 7,000 grains) was establd. by Act of 1855. 2) Brit. monetary unit; symbol £, repesrd. by gold coin (sovereign, q.v.). Gold money withdrawn from circulation in Gt. Brit. in 1914, and replaced by Treasury Notes (see CURRENCY; GOLD STANDARD). 3) A walled enclosure formerly maintained by a local authority, in wh. straying cattle were kept until owner had paid a fine to redeem them.

**Pour encourager les autres** (Fr.: "to encourage the others"), Voltaire's ironical comment on the shooting of Adml. Byng (q.v.). **Pour le mérite** (Fr. "for merit"), Prussian order founded by Frederick the Great; now awarded only to civilians. **Pour prendre congé** (Fr.), abbr. *p.p.c.*, "to take leave"; printed on visiting-cards of those about to leave a locality.

**Pourparler** (Fr.), unofficial discussion, or conference, of diplomats.

**Poussin**, Fr. painters: 1) **Nicolas** (1593-1665), historical subjects and landscapes. 2) **Gaspard** (1613-75), pupil of 1); landscapes.

**Pout**: see BURBOT.



Marks on China

- 1) Derby, c. 1810
- 2) Worcester, 1751-83
- 3) Chelsea, 1745-69
- 4) Spode, 1790
- 5) Swansea, 1750-1820
- 6) Crown Staffordshire, 1906
- 7) Longport, 1793-1830
- 8) Minton
- 9) Coalport, c. 1878
- 10) Bow, 1735-1776
- 11) Sèvres, c. 1756

**Pottle**, 1) Brit. dry meas., 2 quarts or  $\frac{1}{2}$  gallon; see QUARTERN, 1). 2) Obs. Eng. liquid meas., 2 quarts.

**Poularde**, a young hen, fattened for table.

**Poulsen**, Valdemar (1869- ), Dan. telegr. engin.; inv. Poulsen arc.

**Poultice**, a hot, soft, semi-solid mass applied as a dressing to the skin; used to increase the blood-flow to an inflamed part, and to relieve pain.

**Poultry**, domestd. birds reared for the table or for egg-prod.; incld. fowls, ducks, geese, turkeys, guinea-fowl. Most important are fowls, orig. Asiatic jungle-fowl, domesticated for many centuries. Princ. breeds: *Leghorns*, white, black, or brown (egg-productn.); *Wyandottes*, gen. white (both for table and egg-productn.); *Rhode Island Reds*, for breeding and crossing with



Wyandotte

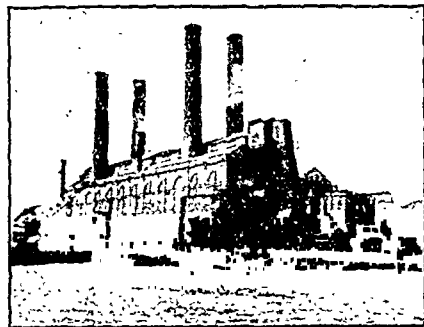


Plymouth Rocks:  
Cock and Hen

**Powder River**, rt. trib. of Yellowstone Riv., Wyoming, U.S.A., 400 miles.

**Power**, 1) (phys.) energy or work; rate at wh. work is performed, measured in horse-power (mech.) and kilowatts (elec.). 2) (Law) **P. of attorney**, authority granted

by one person (appointer or donor) to another to act on his behalf. 3) (Optics) Magnifying capacity of lens of telescope, etc. 4) (Math.) Concept in theory of numbers; no. of times reqd. to multiply a no. by itself to obtn. a given magnitude, e.g., a cube



Lots Road Power Station, London; Exterior

is third P., a square is second power. 5) (Geol.) Thickness of mineral lodes, masses, or layers of rock.

**Power-house**, bldg. in wh. engines, turbines, or other power-generators are housed. **P.-station**, complete plant and all accessories for generating power, usu. electric.

**Poynings**, Sir Edward (1459-1521), Eng.



Lots Road Power House; Turbine Room

statesm.; as Lord Deputy of Ire., caused enactment, in 1494, at Parlt. of Drogheda, of *Poynings' Law* or *Statute of Drogheda*, which made Ir. legislature dependent on approval of Eng. king. Repealed, 1782.

**Poynter**, Sir Edward (1836-1919), Brit. historical painter; mosaics of St. George and St. David in Cent. Hall of Ho. of Parlt.; R.A., 1876; P.R.A., 1896-1919.

**Pozières**, vill., Somme, Fr.; captured by Australians in first battle of the Somme, July, 1916; Brit. memorial to 14,695 missing.

**Pozzolana**, **Pozzuolana**, from Pozzuoli, nr. Naples, volcanic tufa or rock ground to powder and used for making hydraulic cement; consists of silicic acid and clay.

**Pozzuoli**, **Puteoli**, tn., Gulf of Naples, It., pop., 33,000. Anc. Greek colony, became Rom. commercial port and summer resort; many Rom. remains.

**PP.** (mus.), abbr. *pianissimo* (It.), very softly.

**P.P.**, abbr. 1) *praemissis praemittendis* (Lat.), omitting the preliminaries; 2) *per procuracionem* (Lat.), by procurator, also colloq. *per pro*, "on behalf of"; 3) *Pastor Pastorum* (Lat.), Shepherd of Shepherds.

**Pr.** (chem.) sym. for Praseodymium.

**P.R.A.**, abbr. President, Royal Academy.

**Prado** (*Real Museo de Pinturas*), art-gallery and museum, Madrid, built c. 1785. Contains some 2,000 pictures, inclgd. works by Velasquez, Goya, Titian, Tintoretto, etc.

**Praetor**, (Rom. hist.) orig. commander of the army, later applied to various magistrates, esp. *P. urbanus*, with jurisdiction in civil suits; *P. peregrinus*, who decided lawsuits in wh. aliens were concerned; later, number was increased, and Ps. were given charge of specialised courts and became govts. of extra-Ital. provinces. **Praetorian Guard**, the Emp.'s personal bodyguard; disbanded by Constantine the Great (312).

**Pragmatic Sanction** (1713), decree of the Emp. Charles VI declaring the indivisibility of Austr. domains and legality of female succession.

**Pragmatism**, school of philos. (esp. in U.S.A.), regarding science, thought, and events from a utilitarian point of view, testing their truth or value by the criterion of their effect on human interests and activities (*James, Dewey*).

**Prague** (Czech, *Praha*), cap. of Czechoslovakia and of the prov. of Bohemia, on both banks of the Vltava (Moldau); pop., 848,000.



The Hradshin, Prague

The left bank (mainly residential) is dominated by Hradčany Hill, crowned by the fortified palace of the kgs. of Bohemia (now residence of the president); cathed. of St. Vitus (fndd. 930 by Wenceslas). On the right bank is the New Town, with the Diet, univ., Nat. Museum, and the commercial and industrial quarters. Textile, leather, paper, and metal industries; trade fairs. Centre of Bohemia from A.D. 1000; univ. fndd. by Emp. Charles IV, 1348. **Defenestration of P.**, 1618, cause of Thirty Years' War (*q.v.*). **Battles of P.**, 1) or battle of the White Mountain; first great battle of Thirty Years' War, 1620; 2) victory of Frederick the

Great over the Austrians in the Seven Years' War, 1757. **Treaty of P.**, 1866, ended the Austro-Prussian War.

**Prairial**, May 20th–June 18th in Fr. Repub. Calendar (*q.v.*).

**Prairie**, wide area of level, treeless grassland; esp. those of centr. N. America.

**Prairie Provinces**, name given to Canadian provs. of Alberta, Manitoba, and Saskatchewan.

**Prakrit**: see LANGUAGE SURVEY, *Ind. Languages*, all dialects of N. and Centr. India co-existing with or developed from Sanskrit.

**Pram**, (naut.) flat-bottomed barge or lighter, used in Baltic for discharging and loading cargo.

**Praseodymium**, very rare metallic element, found in monazite sand; sym. Pr; at. wt., 140.9; decomposes water.

**Prato**, tn., Florence, It.; pop., 59,000; metal and textile industries; an art centre in the Renaissance.

**Prawn**, colourless, translucent crustacean, allied to, but larger than, shrimp; some tropical varieties approximate to lobster in size; edible.

**Praxiteles**, Athenian sculptor, 4th cent. B.C.; *Hermes with Infant Dionysus* (at Olympia, Greece); *Aphrodite of Cnidus* (copy in the Vatican).

**Prayer, Book of Common**, book containing the daily offices, occasional services, and liturgy of the Ch. of Eng.; 1st P.B. of Edward VI (1549) did not please extreme Protestants; 2nd P.B. of Ed. VI (1552) embodied nearest assimilation of C. of E. services to those of Protestants abroad; revised (1559) in direction of 1st book, with further revisions in 1604, 1633, and (under Act of Uniformity) 1662. Version revised by bps. in 1927, accepted by Convocation, was twice rejected by Parliament on ground that it tended to weaken Protestant character of the Church.

**Praying-shawl**: see TALLITH.

**Praying-wheel**, revolving metal drum or case containing written prayers, used by Tibetan Buddhists as substitute for vocal prayer.

**Preaching Friars**, the Dominicans (*q.v.*).

**Preamble**, preface, introductory portion; introductory pt. of statute.

**Prebend**, endowment in land or money given to a cathed. ch. for maintenance of a priest being a member of the *chapter* (*q.v.*).

**Prebendary**, holder of prebend in certain anc. cathed. or coll. churches; equiv. to an honorary canon.

**Pre-Cambrian**, (geol.) pertaining to the

period and its rocks anterior to the Cambrian period (*q.v.*). See GEOLOGICAL FORMATIONS.

**Precedent**, judgment of a court in a similar matter or cause which is of authority in subsequent cases.

**Precentor**, (eccles.) director of singing and music of a cathed., either a member of the *chapter* or the principal minor canon.

**Preceptors, College of**, chartered society (London, Eng.), incorp. 1849, wh. provides instruction and holds exams. in pedagogics (awarding diplomas of associate and licentiate), and also for pupils.

**Precession**, (astron.) slow retrograde motion of the equinox from E. to W. along the ecliptic (*q.v.*) at rate of 50.26" per annum; P. of the equinoxes due to gradual change in direction of earth's axis in space produced by attraction of sun and moon; effect upon signs of Zodiac; see ZODIAC; NUTATION.

**Pre-Chellean Culture**, earliest divn. of Lower (Earlier) Palaeolithic Period (*q.v.*), preceding Chellean Culture (*q.v.*); eoliths.

**Précieuses**, name given to "blue stockings" (*q.v.*) in 17th-cent. France.

**Precious metals**, gold, silver, platinum, iridium, palladium; rarer are ruthenium, osmium, rhodium. All, except silver, untarnished in impure air, silver blackened by sulphuretted hydrogen, but not affected otherwise. All, except silver, gen. found native, mostly in quartz rock. Used for coins, jewellery, vessels, works of art, for plating base metals, for electric contacts, etc.

**Precious stones**, minerals of outstanding brilliance, colour, high refractive index and hardness. Among P.S., properly so called, are: alexandrite, diamond, emerald, moissanite, opal, ruby, sapphire, tiffanyite, turquoise. *Semi-precious stones* include: agate, amethyst, beryl, rock crystal, jasper, lapis lazuli, malachite, moonstone, topaz, etc.

**Artificial or synthetic p.s.** (ruby, sapphire, corundum), produced chemically by melting down alumina in oxy-hydrogen flames. This process was perfected by A. Verneuil and E. Frémy. **Imitation p.s.** are made from coloured glass of high refractive index.

**Precipitants**, chem. substances causing sep. of dissolved solids in a fluid. **Precipitation**, 1) act of causing sep. of a dissolved solid, wh. usu. falls to bottom of container (precipitate). 2) (Meteorol.) Fall of condensed water-vapour on to earth's surface in form of rain, snow, hail, sleet, mist, or dew.

**Preordial pain**, pain in the chest over the heart; may be due to condition of heart, but is more often caused by indigestion.

**Predella**, (archit.) step projecting below an altar-piece (*q.v.*); often decorated with relief or painting.

**Predestination**, (theol.) predetermination of all events by God; esp. Calvinist doc-



Praying-wheel

trine, that every soul is predestined from eternity either to perdition or to salvation.

**Predeterminism:** *see* DETERMINISM.

**Preface**, something, usu. explanatory, written bef. main body of a work; introductn. to a book; intonational hymn of praise to God in Cath. Mass.

**Prefect**, high adminis. official in Rom. Empire; now adminis. head of a Fr. dépt. or Ital. province.

**Preference on imports**, favourable terms for imported goods, e.g., into a country from its colonies and dominions.

**Preference shares:** *see* SHARES.

**Prefix**, syll. or particle before another word to modify its meaning.

**Pregl**, Fritz (1869-1930), Austr. chemist; micro-chem. analysis; Nobel Prize (Chem.), 1923.

**Pregnancy**, condition of a woman from date of conception to date of birth of the child. Normal period, 280 days (10 lunar months). *Signs of P.*: cessation of regular menstruation; morning nausea, heightened colouring of the skin, esp. on the brow and round the nipples, and on the middle line of the belly. Many women have more severe *P. maladies*: vomiting; conditions of nervous irritation, skin and kidney ailments. *Normal P.*, in a healthy woman, does not necessitate any appreciable reduction of her activities for the first 5 months. A certain forbearance is, however, necessary during the 2nd half of the pregnancy. During the first months, strain and shocks should be avoided at all costs, as otherwise miscarriage may occur; diet should be nourishing and adequate, but not excessive; liver and kidneys should not be overloaded; strong drugs should be avoided. From 5th month the child moves in the uterus, and at the 28th wk. becomes *viable*, i.e., capable of independent existence.

**Pregunta**, (lit.) form of verse-composition, consisting of question and answer, employed in early Span. lit. for riddles and jests, and later for more didactic purposes.

**Pre-heater**, apparatus for heating water, air, gas, etc., before they enter a boiler or furnace; e.g., in generation of steam by heating boiler-feed (in economiser, *q.v.*) and air supply.

**Prehistoric**, relatg. to period prior to that of wh. humanly recorded hist. is available.

**Pre-history**, account or study of the development of the human species up to the beginning of historical times, based on data supplied by excavated tools, weapons, etc., and fossil and skeleton remains. According to most widely accepted theory, both man and the anthropoid apes descended collaterally from a more primitive form of life; earliest remains resembling man are those discovered in Java, in Pliocene strata, and

named *Pithecanthropus erectus* (walking ape-man), who was an ancestor either of man or of the anthropoid apes; the *Heidelberg Man* of a period some 200,000 yrs. later was apparently man-like in most respects, but contemporary implements are inhumanly large; the *Pittdown Man*, whose remains were discovered in Sussex, lived c. 100,000 yrs. ago and represents a type still definitely sub-human; the *Neanderthal Man* (*q.v.*) of c. 50,000 yrs. ago was the first true man. Prehistoric periods of human life are classified acc. to the type of implements employed; *see* STONE, BRONZE, and IRON AGES. *Cf.* WORLD HISTORY.

**Prejudice**, pre-judgment, unreasoned predilectn. or prepossession for or agst. anythg., formed witht. proper grounds.

**Prelate** (Lat.), "preferred"; eccles. dignitary of high rank, esp. an abp. or bp.; also an abbot or prior.

**Preller, Friedrich** (1804-78), Ger. painter, chfily. of classical subjects. **P., Ludwig** (1809-61), Ger. archaeologist and class. scholar; *Hist. of Gk. and Rom. Philos.* (1838), etc.

**Prelude**, (mus.) introductory movement. Most common in the 18th cent. (Bach). Later, detached piece. *See* CHOPIN; RACHMANINOV.

**Premier**, first in rank or degree. In Brit. peerage, *P. Duke and Earl* is Duke of Norfolk (also E. of Arundel and of Surrey); *P. Marquess* is M. of Winchester. *See* PRIME MINISTER.

**Premier cru** (Fr., first soil), loosely used of any good wine, but correctly only of those Bordeaux wines, 4 in number, which are by law of 1855 classed in the *P. C. classé*.

**Première** (Fr.), the first-night performance of a stage play.

**Premise**, propositn. antecedently supposed or proved.

**Premium**, reward, remuneration; 1) (insur.) regular, usu. annual, pymt. by holder of insur. policy to insur. co.; 2) (Stk. Exch.) amt. quoted for a security above its nominal value. *Ant.: discount.* **P. wage system**, or **bonus system**, system of wage payment in wh. basic wage is supplemented by an amt. dependent on quality or quantity of work performed or time saved; bonus also granted in consideration of abnormal incr. in cost of living. **P. bonds:** *see* BONDS.

**Premonstratensians**, order of canons regular, named from the abbey of Prémontré, nr. Laon, where it was founded in 1120 by St. Norbert of Xanten; called also Norbertines, or, from their habit, "White Canons."

**Preparatory school**, privately owned school in Gt. Brit. for preparing boys of 8-14 for public school; usu. submit voluntarily to inspection of Bd. of Educ., who give certificate of efficiency.

**Preposition**, word placed before or after another to denote its assoc. with a 3rd, e.g., *with, against*.

**Pre-Raphaelitism**, Eng. art movement aiming not at mediaevalism but at the sincerity and naturalism of the earlier Ital. painters; started by Holman Hunt, who, with Millais and Rossetti, founded the P.-R. Brotherhood in 1848; supported by Ruskin. *See also* OVERBECK.

**Prerogative**, that part of Eng. law which entitles kg. personally or thr. Minsters or Privy Council to act without parl. concurrence in certain matters, e.g., conferring titles of honour, granting charters, recognising denizens (*q.v.*), management of civil service, foreign affairs, control of nat. defence in war-time.

**Presbyopia**, long-sightedness of middle age; *see* ACCOMMODATION.

**Presbyter** (Gr.: elder), leader of an early Christian community; priest; elder. **Presbyterian Church**, one recognising only one order, that of presbyter, in the ministry, esp. the established Ch. of Scotland, as contrasted with Episcopalian Church. *See* CHURCH OF SCOTLAND.

**Presbyterianism**, form of church govt. recognising only one order of sacred ministers, i.e., presbyters or priests, whose authority derives from an assembly composed of elected representative presbyters; P. churches exist esp. in Eng.-speaking countries, also in France, Switzerland, Netherlands. *See* CHURCH OF SCOTLAND; PRESBYTER; SYNOD.

**Prescott**, Wm. Hickling (1796-1859), Amer. historian; *Conquest of Mexico*, 1843; *C. of Peru*, 1847; etc.

**Prescription**, 1) (law) title to property or right authorised by long usage. **Negative P.** gives person who has been in uninterrupted possession for a cert. time a valid title by depriving any adverse claimant of right to sue him. **Positive P.** given to person who has enjoyed a right for a great length of time, e.g., a right of common; a valid title; usage must have been from time immemorial. 2) (Med.) An order given by a doctor for medicine for his patient. It specifies the drugs to be used and their quantities; gives such directions as may be necessary for the dispenser, and also instructions as to administration or application. A P. is usu. headed with the sign  $\mathcal{R}$ , now interpreted as meaning *recipe* = "take", but really a survival from the practise of alchemists, being a symbol meaning "Aid me, Jupiter." In Gt. Brit. a P. for *dangerous drugs* must bear the name of the prescriber and the name and address of the patient, and may not be repeated except on further instructions from the prescriber.

**Present arms**, (mil.) to bring rifle to a pendic. posit. in front of body (as compliment).

**Preserving**, process of ensuring food-stuffs against putrefaction (by means of chilling, hermetically sealing, etc.); skins are preserved by chem. means (combinations of arsenic).

**President**, presiding officer, esp. of large polit. organ.; in repub. constitutions, head of State.

**Press**, machine for exerting strong pressure. Main types: *Screw*, used as wine-press on grapes to expel juice, as small hand-stamping tool, as copying-press in offices. *Lever* and *toggle* (*q.v.*), of many kinds: large mechanical P. for stamping, drawing, and pressing metal, for bending, etc. *Eccentric*, similar to above. *Piston P.*, work by means of gases or liquids; *hydraulic P.*, for compressing, baling, etc. For *Newspaper P.* *see* NEWSPAPER; for *Printing P.*, PRINTING.

**Press gang**, organized band of officers and men formerly entrusted with duty of impressing men for service in Brit. Navy; seamen, disorderly servants, vagrants, etc., were so enlisted until end of Napoleonic Wars, since when sufficiency of voluntary recruits has rendered P.G. obsolete.

**Press laws**, legislatn. in restraint of the P. arose from eccles. supervision of printing (bull of Alexander VI against unlicensed printing, 1501); German diets made regulations, 1524-48; in Eng., after Reformation, Crown assumed power of granting right of printing books; Star Chamber under Tudors and early Stuarts assumed control of printing; Milton's *Arcopagitica* (1643) demanded liberty of unlicensed printing; *Licensing Act* (1662) made stringent regulations for licensing of books, but was not renewed after 1695; last duties on newspapers abolished 1870, since when principle of freedom of Press has been establd., proceedings for libel or obscenity, when necessary, being taken under ordinary law. Principle of freedom of Press is recognised in constitution of U.S.A.; in many countries since World War, esp. It., Russia and Ger., various degrees of State control are exercised over expression of opinion.

**Pressburg**: *see* BRATISLAVA.

**Pressed glass**, very strong glass for top lights, etc.; made by pressure in iron moulds. Cannot be cut with a diamond; must therefore be made to measure.

**Pressure gas**, gas under high pressure, to incr. its effect for heating and lighting.

**Presteign**, **Presteigne**, former co. tn., Radnorsh., Wales, on Riv. Lugg; pop., 1,100.

**Prestidigitator**: *see* CONJUROR.

**Presto**, (mus.) quickly; *prestissimo*, very quickly.

**Preston**, co. bor., Lancs, Eng., on Riv. Ribble; pop., 118,800; manuf. cotton, linen, iron; important rly. junction. **P. North End**, Eng. assoc. football club, fndd. as

Rugby club, 1870, changing to assoc., 1882; orig. members of Football League; won league championship 1888, '89, and Eng. Cup, 1889.

**Prestonpans, tn.,** E. Lothian, Scot., 10 m. E. of Edinburgh; coal-mines, pottery; pop., 2,500. *Batt. of P.*, Jacobite victory over Hanoverian troops of Sir John Cope, 21 Sept., 1745.

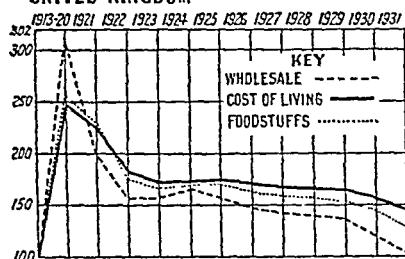
**Prestwick, police burgh,** Ayrsh., Scotland; pop., 8,500; noted golf-links.



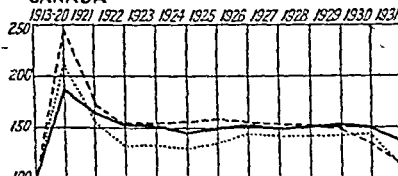
By courtesy of the High Commissioner for S. Africa  
Union Buildings, Pretoria

**Pretoria**, named after Boer leader And. Pretorius (1799-1853); admin. cap., Union of S. Africa and of Transvaal; (alt. 4,500 ft.), pop., c. 100,000 (62,100 whites); govt. buildings; univ. coll.; school of mines; centre of diamond, gold, and silver mines.

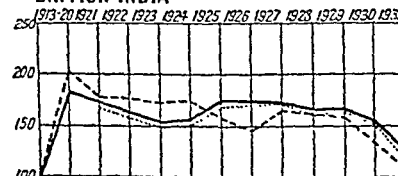
#### UNITED KINGDOM



#### CANADA



#### BRITISH INDIA



Prices in all countries rose during World War; sharp fall since 1920, and tendency of wholesale P. to fall faster than others. Australia chief exception to divergence betw. wholesale P. and cost of living during period of high prices. Compare widening gap of U.K.

**Preussisch-Eylau:** see EYLAU.

**Previous convictions** (antecedents), render sentences more severe on later convictions; may not be brought up in evidence, but are mentioned betw. verdict and passing of sentence.

**Prévost, Fr.** novelists: 1) **Antoine François**, Abbé P. (1697-1763); *Manon Lescaut*; 2) **Eugène Marcel** (1862- ); *Les Demi-Vierges*.

**P.R.H.A.**, abbr. People's Refreshment House Association. See PUBLIC HOUSE.

**Priam**, in Homer's *Iliad*, Kg. of Troy.

**Priapus**, Graeco-Rom. god of fertility, represented with an enormous phallus (g.v.).

**P.R.I.B.A.**, abbr. President Royal Institute of Brit. Architects.

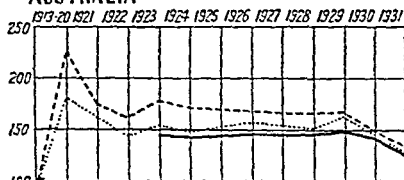
**Pribilof Islands**, group in Bering Sea, Alaska, belonging to U.S.A.; 66 sq.m.; pop., c. 400; largest isl. *St. Paul* (35 sq.m.); fur-seals, blue foxes.

**Price**, (econ.) value of commodity in terms of medium of exchange; money equiv. for which it may be bought or sold. **Market p.**, prevailing cost of goods to a purchaser in a market, determnd. by relation of demand to fixed supply; "short period price."

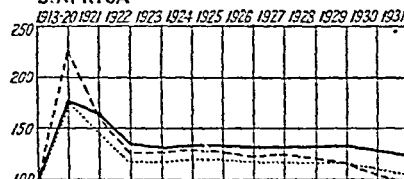
**Natural p.**, cost of production, Adam Smith's "long period price."

**Retail p.**, cost of goods to the purchaser or consumer. **P. agreement**, understanding betw. more important vendors of a product to maintain an agreed minimum

#### AUSTRALIA



#### S. AFRICA



#### U.S.A.



price. P.a. has a favourable econ. effect if it checks cut-throat competition (*q.v.*), but unfav. when it hinders tech. and econ. improvements in produc. by discouraging all competition. **P. fluctuations** affect most goods according to supply and demand. Fluctuation may be either 1) *seasonal*, 2) *cyclical* or 3) *secular*; for 2) see BUSINESS CYCLE; 3) is a general long-time trend, influenced in part by quantity of monetary gold.

**Prickly heat**, skin-eruption accomp'd. by pricking sensation; caused by sweating.

**Prickly pear**, edible fruit of certain varieties of cacti (*Opuntia*).

**Pride's Purge**, expulsion from Hse. of Comms., by milit. force under command of Thos. Pride (d. 1658) of all members favouring compromise with Royalists and return of Charles I, 6 Dec., 1648. Remaining members formed the Rump (*q.v.*).

**Prie-Dieu**, small desk with sloping top for book, and board below on wh. to kneel; used in churches and private oratories for recital of prayers; sometimes elaborately carved.

**Priest**, one who, by virtue of his office, performs sacred rites and ceremonies and acts as an intermediary betw. the people and the god they worship; in the R.C., Gr., and Eng. churches, one ordained to the second of the *Holy Orders*, below a bp. and above a deacon, and authorised to administer the sacraments, esp. the Eucharist and Absolution.

**Priestley, John Boynton** (1794–), Brit. author; *The English Comic Characters*, 1925; *The Good Companions*, 1929; *Angel Pavement*, 1930. **P., Joseph** (1733–1804), Eng. chemist, discovd. oxygen, 1773; house wrecked and papers burnt by Tory mob in Birmingham, 1791.

**Prilep**, tn., Jugoslavia, near Monastir; pop., 18,510; carpet-weaving; tobacco industry; birthpl. of Serbian hero, Marko Kraljević.

**Primacy**, office or dignity of primate or chief eccles. in nat. ch., esp. of Pope as head of R.C. Church.

**Prima donna**, leading lady, usually soprano, in opera.

**Prima facie** (Lat.), at the first view, on first consideration.

**Primary** (or *Palaeozoic*), one of the main geol. periods; see GEOLOGICAL FORMATIONS.



Prickly Pear



J. B. Priestley



Joseph Priestley

**P. school**: see ELEMENTARY SCHOOL, PUBLIC. **P. voter**, in indirect election (*q.v.*), one entitled to vote for delegates who will choose the elected person.

**Primate**, chf. prelate of an Episcopal ch., an archbishop. The Abp. of Canterbury is "Primate of all England" and the Abp. of York "Primate of England." Abp. of Armagh (Protestant) is "Primate of Ireland."

**Primates**, name (first used by Linnaeus, 1758) denotg. highest order of mammals, comprising man, the large apes, monkeys, and lemurs (*see* Ill. next page).

**Prime**, (mus.) first degree of the scale; the tonic, unison. (Eccles.) The first canonical hour of the day; *see* HOURS.

**Prime Minister**, leader of Govt. in power (ranking next after Abp. of York), apptd. by Kg. and apptg. his own Ministers; office technically unknown to Brit. constit., first effectively held by Wm. Pitt. Also known as "Premier", title given in Austral. to heads of State Govts., head of Fed. Govt. being "P.M."

**Primer**, 1) (educ.) elementary text-book. 2) (Printing) Two sizes of type (*long p.* and *great primer*); *see* TYPE. 3) Explosive betw. detonator and main charge to ensure detonation of a stable explosive, such as gun-cotton.

**Primitive Methodists**, sect of Methodists (*q.v.*), fndd., 1812.

**Primitives**, term often applied to the painters who preceded the Renaissance.

**Primo de Rivera**, Miguel, Marq. de Estella (1870–1930), Span. soldier and statesm.; gen., 1915; senator and capt.-gen. of Catalonia, 1921; became military dictator of Sp. by *coup d'état*, 1923, and premier of civil administn., 1925–1930.



Primo de Rivera

**Primovska**, dept., Jugoslavia, on Dalmatian coast; 7,480 sq.m.; pop., 883,000; cap., Split (Spalato).

**Primrose**, *Primula vulgaris*, spring flower, egg-shaped leaves, yellow flowers on separate stalks.

**Primrose League**, Brit. society for propagating polit. principles of Conservative party, fndd. 1883 by Lord Randolph Churchill and Sir H. D. Wolff; name arose from fact that primrose was favourite flower of Disraeli; membership open to both sexes. **P. Day**, Apr. 10th, anniv. of death of Lord Beaconsfield (Disraeli).

**Primula**, general name for primrose tribe wh. includes primroses, pimpernels, and cowslips.

**Primus inter pares** (Lat.: "first among equals"), phrase applicable to the position in the Brit. cabinet of the Prime Minister.



Primula



# THE PRIMATES



A Woolly Lemur  
 B Orang-Utan  
 C Gorilla  
 D Gibbon  
 E Old World Monkey (Indian Sacred Monkey, Langur)

F Chimpanzee  
 G Baboon  
 H Homo Sapiens  
 I South American Monkey (Brown Sajeu)

**Prince, princess**, member of a royal house or sovereign of a lesser State (principality).

**Prince Consort**, husband of a qn. reigning in her own right, not being himself invested with sovereign powers; esp. the husband of Qn. Victoria (*see* ALBERT OF SAXE-COBURG-GOTHA).

**Prince Edward Island**, prov., Canada, in Gulf of St. Lawrence; 2,184 sq.m.; pop., 88,600; cold climate; farming, fishing, fox-breeding; cap., *Charlottetown*; pop., 12,357; cloth, lumber, canneries.

**Prince Igor**, opera by Borodin (*q.v.*), left uncompleted at his death; finished by Rimsky-Korsakov and Glazounov, 1889.

**Prince of Wales**, title invariably bestowed since time of Edward I on eldest son of the Eng. sovereign. It is not hereditary, but conferred by creation. **P. of W.'s Volunteers** (South Lancashire), Brit. infantry regt.; union of 40th Foot (raised 1717) and 82nd Foot (1793); depot, Warrington; record office, Preston; 20 battalions in World War.

**Prince Regent**, a prince who rules in the place of a monarch, esp. eldest son of Eng. King George III, afterwards George IV.

**Princess Royal**, title conferred by royal warrant on the eldest dau. of the Eng. sovereign.

**Prince Rupert**, port, Brit. Columbia; pop., 7,500; terminus, Canadian N. Railway.

**Princeton University**, in bor. of P., New Jersey, U.S.A.; formerly N.J. Coll.; academic dept.; science school. Fndd., 1746.

**Princetown**, vill., Dartmoor, Devonsh., Eng.; convict prison; pop., 2,100.

**Principal**, (finan.) term applied to party for whom an agent acts, *e.g.*, manufacturer may employ an agent to sell his goods; he is then the P. of the agent.

**Principe**, **IL**, Machiavelli's (*q.v.*) famous political treatise on the foundg. and maintenance of a State, and the training, character, and policy of a successful absolute ruler.

**Print**, 1) letterpress, or illustration, obtained from type, block, or plate, by means of a printing press. 2) (Photog.) Positive picture obt'd. from a negative plate or film by exposure of sensitised paper beneath negative to light. 3) (Textiles) Calico or cotton fabric printed with coloured pattern.

**Printing**, earliest attempts (China) by means of wood blocks upon wh. pictures, etc., were cut in relief, impressions being obtained by dabbing raised surface with a thick ink and transferring to paper by rubbing (first known Eur. dated print, the St. Christopher 1423—Chinese many centuries earlier).

Printg. fm. movable type (*typography*) believed to have bn. in use in China, 11th cent., but, as now practised, derives from MS. writg. wh. fl. in Eur. fm. Rom. times to close of the 15th cent., its object being to reproduce and multiply the work of the scribes by a cheap and rapid method. Name of actual inventor unknown, but credit usu. given to Johann Gutenberg, of Mainz, with whom are associated Johann Fust (financially) and Peter Schoeffer (mechanically). Earliest piece of typography extant to wh. date can be attached, a Mainz Indulgence of 1454; first book, Bible (now in Bib. Nat., Paris). press (Fust in wh. first owner recorded Aug., 1456, as date of completion of rubrication and binding; in 1457 Fust and Schoeffer's *Psalter* (first book with printed date of publication and names of printers) demonstrated that the craft was well beyond the experimental stage. Printg. rapidly spread in Germany. Ulrich Zell fndd. a press at Cologne, 1466; Gunther Zainer produced the 1st Augsburg book, 1468; Nuremberg followed, 1470, and by end of 15th cent. printg. was practised in 51 Germ. towns, and output was over 10,000 editions. In Italy 1st book printed (1465) by Sweynheym and Pannartz (Germans) at Subiaco, near Rome; another German, Joannes de Spira, issued 1st Venice book (*Cicero*, 1469); Italy's patrons of learning, so soon attracted printers that by 1473 the supply of Latin classics exceeded the demand. In type-design early printers followed the local book-hand, so early German works are in varyg. forms of Gothic, and early Ital. in the round minuscule of the Ital. scribes, whence *roman* types (*see* TYPE). France (esp. Paris, Lyons, and Rouen) was also indebted to Germans (1470), and printg. was definitely estab'd. in the Low Countries, 1473, Austria and Spain, 1475, and in Eng., 1476 (Caxton's *Indulgence*). Printers in Eng. contemporary w. Caxton (*q.v.*) were Theodoric Rood (of Cologne) at Oxford, 1478-85; the otherwise unknown "school-master printer," St. Albans, 1479-86; and John Lettou and Wm. de Machlinia, who printed law-books in London. Caxton (d. 1491) was succeeded at Westminster by his assistant, Wynkyn de Worde, a most prolific printer who (*c.* 1500), estab'd. himself in Fleet Street—still one of the centres of printing. Richd. Pynson (the King's Printer), who worked close to Temple Bar, and Julian Notary were contemporaries of de Worde. European printg. of 16th cent. was marked by a succession of scholar printers who did much to spread the New Learning. Aldus Manutius of Venice is famous for his



Prince of Wales's Badge



Prince of Wales's Crest

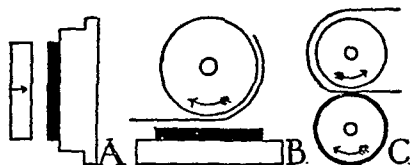


Printer's Mark of the First Printing-press (Fust, Schoeffer), 15th Cent.

long series of cheap and small-size Gr. and Lat. classics, for productn. of wh. he cut a type (*Italic*) fndd. on the cursive hand then used in Italy. John Froben of Basle produced a remarkable number of beautifully printed classics—including Erasmus's New Test. in Greek. In France the Estiennes, Simon de Colines and Geoffrey Tory set a high standard of typographical excellence. Dut. printg. and type-founding became of importance in the 2nd half of the 16th cent. and exercised a wide influence through work of Christopher Plantin and the Elzevir family (Plantin's printg. house was in existence till 1876, when it was acquired by the city of Antwerp and has since been preserved as a museum). The Elzevirs (business fndd. at Leiden, 1583) specialized in fine editions of small format.

Progress was slow in Eng. during early 16th cent. (Robt. Copeland, Jn. Rastall, and Thos. Berthelet—who succeeded Pynson as King's Printer) and the incorporation of the Stationers' Co. in 1557—when it became obligatory on printers to be members of the Co. and to register the name of any book they desired to print—did not improve matters. Both Ch. and State sought to control the output of the presses; the Co. was used as a means to this end, with the result that till the end of the 17th cent. real progress was impossible. Though the literary activity of the Elizabethans entailed a great increase in the number of Eng. books, typography was not comparable with that of leadg. printers abroad; creditable work was, however, done by John Day (1522-84), who was also the 1st Eng. printer to cut types of importance.

In the 17th cent. (rise of the pamphlet and newspaper) typographical degeneration continued, and foreign type was preferred until



Printing  
A) Platen B) Cylinder C) Rotary

the type-founder Wm. Caslon showed its inferiority (c. 1735) and redeemed Eng. letter-design and, incidentally, that of the printed book.

The 19th cent. saw the inventn. of the printg. machine and the evolutn. of mechanical type-setting (see *LINOTYPE* and *MONOTYPE*), wh. made possible the setting and printg. of type at vastly increased speed, but did little to improve the quality of printing. Progress in that directn. was due mainly to the Whittinghams (Chiswick Press) and later to William Morris (*q.v.*) and his dis-

ciples, whose example and influence long caused the productions of the composing machine to be considered necessarily inferior for book-work. Since 1920, however, a revolutn. in the methods and results of typography has taken place; publishers and printers, realising the potentialities of the composing machine, have insisted on improvements in letter-spacing and the quality of type, so that latterly the typography of the everyday book and the better class newspapers and periodicals has been raised to a level often equal to that of the old hand-setting.

An even greater revolution has taken place in *commercial printing*, i.e., that used in the marketing of goods, and in some cases the "modernism" of advertisement printers, with their many new type faces, has shocked those who dislike departure from tradition.

Books and periodicals relatg. to the aesthetics and practice of printg. have multiplied enormously in recent years; the printers' Technical Library, at St. Bride Institute, London, possesses some 30,000 items relatg. to it. **P. processes** can be divided into three main groups: 1) *Relief*, in which the printing surface is raised to receive the ink, as in type (*q.v.*), wood engraving (*q.v.*), line engraving (*q.v.*); *half-tone* process (*q.v.*). 2) *Intaglio*, in which the design to be printed is sunk in an otherwise smooth metal plate. The sunk portions are filled with ink and the smooth surface cleaned before printing. Greater pressure (applied by rotary methods) is necessary than in relief printing. See *ETCHING*, *PHOTOGRAVURE*, *MEZZOTINT*. 3) *Planographic*, in which the design to be reproduced is on a flat surface. See *BOOK PRODUCTION*; *CHASE*; *ELECTROTYPES*; *FORM*; *LITHOGRAPHY*; *STEREOTYPE PLATES*; *TYMPAN*; *TYPE*; *TYPE-COMPOSING MACHINES*. **P. telegraph**: see *TICKER*.

**Prior**, Matthew (1664-1721), Eng. poet and diplomat; author of witty epigrams and occas. verses.

**Prior** (Lat.), 1) head of a *priory* (*q.v.*) of monks or friars. 2) Deputy superior of an abbey (*q.v.*), ranking next after the abbot. 3) Superior of a military order of monks (e.g., Grand Prior of the Knights of St. John of Jerusalem). 4) Magistrate of the republic of Florence in 13th century. **Priory**, monastic society or its buildings, ranking below an *abbey* (*q.v.*) in importance.

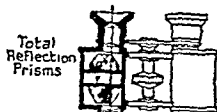
**Priority**, precedence in order of time.

**P. shares**: see *PREFERENCE SHARES*.

**Pripet**, riv. (500 m.), rises in Poland, flows through White Russia to Ukraine, joining Riv. Dnieper near Kiev; navigable from Pinsk (290 miles). The **P. Marshes** (in Poland and White Russ.), thr. wh. the riv. flows, were the scene of Russian disasters during World War, esp. 1915.

**Priscilla:** *see* AQUILA.

**Prism,** (phys.) solid body bounded by rectangles, sides of wh. are parallel in one direction. In optics, prism-shaped bodies of solid glass or vessels filled with liquids; P. of triang. section for analysis of light in spectroscope (*q.v.*); or, with one angle a rt.-angle, giving total reflection of light and serving in place of mirror.



**Prismatic binocular,** (optics) twin telescope, in wh. picture seen is turned rt. way up by means of totally reflecting glass prisms; incrsd. stereoscopic vision obt'd. by increasing distance betw. objective lenses.

**Prismatic telescope:** *see* TELESCOPE.

**Prison,** place of captivity; state bldg. in wh. convicted criminals are confined whilst undergoing punishment, or in wh. those awaiting their trial are detained. Among earliest Eng. prisons were the Marshalsea and Fleet (*qq.v.*); in 16th cent., workhouses, or "houses of correction," were establd. similar to Bridewell (*q.v.*) and known as *bridewells*. P. system, in its modern sense, dates from 18th century. A parliamentary report on cruel practices of officials of prisons (1729) led to acts intended to bring about reformation. In 1778, owing to efforts of John Howard (*q.v.*), Prison Act was passed introducing princ. of moral reform and solitary confinement. System of transportation of criminals to Australia was practised, 1788-1840, when its attendant evils caused it to be abandoned. Millbank Penitentiary (bld. 1823) was first Eng. prison constructed on princ. of segregation, occupation, and education of prisoners. System of confinement in cells was introduced, 1831, the 1st prison to be constructed on this princ. being Pentonville (*q.v.*). Introductn. of *penal servitude* or *hard labour* necessitated prisons in neighbourhoods where public works were in progress, e.g., Portland, Chatham, Portsmouth (breakwater, docks), and Dartmoor (land reclamation). By Prison Act (1898) prisoners are classified accdg. to degree of offence, and they may earn remission of part of sentence. Prevention of Crimes Act (1908) introduced Borstal System (*q.v.*).

**Privas,** cap. dépt. Ardèche, Fr.; pop., 6,680; textiles, silks; ironworks.

**Private bill,** bill in Parl. wh., if passed, will be an act affecting private int. (e.g., to dissolve a marriage or to empower a co. to act outside its regular powers) or a particular locality. *See* LOCAL LEGISLATION.

**Privateering,** until abol. by Paris Declaration of Naval Law in 1856, the right of seizing foreign trading vessels during a naval war,

granted to private ships by a govt. and evidenced by *letters of marque*.

**Private member,** member of Hse. of Com. who is not a mem. of government. **P. m.'s bill,** bill introduced by such a member; dist. from "private bill" (*see* above).

**Privet,** (bot.) *Lingustrum vulgare*, shrub with white flowers and blue-black berries; makes good hedges. **P. hawk-moth,** moth with grey fore-wings, hind-wings with pink tinge; larvae have a horn at end of body; feed on privet.

**Privilege,** 1) in libel cases, statement is privileged when person to whom it is made has common interest with person who makes it, e.g., character of a servant. Right to claim privilege is defeated by proof of malice. 2) Statements made in either Hse. of Parl. are absolutely privileged.

**Privy Council,** originally kg.'s confidential advisers, increased in number thr. life membership and honorary appts., until now comprising more than 300. Has ceased meeting as whole, but many governmental acts tech. performed by Order in Council, for issuing wh. a few members summoned with or without Kg. in person. *See* JUDICIAL COMMITTEE; ORDER IN COUNCIL.

**Privy purse,** amt. set apart for private and personal use of Eng. sovereign.

**Prize,** in naval warfare, a captured enemy vessel, with her cargo. **P. court,** crt. (in Gt. Brit. held by Pres. of Probate, Divorce, and Admiralty Division); determines rights over ships and cargoes captured in war. Though set up by belligerent State, admin. internat. laws. **P.-fighting:** *see* PUGILISM.

**Pro** (Lat.), for; **p. aris et focis**, for altars and hearths; for God and country; **p. bono publico**, for the public good; **p. et contra**, for and against; coll. plur., *pros and cons*; arguments on both sides; **p. forma**, for form's sake, as a formality.

**Proa,** out-rigged, double-ended sailing-boat, with one flat side and lateen sails; used by natives of Malay Archipelago.

**Probability, Theory of,** (math.) calculation of ratio between no. of times an event happens and the total no. of observations (whether event happens or does not). When any observation is as likely to occur as any other, the P. (*a priori* P.) is given by the ratio that no. of observations favourable to the event bears to total no. of observations; e.g., a balanced die has 6 faces, each of which is as likely to appear when die is thrown, so that chance of any one face appearing is  $\frac{1}{6}$ . If the observations are not known to be equally likely, but a certain proportion of the occurrences are found to produce a particular event, then the P. (*a posteriori*) is defined as the proportion of favourable events to total no. of occurrences as the latter becomes infinitely large, e.g., chance of person of partic-

ular age in certain district dying this yr. is equal to proptn. of deaths of persons of such ages in district in yr. to total no. of such persons alive during yr. (latter being assumed to be of sufficiently large dimensions to estimate P.). Range of P. is from 0 to 1, 0 indicating certainty of event not occurring, and 1, of its occurring. *Addition of Chances:* If event can be obtained either from an occurrence whose chance is  $p_1$  or from another whose ch. is  $p_2$ , the total P. of event happening is  $p_1 + p_2$ ; e.g., chance of getting a spade in a pack of 52 cards is chance of getting Kg. of Spades + chance of getting Qn. of S. + . . .

and so on down to Ace of S. =  $\frac{1}{52} + \frac{1}{52} + \dots = \frac{13}{52} = \frac{1}{4}$ . *Multiplication of Chances:* If

$p_1, p_2$  are the chances of success in two independent experiments, then  $p_1 p_2$  is chance of double success, e.g., P. of obtaining two 6's with two consecutive throws of a die is  $\frac{1}{6} \times \frac{1}{6} = \frac{1}{36}$ . Chief application of Th. of P. is to Th. of Errors, being of importance to physics (quantum theory of gases), biology (doctrine of heredity), statistics, and insurance. Developed by Cardano, Pascal, Jacob Bernoulli, Laplace, Gauss, Karl Pearson, A. L. Bowley, Keynes, and others.

**Probate**, offic. proof of will of a deceased person. Copy of orig. will furnished to executor with certificate of will having been proved.

**Probate, Divorce, and Admiralty Division**, division of Brit. High Court of Justice formed to try suits as to wills, matrimonial affairs, and maritime disputes. See PRIZE COURT; TRINITY HOUSE.

**Probation**, suspension of punishment of first or young offender, conditioned by future conduct.

**Probe**, (surg.) small rod-shaped instrument for examining wounds.

**Problem**, unsolved scientific or practical question. **Problematics**, manner and art of scientific questioning.

**Proboscidians**, mammals provided with long prehensile organ (*proboscis*) on head; elephant is now only P. extant.

**Proboscis-monkey**, large, long-tailed species of monkey; native of Borneo. So called from the long hanging nose, esp. large in the male.

**Procession moth**, yellow-grey moth of Centr. and S. Europe, so called because the larvae, when in search of new feeding ground, travel in a long line, the head of each caterpillar touching the tail of the one in front. Very destructive, esp. to oaks and conifers.



Procession Moth

**Procession of the Holy Ghost**, fact of,

and doctrine concerning, the proceeding or emanation of the Holy Ghost from the Father and the Son.

**Procès-verbal** (Fr.), an official minute or record of transactions or proceedings, esp. the written deposition as to facts in relation to a criminal charge.

**Proclamation**, public announcement, esp. of govt. intentions (e.g., war), accession of new head of State, or warning to disperse riot (q.v.).

**Proconsul**, in anc. Rome, gov. of a province.

**Procopius**, 1) Byzantine historian at Justinian's crt., 6th cent. A.D.; *Histories*. 2) **P.**, Emperor of the West, 365-66. 3) and 4) **P.**, Andrew, the Elder (*Greater*) and **P.**, the Younger (*Lesser*), generals in Hussite (q.v.) wars, both slain in batt. near Lipau, 1434.

**Procrustes**, (Gr. myth.) robber who tortured his victims to death by stretching or cutting them to fit the **Bed of P.**

**Proctor**, 1) univ. official (Oxford, Cambridge, Durham) responsible for preserving discipline. 2) (Law) Person acting as solicitor in eccles. court. **King's P.**, official whose duty it is to intervene in divorce suits when collusion is alleged.

**Procurator**, (law) 1) the business of a procurator (q.v.); 2) the procuring or employing of women for immoral purposes for gain.

**Procurator**, one who performs functions of another. In anc. Rome the Imper. represen. in a province. In Scot., Procurator Fiscal has duty of inquiring into all crimes within a sheriff's jurisdiction. In and near Glasgow solicitors are called procurators.

**Procyon**, 8th brightest star in heavens;  $\alpha$  in constell. Canis Minor (q.v.).

**Produce exchange**, market for dealing in various products such as cotton, wheat, wool, metals, rubber, etc. Dealings may be in futures (q.v.), or auctions may be conducted by exch. of goods on the spot accd. to organization of particular exchange.

**Producer**, pers. responsible for producing play at theatre; work includes distribution of parts, conducting rehearsals, arrangement of grouping, lighting, and scene-setting; orig. undertaken by an actor, but task greatly increased by modern scenic elaboration, and spec. producers now appointed, assisted by experts in var. branches of stage-production, e.g., scenic artists, etc.; also in cinema and radio productions. **P. gas:** see GAS.

**Product**, (math.) result of multiplying 2 or more numbers.

**Production**, (econ.) creation of utilities of exchangeable value from raw materials.

**Means of p.**, all kinds of raw materials, labour, tools, machinery, etc.

**Profession**, calling or occupation in life, especially one of the learned vocations as contrasted with trade or business; body of persons practising a particular calling; colloq. used esp. of actors; in Roman Catholicism, act of taking vows as a monk or nun and entering a relig. community.

**Professional**, (sport) player paid for taking part in a game, as opposed to *amateur*.

**Professional secrecy**, observd. by ministers of religion, doctors, chemists, lawyers, bankers, etc., concerng. facts confided to them in their professl. capacity.

**Professor**, public teacher of highest rank in specific faculty, esp. one holding endowed "chair" at univ. or college. **Regius** (royal) **p.**, holder of one of 16 "chairs" endowed at Oxford (8), Cambridge (3), and Dublin (5), by Henry VIII, 1546.

**Profile**, (archit.) view of bldg., or of moulding from the side; sometimes used of a vertical section. **P. metal**, (tech.) bars of most var. cross-sections. Iron rolled to many standard sections and sizes, e.g., H, T, L, L, U. Delta and sim. brass and other copper alloys, also aluminium and light metal, extruded in liquid state in useful and ornamental sections.

**Profit-sharing**, (econ.) system by wh. employees, while contributing no capital, receive, in add. to wages, an agreed share of profits realized by the business, with object of giving workers an interest in the effect of their labour and eliminating antagonism betw. employers and workers; system first applied in Fr. by E. J. Leclair (1842), and intro. into Eng., 1865-67, but has not proved widely successful. In 1931, 491 Brit. firms had profit-sharing schemes in operation, in wh. 238,000 workers participated.

**Profit-taking**, (Stk. Exch. expression: also used in the foreign exch. markets) sale, by a speculator, of securities, etc., after a rise in price, in order to take the profit accruing from that rise. Ant.: *Bear-covering* (q.v.).

**Prognosis**, act or art of foretelling course and event of disease by partic. symptoms.

**Programme**, a list of performances or persons (e.g., theatre P.); plan (e.g., P. of work; polit. plan). **P. music** represents by its title, or by a prefatory text, certain thoughts, objects, or actions, as forming the subject of mus. treatment; esp. by means of tone-painting, e.g., Beethoven's Pastoral Symphony with its representation of rural life; also comp. by Berlioz, Liszt, R. Strauss, etc.

**Progression**, (mus.) succession of notes or chords proceeding according to rule.

**Progressions**, (math.) **arithmetic. p.** or **series**, one in wh. every term after 1st exceeds one before it by same amount. Excess of every term over one before it is called *Common Difference*, e.g.,  $1 + 3 + 5 + 7 + \dots$

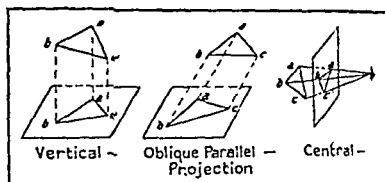
2 being C.D. **Harmonic p.** or **s.**, of terms whose reciprocals, in the same order, form an A.P., e.g.,  $1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots$  **Geometric p.** or **s.**, one in wh. every term after 1st. bears same ratio to one before it, this ratio being called *Common Ratio*, e.g.,  $1 + 5 + 25 + 125 + 625 + \dots$  C.R. being 5.

**Prohibition**, forbiddg. manufac. and sale of alcoholic drinks. **Nat. p.** introd. in U.S.A. by 18th amendment to Constitution, 1920; enforcing act forbade all beverages contg. over  $\frac{1}{2}\%$  of alcohol; in 1933 Congress authorized beer with 3.2% alcohol content. **P.** introd. in Norw., 1919; susp., 1924.

**Prohibitive tariffs**, protective T. so high as practically to prevent importation.

**Proh pudor!** (Lat.), for shame!

**Projection**, 1) esp. in cartog., the attempt to minimize apparent distortion of representation of the earth's surface by making lines of latitude and longitude parallel and at right angles to each other. See *MERCATOR*. 2) (geom.) Delineation of a solid on a plane.



3) **P. apparatus**, (optics) instrum. for presenting pictures on an enlarged scale; a bright light throws the picture through a lens on to a screen; see *EPIDIASCOPE*.

**Prokopenvsk**, tn., Kuznetsk Basin, W. of Irkutsk, Russia in Asia, created 1929; pop., 100,000; important indust. centre under first Five-Year Plan.

**Prolapse**, (med.) the falling downward of a part. 1) **P. of uterus**, slipping of uterus down into the vagina due to weakness of supporting muscles and ligaments. 2) **P. of rectum**, passage of a portion of rectum downwards through the anus.

**Proletariat**, term applied to wage-earning classes of a community, as oppd. to the capitalist classes (*bourgeoisie*).

**Prologue**, orig. part spoken in Gr. play before 1st chorus; hence preface or introduction to discourse or performance, esp. poem spoken before dramatic performance begins.

**Prometheus**, (Gr. myth.) brought fire to man; Zeus punished him by having him chained to a rock in the Caucasus, where an eagle tore his liver out daily. See *KAZBEK*.

**Promised Land**: see *CANAAN*.

**Prompter**, (theat.) pers. stationed in wings (q.v.) to prompt actor if he forgets his part.

**Prompt side**, (theat.) right of stage as seen from audience.

**Pronghorn**, prongbuck, deer-like animal

closely allied to hollow-horned ruminants, but forming a distinct family on account of sheaths of horns being branched and shed annually; about size of a fallow deer; herds of P. found on plains of centr. N. America.

**Pronoun**, word used *instead* of a noun to designate person or thing already mentioned or known from context.

**Pronunciamento**, a proclamation, manifesto; esp. a politic. manifesto issued by a revolutionary party in Spanish-speaking countries.

**Prony brake**, (mech.) brake dynamometer for measuring the power of a machine. Consists of a brake band with brake lever wh. can be weighted, by which force of friction on the band can be measured.

**Proof**, 1) that which convinces the mind of truth or falsity of statement or proposition. 2) In printing, an impression (or "pull") of freshly set or corrected type, for examination and correction. **Slip or galley p.**, impression taken before the type is arranged in pages for **page proof**.

**Proof spirit**, British legal standard of strength of alcohol; derived from ancient method of testing liquid (alc. and water) by moistening gunpowder with it and applying flame; if gunpowder explodes, spirit is "over proof." By Act of Parliament proof spirit weighs at 51° F. 12/13 of equal volume of distilled water; it contains 57.1% alcohol by volume, or 49.3% by weight. Spirit 5% over proof contains in each 100 vols. same quantity of alcohol as 95 vols. of proof spirit; spirit 5% over proof needs 5 vols. of water added to each 100 vols. to make proof spirit.

**Propaedeutics**, preliminary studies in any branch of learning.

**Propaganda**, method of enlisting supporters, e.g., for an ideal, a polit. movement, etc. **Congregation of P.**, sacred congreg. of cardinals estab. by Pope Gregory XV, 1622, to guide, protect, and promote R.C. foreign missions. **College of P.**, instituted by Urban VIII, 1623-44, as supplement to above, where men of all nations and languages are trained for priesthood and missionary work.

**Propagation**, reproduction, as the result of the union of the nuclei of 2 cells (sperm and ovum).

**Propagation of Gospel, Society for** (S.P.G.), in *Foreign Parts*, fndd. 1698, incorptd. by William III, 1701; in *New England*, establd. 1649; charter renewed by Charles II, 1661.

**Pro patria** (Lat.), for the country.

**Propeller**, instrument or contrivance consisting of a centre boss, to wh. 2 or more blade-like portions are attached axially, used to propel ships or aircraft; P. is (*mech.* and *phys.*) a screw in action, having both diam. and pitch, i.e., twist or rake of blades;

difference betw. mechan. screw and screw P. is that latter does not operate in a solid medium, hence propeller "slip" or loss of grip due to lack of solidity.

**Propertius**, Sextus (49-15 B.C.), Rom. elegiac poet.

**Property**, personal goods or real estate over which one may exercise full authority. P. of married woman, in Eng., law conserves to her by statute an independent personal status. **P. tax**, direct tax levied on property; term often used in Gt. Brit. for income tax assessed on property in lands, houses, bldgs., etc.; see TAXATION.

**Prophet**, 1) (O.T.) seer or man of God who interpreted the divine will and often foretold future (e.g., Elijah); author of one of the Prophetic Books: 4 *Major P.*: Isaiah, Jeremiah, Ezekiel, Daniel; 12 *Minor P.*: Hosea, Joel, Amos, Obadiah, Jonah, Micah, Nahum, Habakkuk, Zephaniah, Haggai, Zechariah, Malachi. 2) One of the great non-Christian religious teachers, e.g., Mohammed.

**Prophylaxis**, prevention of disease.

**Propontis**, anc. name for the Sea of Marmora.

**Proportion**, 1) (art) the relation of one thing to another in respect of size. 2) (Math.) Ratio one quantity bears to another.

**Proportional representation**, method of election. Sev. forms, simplest being where each constituency elects more than 1 mem., and voter directs wh. if any candidate shall benefit if candidate of his first choice has enough other votes to secure election. Party rep. thus tends to be proportionate to electoral strength. Method tried in many countries but in Eng.-speaking world not gen. popular, though used in Eng. for univ. constituencies. See CONSTITUENCY; TRANSFERABLE VOTE.

**Proposition**, sentence containing at least 3 terms (subject, copula, and predicate), wh. affirms or denies a connec. betw. 2 of them. e.g., *Water* (subject) *is* (copula) *liquid* (predicate).

**Propria manu** (Lat.), by one's own hand.

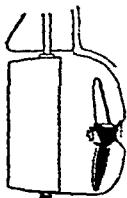
**Proprietary articles**, goods made by firms which are proprietors of their patents and trade names, e.g., most toilet articles, drugs, preserved foods, etc.

**Propylaea**, (archit.) porch of Gr. temples, esp. entrance to Acropolis, Athens (c. 5 B.C.); style sometimes reproduced, e.g., P. at Munich (bld. 1862).

**Pro rata** (Lat.), in proportion.

**Proscenium**, (theat.) forepart of stage in front of drop-scene.

**Proscription**, outlawry, banishment, condemnation, denunciation.



Ship's Propeller

**Prose**, direct straightforward arrangement of words, without poetical measure; ordinary spoken and written language.

**Proselyte** (Gr.: newcomer), newly made convert to a religion, relig. sect., or set of opinions.

**Proserpine, Persephone, Kore**, Gr. myth., "The Maiden" dau. of Ceres (Demeter), carried off by Hades; goddess of the Underworld.

**Prosit!** (Lat.), good health! A toast.

**Prosody**, part of gram. treating of quantity (*q.v.*), accent, and laws of verse.

**Prospecting**, search for mineral wealth. Formerly by single individuals, using few simple tools and chemical tests, now by modern scientific methods (measurement of gravity, magnetic tests, electric conductivity of earth, electric waves) which enable concealed bodies of ore to be located.

**Prospectus**, (Stk. Exch.) announcement by a co., govt., etc., when making new issue of shares, bonds, etc., to the public. Strictly regulated by Brit. Co. Law as to minimum information reqd. and accuracy of statements (for wh. directors are personally responsible); also as to filing with Registrar of Companies.

**Prostate gland**, situated at outlet of bladder; its functions are not fully understood, but it probably manufactures certain constituents of the semen (*q.v.*). It surrounds upper part of urethra, wh. it may constrict if it becomes enlarged thr. disease.

**Prostitution**, the hire or sale by a woman of her own body for lewd purposes; in some countries regulated by law, licensing of houses and registration of prostitutes, who are periodically medically examined. British law deals with procuration, solicitation, etc.; but includes no system of registration.

**Protagoras** (c. 480-410 B.C.), Gr. philos.; first of the Sophists (*q.v.*).

**Pro tempore** (Lat.), abbr. *pro tem.*, "for the time being."

**Protargol**, compound of silver (about 8%) with protein forming colloidal solution in water, in which form it is employed in inflammatory condition of eyes, bladder, and urethra.

**Protection**, (finan.) govt. measures, usu. import (protective) tariffs to assist home industries. **Protectionist**, one who advocates protection.

**Protective colouring**: see MIMICRY.

**Protectorate**, office of, or rule by, a protector or regent; period of such rule; State governed by a protector; administration of a weaker, or less civilised, State by one more powerful.

**Proteids**, proteins combined with other bodies, coagulable by alcohol.

**Proteins**, albuminoids, large class of animal and veg. substances contg. nitrogen, and

usu. of an albuminous character, e.g., egg albumen; most are coagulable by heat. Chemical constitution not yet completely understood; the most important problem relatg. to chemistry of living beings.

**Proterozoic systems**, called also *Algonkian*; geological formations intermediate in age betw. the Archean and Palaeozoic rocks. See GEOLOGICAL FORMATIONS.

**Protestant**, (relig.) orig. name given to Lutherans who "protested" agst. decree of Second Diet of Spire, 1529, providing for toleration of Cath. worship in States adhering to Reformation; later applied to all Christian bodies and persons rejecting authority of R.C. Church. In Ch. of Eng., applied, often in derogatory sense, to the party wh. emphasises the "reformed" character of its theology and ritual as against the "Catholic" elements continued from, or re-introduced after, the pre-Reformation period. **P. Episcopal Church**, large relig. body in U.S.A., in communion with, but independent of, Ch. of England.

**Proteus**, (Gr. myth.) sea-god; Old Man of the Sea, who had power of assuming different forms.

**Protevangelion**, apocryphal gospel narrative traditionally attrib. to St. James.

**Protevangelium**, name given to the verse Gen. iii. 5, which was taken as the first announcement of the gospel of redemption.

**Protista**, collective name for unicellular organisms (animal and vegetable).

**Protoactinium**, (chem.) radio-active element, parent of actinium (*q.v.*); sym., Pa; at. wt. (calc.), 231; half-period,  $1.25 \times 10^4$  years.

**Protocol**, legal name for orig. of a document; now obsolete except in internat. law; esp. of treaties.

**Proton**, (phys.) one of the units from wh. all matter is built up, the other being electron (*q.v.*). P. has positive charge equal and opp. to electron charge; it is 1,800 times heavier; same wt. as hydrogen atom, wh. consists of one P. with satellite electron. Hurlled off at great speed when atoms split up.

**Protophyta**, (bot.) division of simplest, unicellular plants corresponding to zool. Protozoa (*q.v.*).

**Protoplasm**, physical basis of organic life; a homogeneous, structureless substance possessing contractility with an albuminoid chemical composition.

**Prototype**, original pattern or model.

**Protioxide**, (chem.) former term for an oxide containing less oxygen than other oxides of the same element, which may be called superoxides or peroxides.

**Protozoa**, (zool.) collective term for simplest, unicellular animal organisms reproducing by fission. See AMOEBA; PROTOPHYTA.



**Protractor**, (tech.) draughtsman's instrument for setting off angles in drawing.

**Proud flesh**: see GRANULATION.

**Proudhon**, Pierre Joseph (1809-65), Fr. socialist writer and anarchist; *What Is Property?* ("Property is theft!")

**Proust**, Marcel (1871-1922), Fr. author; founder of psychological school of writing based on 15 vol. novel, *A la Recherche du temps Perdu* (1913); Eng. tr. chiefly by Moncrieff.

**Provençal**: see LANGUAGE SURVEY, Romance Languages.

**Provence**, anc. prov., S.E. France, on Mediterranean (now Basses-Alpes, Var, Bouches-du-Rhône, and E. Vaucluse): crossed by spurs of the Alps; watered by rivs. Durance, Var, and Rhone; very fertile (mild climate); cap., *Marseilles*. *Provincia romana* was first Rom. prov. of Gaul, 125 B.C.; invaded by Visigoths, A.D. 480, who made Arles (q.v.) their capital. Ceded to Ostrogoths, 510; to Franks, 537. Charles Martel expelled Arabs, 739. Passed to Charles the Bold, 1475; kgdm. of Provence (Cisjuran Burgundy) fndd. by Boso, 879. United with Transjuran B., 933, to form Kgdm. of Arles. Anc. language (see LANGUAGE SURVEY) revived in 19th cent. by the *Félibres* (q.v.).

**Proverb**, short familiar sentence expressing a well known truth or moral lesson; a by-word.

**Proverbs, Book of**, (O.T.) collection of relig. and moral maxims, parts of wh. attribtd. to Solomon; prob. compiled from writings of var. dates by var. authors.

**Providence**, cap., Rhode Island, U.S.A., on P. Riv., at head of Narragansett Bay; pop., 253,000; Brown Univ. (1764); manuf. textiles, steam engines, jewellery, silver plate; port for coast trade. Fndd., 1636.

**Province**, part of country, division of an empire, remote from but administered by a centr. authority; area forming an administrative unit; area remote from capital or centre of govt.; eccles. division of a country under jurisdiction of an abp.; department or branch of knowledge, thought, etc.; sphere or range of action.

**Provincial Letters**, letters written by Pascal (q.v.) under name of Louis de Montalte to a supposed friend in the provinces in defence of Jansenism (q.v.); pubd., 1656.

**Provost**, title of heads of Oriel, Queen's and Worcester colls., Oxford; King's Coll., Cambridge, and Trinity Coll., Dublin; head of board of governors of Eton Coll. (Scotland); Chief magistrate of town. **P.-marshal**, (milit.) officer charged with the maintenance of discipline outside units, regulation of traffic, protect. and supervision of civil pop. and



Proudhon

execution of milit. sentences. Assisted by *Mil. Police* or *Gendarmerie*.

**Prox.**, abbr. *proximo* (Lat.), "next" (month).

**Proxime accessit**, (Lat.) abbr. *prox. acc.* "came next"; formula applied to the candidate who has most nearly approached the actual winner of a competitive examination for a prize; an honourable mention.

**Proxy**, one entrusted to exercise a right by another on his behalf. Used commonly of a person entrusted with right of voting for another.

**Prud'hon**, Pierre (1785-1823), Fr. painter: *The Abduction of Psyche*.

**Prune**, kind of plum, peeled and dried; largely imptd. into Eur. from California.

**Prunelle**, liqueur of prunes distilled in spirit; made in Burgundy.

**Pruritus**, itching of the skin, usually applied to that of anus or vulva.

**Prussia**, largest and most important repub., Ger.; coast-line identical with Ger.'s, except for interruptions of Oldenburg, Lübeck, and Mecklenburg. Bounded W. by Holland, Belgium, Luxembourg, and France; S. by Hesse, Bavaria, Thuringia, Saxony, and Czechoslovakia; E. by Poland. E. Prussia is sep. from rest of Prussia by Polish Corridor and Free State of Danzig, and is almost surrounded by Poland, with Lithuania in E. and N.E. Area, 113,600 sq.m.; pop., (excl. Saar Territory), 38,200,000. Surface comprises larger part of N. German Plain, bounded in S. by mtns. of centr. Germany; in S.E. by Sudetes Mtns. (Riesengebirge, etc.); large tracts of moorland in N.W. (incl. Lüneburger Heide): portion of Thuringian Forest in S. Chf. rivs.: Rhine, Ems, Weser, Elbe, Oder and (E. Prussia) Vistula and Niemen (Memel). Many lakes in E. Climate temperate; more extreme in E. Two-thirds of area arable—rye, oats, potatoes, beetroot, chicory; vineyards in Rhine Prov.; fisheries important; one-sixth forest—fir, larch, oak, beech, birch. Cattle, pigs, sheep, and goats; horse-breeding in E. Prussia. Mineral wealth considerable; coal, in Silesia, Westphalia, and Rhineland (see also SAAR TERRITORY); salt (Stassfurt); copper (Mansfeld); mineral springs in Hesse-Nassau, Rhineland, and Silesia.

**Industries**: cotton (Rhineland, Silesia, Niederlausitz), linen (Bielefeld, Silesia), silk (Crefeld, Wuppertal), glass, pottery, and china (Rhineland, Saxony, Silesia), iron and steel (Solingen), shipb. (Stettin, Wilhelmshaven). Rlys., c. 21,500 m.; extensive canal-system (Kiel Canal, Berlin-Stettin Waterway, etc.).

Divided into 12 provs.: E. Prussia, Border Prov., (Grenzmark W. Prussia-Posen),



Upper Silesia; Lower Silesia, Brandenburg, Pomerania, Saxony, Hanover, Westphalia, Rhine Prov., Hesse-Nassau, Schleswig-Holstein, and detached dist. of Hohenzollern (*q.v.*) in S. Germany. Chf. tns.: *Berlin* (cap.), Cologne, Essen, Breslau, Frankfurt am Main, Dortmund, Düsseldorf, Hanover, Duisburg-Hamborn, Wuppertal; ports: Stettin, Kiel, Altona. The great ports of Hamburg and Bremen (*qq.v.*) are separate States outside Prussia.

**HISTORY:** The Teutonic Order (Teutonic Knights) conquered the heathen Prussians (Pruzzen) in 1226-83; the battle of Tannenberg (1410), when the Knights were routed by Jagiello (*see* POLAND), preluded incorporation of the territories of the Order, as a feudatory duchy of Poland (1525). United to Brandenburg early 17th cent. and rose to great power under Hohenzollerns, esp. Frederick the Great. After period of eclipse (Treaty of Tilsit, 1807), made great recovery in 19th century. Bismarck (*q.v.*) formed the N. German Federation in 1867, after the Austro-Prussian War, and the German Empire in 1871, after the Franco-Prussian War. Kg. of Prussia became president of the *Bundesrat* (council) of German princes, with title of German Emperor. For later history, *see* GERMANY.

**Prussian, Old:** *see* LANGUAGE SURVEY, *Baltic Languages*.

**Prussian blue,** deep blue pigment (ferrocyanide); formerly called *Berlin blue*.

**Prussiate of potash:** *see* POTASSIUM.

**Prussic acid,** sym. HCN; hydrocyanic acid; very poisonous gas formed in bitter almonds and kernels of cert. fruits; made from potassium or sodium cyanide and sulphuric acid; used to fumigate ships and in minute doses (2% solution) in treatment of vomiting.

**Pruth,** riv., Rumania, left trib. of Lower Danube, rising N. of Carpathians; forms boundary betw. Moldavia and Bessarabia; length, 525 m.; navig., 168 miles.

**P.R.V.,** abbr., *pour rendre visite* (Fr.), to return a visit.

**Prynne,** Wm. (1600-69), Eng. Puritan pamphleteer; pub. *Histrio-Mastix, or a Scourge for Stage-Players*, 1633, an indirect criticism of kg. and qn.; fined by Star Chamber and sentenced to exposure in pillory, loss of ears, and imprisonment for life; released, 1640, and awarded £4,000 by Long Parlmnt.; entered on prosecution of Abp. Laud, 1643; M.P., 1648, and included in Pride's Purge (*q.v.*); imprisoned 1650-52; later became Royalist and apptd. keeper of records by Charles II.

**Prytaneum,** in anc. Athens, meeting-place of highest officers of State (*prytanis* = chieftain, president). To be entertained at its guest was highest honour.

**Przemysl,** fortified tn., Galicia, Poland, Austrian before World War; pop., 47,666; seat of R.C. and Orthod. Gr. bps.; naphtha industry; surrendered by Austrians to Russians, 1915; later recaptured by Austro-German forces.

**Psalmanazar,** Geo. (d. 1763), Fr. impostor; claimed to be a native of Formosa; visited Rome in guise of Jap. convert; employed by Bp. of London to translate Catechism into Japanese; pub. fictitious works on Formosa, 1704, '07; confessed to imposture c. 1712; d. in London.

**Psalms,** (O.T.) poems (some ascribed to David) of very varying dates, but chiefly post-exilic.

**Psaltery,** ancient stringed mus. instrument.

**Psammetichus,** name of three Egypt. Kgs.: **P. I** (664-610), fndd. 26th Dyn.; **P. III** (525 B.C.), defeated by Pers. Kg. Cambyses.

**P.S.C.,** abbr. passed Staff College, indicates that officer has graduated at Mil. or Naval Staff College.

**Pseudopod,** temporary protrusion in a one-celled organism serving for locomotion; also, limb-like outgrowth of body wall in certain Crustacea and insects.

**Psittacosis,** parrot disease; an infection of lungs wh. may be transmitted to humans by parrots.

**Psoriasis,** skin disease in which reddish patches appear, covered by white scales; occurs on extensor surfaces of body, e.g., back of elbow and front of leg.

**Psyche** (Gr.), soul, the opposite of *Physis*; in (late) Greek legend Psyche is personified as beloved of Eros (Amor) and wears butterfly's wings or is represented as a butterfly.

**Psychiatry,** branch of med. science dealing with mental derangement.

**Psychic,** pertaining to the soul, esp. in reference to spiritualistic phenomena.

**Psychical Research, Society for,** fndd. in Eng. by Sidgwick, Myers, and Gurney (1882), to collect and consider evidence relating to super-normal faculties in man. Headquarters in London.

**Psycho-analysis,** scient. method, mainly applied to therapeutic ends, of investigating mental processes and motives of conduct; devised princ. by Freud and Jung; based on conflict betw. the conscious will and sub-conscious or unconscious desires, and aiming at overcoming the various *repressions* and *complexes* (*qq.v.*) wh. result from that conflict; applied in cases of hysteria, sexual abnormality, etc. Cf. PSYCHIATRY.

**Psychologism,** philos. view that the validity of human knowledge can be satisfactorily tested by study of human thought-processes.

**Psychology,** science of life of the mind and processes of consciousness and underlying

causes of behaviour; formerly *speculative*, based on consideration of concepts rather than of experience; to-day based on *experience*. **Experimental p.**, examination of processes of the soul based on the reality of experience; *psycho-physics*, doctrine of reciprocal relationship between body and soul (stimulus, reaction, sensation).

**Psychopath**, one whose behaviour evinces pathological mental abnormality and a degree of irresponsibility not necessarily amtg. to insanity.

**Psychosis**, total state of consciousness as it exists at any one moment; more gen. denotes abnormal mental condition not associated with actual injury to, or defect in, the brain.

**Psychotherapy**, method of healing by means of purely psychic influences. See PSYCHIATRY; PSYCHO-ANALYSIS; SUGGESTION.

**Pt.** (chem.) symbol of platinum.

**Ptah**, Egyptn. artisan-god, local deity of Memphis; his earthly manifestation was the sacred bull Apis.

**Ptarmigan**, a member of the grouse family (*Lagopus*), inhabiting the higher mountains of Scot. and similar situations in Europe, from Lapland to the Pyrenees, eastwards to the Urals. Plumage presents a constant change with seasons of the year. From November to February it is practically pure white, harmonising with the snow-covered rocks; in March the moult into breeding plumage begins, when the general colours are black or brownish-grey with many white-tipped feathers. Another moult in August brings the beautiful autumn plumage of grey, brown and white, which harmonises with the grey lichen-stained rocks.



Ptarmigan

**Pterodactyl**, 1) extinct flying-reptile with membranous wings extending from side of body to last digit, wh. was of great length, the other fingers being separate from the wing; found in fossil remains in the Mesozoic strata; member of the order *Pterosaur*, the wing span of some of wh. was nearly 23 feet. 2) Three-seater tailless aeroplane with enclosed cabin and having exceptional control at and below stalling speeds.



Pterodactyl

**Pteridophyta**, *vascular cryptogams*; ferns, selaginellas, horsetails, and club mosses; primitive flowerless plants; develop from spores contained in a *sporangium*.

**Ptolemy**, Macedonian dyn. in Egy.: 1)

**P. I**, *Lagi* (s. of *Lagus*) or *Soter* ("Saviour," d. 283 B.C.), gen. of Alexander the Great, satrap of Egy., 323; Kg., 305; abdicated, 285 B.C.. 2) **P. II**, *Philadelphus* (309-246); Kg., 285; enlarged museum and library at Alexandria fdd. by 1). 3) **P. III**, *Euergeles* (reigned, 246-221); invaded Babylon. See BERENICE. Dyn. extinct with death of Cleopatra, dau. of Ptolemy XIII (Auletes), and her son, Caesarion (**P. XIV**) in 30 B.C.

**Ptolemy**, Claudius Ptolemaeus, astronomer and geographer; fl. 2nd. cent. A.D. at Alexandria; drew map of world with parallels of latitude and meridians of longitude.

**Ptolemaic system**, the earth as the centr. point of the universe; superseded by heliocentric system (*q.v.*) of Copernicus. **Canon of P.**: see NABONASSAR.

**Ptomaine**, poisonous substance found in certain foods wh. have undergone decomposition; formed by the action of bacteria on animal or vegetable tissues.

**Ptyalin**, ferment or enzyme present in saliva; converts starch into sugar; see SALIVA.

**Puberty**, age of attaining sexual maturity. In boys it occurs betw. ages of 13 and 15, in girls betw. 12 and 14 (earlier in hot climates).

**Pubis**, (anat.) front portion of the bony pelvic girdle.

**Publican**, (N.T.) a collector and farmer of taxes, regarded with abhorrence by Jews.

**Public assistance**, provision for poor at pub. expense, made legal duty of parishes under Elizabeth (*see* RATE). From 1834 onward parishes grouped into "poor law unions" under "boards of guardians," and in 1929 duties transfd. to councils of counties and county boroughs.

**Public health**, term applied in Gt. Brit. to the general principles and expedients adopted for preserving collective health of nation, as distinct from those concerned with treatment of disease in the individual. Under the centr. authority of the Ministry of Health (*q.v.*) and of the various local authorities, provision is made for the inspection and control of drainage and sewerage, and water and food supplies, slaughter-houses, etc., for the isolation of persons suffering from infectious diseases, for the promotion of maternity and infant welfare (*see* WELFARE CENTRES) and for medical service at schools. The service has been built up by various acts of Parlt., notably the Public Health Act, 1875, amended 1890, 1904, '07, '25, and other Acts dealing with particular branches of the subject.

**Public house**, in Gt. Brit. a house licensed for the sale of alcoholic drinks. Licences may be for beer and cider, for wine, for spirits, or for all of these. *Off-licences* entitle the holder to sell alcoholic drinks for consumption on the premises. P. H.'s are gen.

divided into saloon bars, private bars and public bars; those owned by brewers and gen. supplying only the beers of their breweries are known as *tied houses*. Companies to revive standard of P.-h.- keeping, secure proper provision of meals, etc., often with limtd. profits conditions, have made gt. progress of recent years (see P. R. H. A. TRUST HOUSES). *Beerhouses*, by act of 1830 (now repealed), are distinguished from others by right, on payment of taxes, to sell beer without licence; those existing before 1869 retain this privilege; *inns* must provide food and lodging to travellers and may not refuse these under reasonable conditions. See also HOTEL; LICENSED VICTUALER.

**Publicist**, writer on current political affairs.

**Public law**, part of law which deals with State or administration, as distinct from that which deals with rights of individuals.

**Public loans** (State and municipal), long-term loans, floated by public authorities, interest on wh. is gen. paid twice a year.

**Public prosecutor**, Brit. legal officer, apptd. by Home Secretary, charged with duty of instituting or carrying on prosecution of criminals on behalf of Crown and advising and assisting those concerned in criminal proceedings; he may at any stage take over conduct of proceedings commenced privately.

**Public school** (Gt. Brit.), term applied by P.S. Act (1864) to Eton, Harrow, Winchester, Westminster, Rugby, Shrewsbury, Charterhouse, St. Paul's, and Merchant Taylors'; now usu. to any endowed school not private property or subject to State control, whose headmaster is a member of the Headmasters' Conference (*q.v.*).

**Public trustee**, Brit. govt. official who (since 1908) may be appointed to act either alone or jointly with others in most of the capacities of an ordinary trustee; his trusteeship is backed by govt. security, and scale of fees payable for his services is fixed by Treasury.

**Public utility undertakings**, those necessary to the maintenance of life and health; in towns esp. waterworks, gas and electricity works, sometimes means of transport, and telephone; run either by governmental bodies or by jt.-stk. enterprise; in latter case, usu. strictly regulated by law to protect community's vital interests; see MONOPOLY.

**Puccini**, Giacomo (1858-1924), Ital. operatic composer; *Manon Lescaut*, *La Bohème*, *Tosca*, *Madame Butterfly*, *Turandot*.

**Puck**, a mischievous sprite, servant of Oberon in the *Midsummer Night's Dream*.

**Puddling**, process by which cast iron is converted into wrought iron. Cast iron, mixed with slag rich in oxygen, is stirred in the P. furnace with long bars until it is freed from undesirable constituents by oxidation; result is wrought iron, or, at lower degree of decarbonisation, cast steel.



Puddling

**Puebla de Zaragoza**, tn., Mexico, cap. of state P. (volcanic area, 12,200 sq.m.) betw. *Mt. Popocatepetl* and Orizaba; 7,900 ft. above sea-lvl.; pop., 100,000; textile indus. iron foundries.

**Pueblo**, Indian natives of New Mexico and Sthrn. States of N. Amer.; agric. and town-dwelling (Span. *pueblo* = village). Four linguistic groups with similar culture.

**Puelche**, nomad Indians of E. Cordilleras

**Puerperal fever**, fever of child-birth, due to infection of the uterus; now infrequent owing to aseptic methods of midwifery.

**Puerperium**, period of time (about 4 weeks) following child-birth during which the uterus returns to its normal size.

**Puerto Rico**, Isl. W. Indies; 3,435 sq.m. pop., 1,544,000; E. isl. of Greater Antilles; tobacco, sugar, coffee, fruit; magnetic iron Span. possn. from its discovery by Columbus (1493) till 1898, when ceded to U.S.A. **P. R. Trench** (*Brownson's Deep*), for lon. the greatest known depth of Atlantic (27,000 ft.), N. of isl. of Puerto Rico.

**Puff-adder**, yellowish-brown, very poisonous African snake, with broad triangular shaped head. Its habit of lying with only the head exposed makes it very difficult to detect. Derives its name from the habit of distending its body with air when excited.

**Puff-ball**, (bot.) name for various kinds of fungi, ovoid or round, wh. discharge the spores like a smoke-cloud when pressed; sometimes edible.

**Puffin**, sea-parrot, an auk of the N. seas; remarkable for the grotesque shape and brilliant colouring of the large beak; when moulting, this bright-coloured sheath is shed.



Pug Bitch with Litter

**Pug**, small snub-nosed lap-dog, with short curly tail.



Puccini

**Puget**, Pierre (1662-94), Fr. sculptor, architect, and engineer.

**Puget Sound**, indentation (80 m.) of Pacific in State of Washington, U.S.A. (continuation of Str. of Juan de Fuca, betw. Vancouver Isl. and Washington); ports: Seattle, Tacoma.

**Pugilism**, sport of fighting with the bare fists; illegal in Eng. since mid 19th cent., and replaced by boxing (*q.v.*) under Marq. of Queensberry's Rules (1866); last fight for world championship Slavin v. Smith, 1886, in Belgium; last champion Jem Smith.

**Pugin**, Augustus W. N. (1812-52), Brit. archit.; leader of the Victorian Gothic revival (St. George's Cathed., Southwark, Catheds. of Killarney, Enniscorthy, etc.); auth. of many architectural treatises.

**Pulitzer Prize**, given in Amer. for journalism and letters; endowed by Joseph P. (1847-1911), an Amer. journalist. Among authors awarded in rec. yrs. are: Willa Cather, Sinclair Lewis, Thornton Wilder, Gen. Pershing, J. J. Jusserand, Edw. Bok, Eugene O'Neill, Susan Glaspell, Amy Lowell, and Robt. Frost.

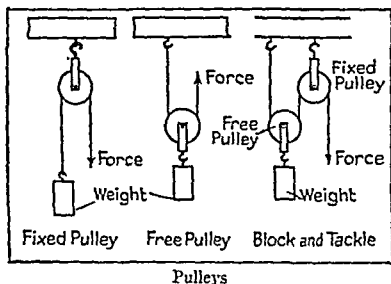
**Pulau**: see KEDAH.

**Pulkovo Hill**, observatory, 9 m. S. of Leningrad, fndd. 1839 as the Imperial Nicholas Obsvtry.; here time throughout the Soviet Union is checked.

**Pull**, 1) (golf) a ball struck in such a way that it curves to the left. 2) (Cricket) A drive made across the flight of the ball.

**Pullet**, young hen in 1st yr. of laying; see POULTRY.

**Pulley**, (machinery) round disk for transmission of power, rotating on or with the axle.



Pulleys

When used as illustd., with ropes to form tackle, pulleys are held in frames forming pulley-blocks.

**Pullman**, Geo. Mortimer (1831-97), Amer. engineer; invented P. sleeping-car, 1863; vestibule cars, 1887; fndd. town of P., Ill. (now part of Chicago), for his factories and employees, 1880.

**Pulmonary**, pertaining to the lung. **P. artery**, artery of the lung; conveys blood from the right ventricle to the lungs. **P. inf.**, conical area of lung tissue rendered in-

active by a clot of blood blocking the artery wh. supplies the area. See EMBOLISM.

**Pullover**, knitted jersey without fastening, pulled over the head and close-fitting.

**Pulpit**, raised struct. in, sometimes outside, a ch. from wh. preacher delivers sermon.

**Pulque**, alcohol. beverage of Mexican Indians, made from fermented juice of agave or Mex. aloce.

**Pulse**, (physiol.) heart-beat transmitted by the arteries; can be felt in artery on thumb-side of wrist. Normal rate in average adult, 72 per minute; lower for athletes, 50-60; baby at birth, 140.

**Pulsometer**, (mechan.) pistonless steam pump for raising fluids, which are sucked up by condensation of steam and forced forward by pressure of fresh steam.

**Pultusk**, fortified tn., Poland, on Riv. Narew; pop., 17,000; grain trade. Napoleon defeated Russians, 1806; occupied by Germans, 1915.

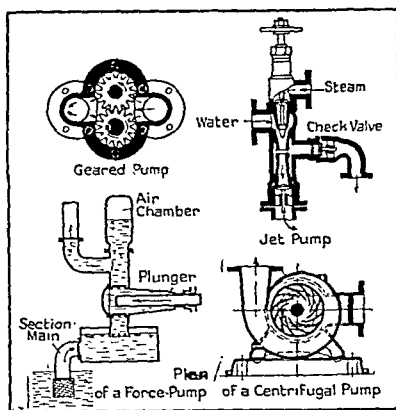
**Pulverised coal**, used as fuel for furnaces and steam boilers. Coal gen. pulverised immediately before use and blown into furnace. Also used, mixed with oil, to form so-called *colloidal* fuel.

**Puma**, cougar, large carnivore of the cat tribe, found in N. and S. America. Tawny coat, long tail.



Puma

**Pumice-stone**, light, porous, volcanic stone, cellular from having held gases when in liquid state; usu. grey in colour; found in natural state in Lipari, now also artificially



made; used for polishing, and for removing stains from the skin.

**Pump**, machine to raise or move fluids or gases. 1) **Injector p.**, chfly. used for feeding

boilers; steam jet from nozzle produces vacuum and carries water with it; when P. starts working, water flows thr. check-valve until full pressure is obtained in boiler; delivery up to 50 gal. per min. 2) **Piston p.** operated by hand (e.g., bicycle P., small air P.) or by slow-speed motor. **Force p., feed p., vacuum p.**, etc: when even pressure is reqd. as in fire engine, air chamber is used. 3) **Centrifugal p.**, for high speeds. Water enters P. at centre of impeller and is projected into supply pipes; for better direction of water, baffle or guide vanes are fixed. For greater heads several P.-units are placed in one chamber, a battery of pumps. Max. press., 4,000 ft.; suction ht. up to 25 ft. with cold water; suction ht. + head of water = ht. raised. Toothed-wheel or gear-P. traps liquid between teeth.

**Pumpnickel**, black bread, made from rye; chfly. made in Westphalia, Germany.



Pumpkin blossom

**Pumpkin**, gourd-like fruit of an Amer. vine, *Cucurbita pepo*; cultivated in Europe and N. America. Provides fodder for cattle in U.S.A., where it is also cooked and eaten as *P. pie*.

**Puna**, 1) cold, arid plateau in Peru and Bolivia. 2) Dry, cold wind blowing in above district. 3) Mountain-sickness; difficulty of breathing in dry altitudes.

**Punch**, princip. male character in puppet-show "Punch and Judy"; buffoon with enormous double hump and hooked nose.



Punch and Judy

**Punch**, or the *London Charivari*, Eng. satirical, illustrated, weekly journal; fndn. (1841) largely due to Henry Mayhew and Mark Lemon; contributors include W. M. Thackeray (*Jeames's Diary*, *Snob Papers*), Thos. Hood (*Song of the Shirt*); artists, John Leech (1817-64), Sir John Tenniel, George du Maurier, Phil May, Sir Bernard Partridge (qq.v.). See CHARIVARI.

**Punch**, 1) (Hindu., *five*) hot or cold beverage composed of 5 ingredients: rum or arrack, sugar, water, tea, lemon. 2) (Tech.) Tool, tubular with sharp end for making holes in leather, paper, etc.

**Puncheon**, 1) large cask for wine, beer, or spirits of varying capacity. 2) Liquid meas.; beer 72, wine 84, rum 91 gallons.

**Punchinello**, clown in Neapol. puppet-show.

**Punctuation**, systematic use of grammat. signs (comma, full-stop, etc.) to indicate connec. or separation of phrases.

**Punica fides** (Lat.), "Punic (Carthaginian) faith"; i.e., treachery.

**Punic Wars** (264-146 B.C.), betw. Rome and Carthage for supremacy in West. Medit. 1) 264-241 B.C., Rome conq. Sicily. 2) 218-201 B.C., Hannibal crossed Alps and invaded It.; Scipio occup. Carthage; Rome conq. Spain. 3) 149-146 B.C., Carthage destroyed. Cf. POENI.

**Punjab**, named after the "Five Rivers" (Jhelum, Chenab, Ravi, Beas, Sutlej; all tribs. of Indus), prov., N.W. Brit. India; surface mainly flat ("plains of the Indus"); *Salt Range* (5,000 ft.) in W.; climate very hot in summer, cool in winter; 99,900 sq.m.; pop., 23,580,900 (50% Mohammedans, 25% Hindus, 16% Sikhs); chief occupation agriculture, depending on irrigation (rainfall slight); wheat, millet, barley, maize, oilseeds, cotton; rock-salt deposits; cap., *Lahore*; sacred Sikh city, Amritsar. **Punjab States**, 34 feudatory States, Punjab (largest Patiala), all Sikh; 37,000 sq.m.; pop., 4,416,000; cap., Lahore. See also NORTH-WEST FRONTIER PROVINCE.

**Punjabi**: see LANGUAGE SURVEY, Ind. Languages.

**Punning**, (tech.) stamping or ramming loose material, e.g., concrete, to consolidate it.

**Punt**, 1) flat-bottomed boat propelled with pole. 2) Bet on a horse; stake agst. bank in games of chance.

**Punta Arenas**, Magallanes, seaport, and cap. of Magalhães, Chili, on Str. of Magellan; pop., 32,300; sheep-breeding.



Punt

**Pupa**, (entomol.) inactive stage in the life-history of an insect, coming betw. the larval and the adult states.

**Pupil**, (physiol.) aperture of the eye (q.v.); contracts or expands by action of muscles of iris. **Pupillary reflex**, contraction of pupil when exposed to light.

**Pupil teacher**, senior student in public elementary or (now usu.) secondary school, who instructs junior classes under supervision of head teacher, usu. preparatory to entering training coll.; system introd. in Gt. Brit., 1846.

**Puppet-show**, play acted by articulated dolls worked by means of strings controlled by the showman. Cf. MARIONETTE.

**Purana**, book of Sansk. sacred lit.; with *Tantras* (q.v.) foundatn. of Brahmanical Hindus' creed.

**Purbeck**, Isle of, penins., S.E. Dorsetsh., Eng., 12 m. by 8; quarries—Purbeck stone; contains Swanage and Corfe Castle.

**Purbeckian**, (geol.) pertaining to rocks

formed at the end of the Jurassic (*q.v.*) period; so called since they extend from Purbeck to Aylesbury; famous for Purbeck marbles; used for paving stones.

**Purcell**, Henry (1658-95), Eng. composer; organist, Westminster Abbey, 1669; sacred music and operas: *Dido and Aeneas*; *King Arthur*; *The Fairy Queen*.



Purcell

**Purchas**, Samuel (1575-1626), Eng. divine and ed. of narratives of travel and exploration; *Purchas his Pilgrimage*, etc.

**Purchasing power**, 1) relation of value of money to price of goods. 2) Capacity to buy goods offered, determined by income and uninvested savings of population. **P. power parity**, theory that when currencies of two countries are not based on gold standard, their relation, or rate of exch., will tend to a point at wh. purchasing power within the respective countries will be equal.

**Purée** (Fr.), any soft material reduced to a pulp; esp. a foodstuff so treated, and the soup made therefrom.

**Purgatory**, condition of, or place for, souls of those who have died in grace and faith of the R.C. Ch., but require a period of punishment for the purging of venial sins, or mortal sins the guilt of which has been forgiven.

**Purge**, (med.) evacuant; aperient, *c.g.*, aloes, Epsom salts (*q.v.*).

**Purification of the B.V.M.**, Christian feast commemorating the purif. (*see* Lev. xii, 2, *seq.*) of the Virgin Mary, observed on Feb. 2nd; cf. CANDLEMAS.

**Purim**, Jewish festival commemorating events of Book of Esther, held on 14 Adar (March), when the Megillah (*q.v.*) is publicly read in synagogue.

**Purine**, (chem.) sym.  $C_4H_4N_4$ ; a weak base; P. group of compounds incl. caffeine, theobromine, and uric acid.

**Puritan**, 1) name 1st applied in reign of Elizabeth to extreme Protestant party in Ch. of E., who wished to abolish all forms and ceremonies as savouring of popery and superstition. 2) Member of party opposed to episcopacy and monarchy (Charles I.). 3) Person of rigid Protestant views in relig. and austerity in conduct and morals. 4) Rigid purist in ethical matters.

**Purl**, twisted cord or lace of silver or gold thread; in knitting, an inverted or turned stitch producing a rib, contrasted with plain.

**Purley**, dist. in Surrey, 2 m. S. of Croydon; part of urb. dist. of Coulsdon and Purley; resid. suburb of London; pop. (with Coulsdon), 37,666.



Purple Emperor

**Purple emperor**, one of the most beautiful butterflies; the wings of the male are of an iridescent purple; of the female, brown; found in woody glades of Europe and S. Eng.

**Pursuivants**, (heraldry) officers of arms of lower rank than the Heralds: Rouge Croix, Rouge Dragon, Blue Mantle, and Portcullis. *See* HERALD.

**Purus**, right trib. (1,930 m.) of Riv. Amazon, Brazil; rises in Peruvian Andes; enters Amazon at Manaos; navigable.

**Pus**, (med.) thick greenish-yellow matter, formed in areas of inflammation; consists of dead white blood corpuscles (leucocytes).

**Pusey**, Edwd. Bouverie (1800-82); Brit. theologian; a leader of the Oxford Movement (*q.v.*); worked for reunion of Anglican and Roman churches.

**Pushball**, game betw. 2 teams, usu. of 11. A ball (6 ft. dia. and not less than 48 lb. wt.) has to be pushed through the opponents' goal (5 pts.), or lifted over the bar (8 pts.).

**Pushkin**, Alexander Sergievich (1799-1837), Russ. poet and author: *Eugen Onegin*, *Boris Godunov*, *Pique Dame*.



Pushkin

**Pushtu**: *see* LANGUAGE SURVEY, *Iranian*; spoken in Afghanistan.

**Pustules**, spots on the skin containing pus.

**Puteoli**: *see* POZZUOLI.

**Putney**, dist., in S.W.

London, part of bor. of Wandsworth; residential; pop., 70,817; **P. Bridge**, start of Oxford and Cambridge boat-race.

**Putt**, (golf) short stroke played near the hole.

**Puttees**: *see* GAITERS.

**Putti**: *see* AMORINI.

**Putting the weight**, a 16- (or 14-) lb. shot is "put" (*i.e.*, pushed from shoulder, not thrown or bowled) from within a 7-ft. space. Champion L. Sexton (U.S.A., Olymp. Games, 1932), 52 ft., 6 $\frac{3}{4}$  in.

**Putty**, cement (mixture of whiting and linseed oil) used for fixing glass in frames of windows, etc. Addition of tallow gives **thermoplastic p.**, used when expansion and contraction of large frames would loosen ordinary kind.

**Putumayo**, 1) dept. of Colombia, S. Amer. (46,300 sq.m.; pop., 40,750), in dispute betw. Colombia, Ecuador, and Peru; watered by, 2) Riv. P. (or Iço), left trib. of Amazon, 1,000 m., almost wholly navigable; rubber plantations.

**Puvis de Chavannes**, Pierre Cecile, (1824-98), Fr. artist; decorative panels in pub. bldgs. in Paris, Lyons, Boston, U.S.A. etc.

**Puy**, geol. name for cone-shaped volcanic hill. **P.-de-Dôme**, 1) volcanic peak of Auvergne, centr. France, 4,813 ft.; funicular rly.;

meteorol. observatory. 2) Dépt. centr. France; 3,095 sq.m.; pop., 515,400; pasture, agric., cattle-breeding; minerals; semiprecious stones; cutlery; cap., *Clermont-Ferrand*.

**Pwllheli**, co. bor., Caernarvonsh., on Lley Penins.; seaside resort; pop., 3,600.

**Pxt.**, abbr. *pinxit* (Lat.), he painted this.

**Pyæmia**, (med.) an abnormal condition characterised by the presence of pus (*q.v.*) in the blood-stream.

**Pyatigorsk**, tn., N. Caucasus, Russia, on Riv. Podkumokh, and on plateau, 1,700 ft. abv. sea-lvl.; noted for sulphur springs, 70-95° F. Lermontov (*q.v.*) killed in duel, 1841.

**Pycnometer**, sp. gr. bottle for measuring density of liquids; holding exact volume for weighing.

**Pygmalion**, (Gr. myth.), Kg. of Cyprus; fell in love with his own statue of Galatea (*q.v.*), wh. came to life.

**Pygmy**, a dwarf; diminutive person or animal, name given to cert. tribes of Centr. Africa and Asia; see DWARF RACES. Also applied in zool. to small species, e.g., *P. elephant*, *P. hippopotamus*.

**Pyjama**, loose-fitting suit consisting of trousers and jacket, gen. of silk, worn by men and women in India; adapted as sleeping-suit in Eur. and Amer., also as beach p. for seaside resorts.

**Pyllades**, in Gr. legend, faithful friend of Orestes.

**Pylons**, (archit.) orig. massive pillars flanking entrances of Egypt. temples; now used for any considerable decorative shaft and esp. for guiding towers on aerodromes and for lattice-towers carrying cables across country.

**Pylorus**, (physiol.) opening of stomach into duodenum; encircled by a muscular band which relaxes, at intervals, to allow the onward passage of food.

**Pylos**: see NAVARINO.

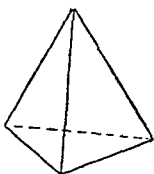
**Pym**, John (1584-1643), Eng. politician; supp. of Petition of Rights (*q.v.*); one of 5 M.P.'s whom Charles I tried to arrest, 1642.

**Pyorrhea alveolaris**, (med.) suppuration of the teeth-sockets (*alveoli*), resulting in a loosening of the teeth.

**Pyramids**, (archit.) 1) tombs of the anc. Egypt. kgs. in 3rd millenium B.C. (Cheops, Khephren); square base with 4 triang. walls meeting at apex. 2) (geom.) Figure, having any polygon as base, the sides rising to a common point. 3) Game on billiard-table for 2 or 4 players, in wh. 15 red balls, arranged in a solid triangle, have to be



Central African Pygmies



Pyramid

pocketed by means of 1 white ball played by each player in turn.

**Pyramus and Thisbe**, legend. lovers of antiqu.; separated by their parents; came to a tragic end.

**Pyrenees**, mtn. range betw. Fr. and Sp., stretching from Bay of Biscay to Mediterr.; 280 m. long, 70 m. wide; summit of Aneto (Pic de Néthou), *Maladetta group*, 11,170 ft. high. On French side are the dépts. of: 1) **Basses-Pyrénées** (2,978 sq.m.; pop., 423,000; cap., Pau), 2) **Hautes-Pyrénées** (1,751 sq.m.; pop., 190,000; cap., Tarnes); and 3) **Pyrénées Orientales** (1,600 sq.m.; pop., 239,000; cap., Perpignan).



Landscape in the Pyrenees

**Peace of the P.** ended war betw. Fr., under Louis XIV, and Sp. (1635-59), whereby Fr. obt'd. large accessions of territory and permanent sep. of crowns of Fr. and Sp. was guaranteed.

**Pyrethrum**, plant of chrysanthemum genus, flowering May and June, cultivated, with wide variations in colour; one variety is feverfew (*q.v.*).

**Pyridine**, (chem.) sym.  $C_4H_5N$ ; liquid prep. from lower-boiling fractions of tar, or bone oil; present in tobacco-smoke; has a penetrating odour and nauseous taste; used as denaturant for alcohol in methylated spirits; a solvent of rubber.

**Pyrites**, bisulphide of iron; golden-yellow crystals (gen. cubical); used in manuf. of sulphur, sulphur dioxide, and sulphuric acid (*q.v.*).

**Pyrogallol**, pyrogallic acid, *trihydroxybenzene*,  $C_6H_3(OH)_3$ ; white crystals made by heating gallic acid (*q.v.*); used as developer in photog., to absorb oxygen in gas analysis and occas. as a parasiticide in medicine.

**Pyrolusite**: see MANGANESE DIOXIDE.

**Pyrometer**, apparatus for measuring such high temperatures as cannot be regist'd. by ordinary mercury thermometer. Used in thermo-dynamics. *Optical*, temp. determined by measuring intensity or colour of light emitted; *electrical*, by measuring resistance of metal (platinum) wire; *thermo-electric* measures voltage produced by heated junction of two metals (platinum, platinum-iridium; copper, constantan); expansion of gas, liquid (metal), solid.

**Pyrotechnics**, art of making fireworks; display of fireworks.

**Pyroxene**, (mineral) name of a group of black crystalline silicates; some varieties are cut and polished as gems.

**Pyrrho** (c. 360-270 B.C.), Gr. sceptic philosopher.

**Pyrrhus**, Kg. of Epirus (306-272 B.C.);



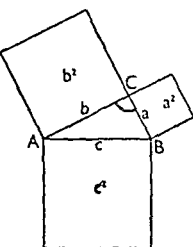
invaded S. Italy, 281; beat the Romans at Heraclea with the help of elephants, but at heavy cost (hence "Pyrrhic victory"); attacked Sparta, 273; killed at Argos.

**Pythchley**, Eng. hunt, fndd. 1750; hunts Leics and Northants; kennels at Brixworth. **Woodland P.** (1874) hunts N. and E. part of the country.

**Pythagoras** (c. 582-507 B.C.), Gr. mystic philos. and mathematician; fndd. in S. It. a brotherhood of religious and social reform (pythagoreans); taught Metempsychosis (*q.v.*).

**Theorem of P.**, a fundamental theorem in geometry: the square on the hypotenuse of a right-angled triangle is equal to the sum of the squares on the other two sides:  $c^2 = a^2 + b^2$ .

**Pytheas**, Gr. astron., geogr. and mathematic.; c. 334 B.C. visited Britain, Thule (*q.v.*) and the "country of amber" (Baltic Coast?).



Theorem of Pythagoras

**Pythian Games**, in anc. Greece, cele-

brated every four years at Delphi in connection with worship of the *Pythian* Apollo; introd. c. 590 B.C., and celebrated till, prob., c. A.D. 390. **Pythian**

**Oracle:** see PYTHONESS.

**Python**, large tropical snake, the Indian species attaining close on 30 ft. in length; non-venomous, killing its prey by crushing in the enveloping coils of its body.



Python

**Pythoness**, priestess of Apollo who delivered oracles seated on a tripod at Delphi; the Pythian Oracle.

**Pyx** (Gr. "box"), (*eccles.*) small case of precious metal, suspended from priest's neck, in wh. Host (*q.v.*) is carried to sick; chalice-like vessel of gold or silver in wh. hosts for Communion are kept (also called *Ciborium*); receptacle or tabernacle in wh. Host is reserved in churches. **Trial of the P.**, (Gt. Brit.) periodical examn. by members of Goldsmiths' Co. of specimen newly-made coins at the Mint, so called from the "Pyx" or chest in wh. coins for examn. are kept.

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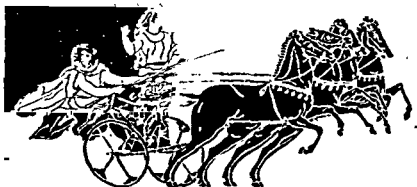
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**Q. Days**, 1st day of each quarter; in Eng., March 25th ("Lady Day"), formerly kept (1155-1750) as New Year's Day (*q.v.*) is 1st Q. Day; June 24th ("Midsummer Day"), 2nd; Sept. 29th ("Michaelmas Day"), 3rd; and Christmas Day, 4th. 2) (wt.). Fourth part of a hundredweight (28 lb.). 3) (dry meas.) 8 bushels. 4) (cloth meas.)  $\frac{1}{4}$  yd. **Q.-deck**, upper deck of a ship, abaft the main-mast, reserved for officers, and, therefore, the symbol of authority. **Q. sessions**, sitting of all justices of the peace in a county, or of recorder in a borough, four times a year, to try certain offences and hear appeals from petty sessions.

**Quartet**, (mus.) comp. written for 4 instr. or voices.

**Quartier Latin** (Fr.), the Latin Quarter, name given to a district of Paris on the left bank of the Seine, where the university buildings and students' lodgings are situated.

**Quartile**: see MEDIAN.

**Quarto**, size of paper and of books; see PAPER.

**Quartz**, form of crystalline silica, found abundantly in granite, gneiss, sandstone, and other rocks; crystals are hexagonal, clear and transparent in rock crystal, coloured in amethyst, chaledony, jasper, etc.; the most common mineral containing gold. Q. is used industrially in manuf. of porcelain and pottery, also for **Q. glass**, made from pure melted Q. for chemical vessels, since it is insensitive to sudden changes of temperature and is not attacked by acids. **Quartzite**, sandstone rock composed of quartz.

**Quasimodo** (Lat.) "as recently," name for *Low Sunday* (*q.v.*) in Fr. and Ger., from the first word of its introit (I Peter ii. 2).

**Quassia**, bitter wood, infusion of which is used medically as a tonic; derived from *Quassia amara* (Surinam) or *Picraena excelsa* (Jamaica). Also used as remedy for thread-worm, and substitute for hops.

**Quaternary**, geol. period subsequent to the Tertiary and lasting to the present period. **Q. Number**, the mystical number 10 according to Pythagoras (*q.v.*), as composed of the numbers 1 + 2 + 3 + 4.

**Quatrebras**, hamlet in S. Brabant, Belgium. **Battle of Q.**, action betw. Eng. and Fr., two days before Waterloo.

**Quatrefoil**: see QUARTERFOIL.

**Quattrocento**, term used to describe Ital. art of 15th cent., *i.e.*, before perspective came to be regarded as essential.

**Quaver**, (mus.) note having time-value of half a crotchet (*q.v.*), twice a semiquaver, four times a demi-semiquaver.

**Quay**, steep reinforcement by wood, masonry, or concrete of a river bank or sea shore, enabling ships to lie alongside; usu. with warehouses, cranes, etc.

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**Quartern**, 1) Brit. dry meas., pottle,  $\frac{1}{4}$  peck. 2) Brit. liquid meas., gill,  $\frac{1}{4}$  pint. 3) Brit. wt., properly  $\frac{1}{4}$  stone or  $3\frac{1}{2}$  lbs. **Q. loaf**, a 4-lb. loaf, as made from  $\frac{1}{4}$  stone of flour.

**Quarter**, 1) period of 3 months,  $\frac{1}{4}$  of year;

**Q. Days**, 1st day of each quarter; in Eng., March 25th ("Lady Day"), formerly kept (1155-1750) as New Year's Day (q.v.) is 1st Q. Day; June 24th ("Midsummer Day"), 2nd; Sept. 29th ("Michaelmas Day"), 3rd; and Christmas Day, 4th. 2) (wt.). Fourth part of a hundredweight (28 lb.). 3) (dry meas.) 8 bushels. 4) (cloth meas.)  $\frac{1}{4}$  yd.

**Q.-deck**, upper deck of a ship, abaft the main-mast, reserved for officers, and, therefore, the symbol of authority. **Q. sessions**, sitting of all justices of the peace in a county, or of recorder in a borough, four times a year, to try certain offences and hear appeals from petty sessions.

**Quartet**, (mus.) comp. written for 4 instr. or voices.

**Quartier Latin** (Fr.), the Latin Quarter, name given to a district of Paris on the left bank of the Seine, where the university buildings and students' lodgings are situated.

**Quartile**: see MEDIAN.

**Quarto**, size of paper and of books; see PAPER.

**Quartz**, form of crystalline silica, found abundantly in granite, gneiss, sandstone, and other rocks; crystals are hexagonal, clear and transparent in rock crystal, coloured in amethyst, chalcedony, jasper, etc.; the most common mineral containing gold. Q. is used industrially in manuf. of porcelain and pottery, also for **Q. glass**, made from pure melted Q. for chemical vessels, since it is insensitive to sudden changes of temperature and is not attacked by acids.

**Quartzite**, sandstone rock composed of quartz.

**Quasimodo** (Lat.) "as recently," name for *Low Sunday* (q.v.) in Fr. and Ger., from the first word of its introit (I Peter ii. 2).

**Quassia**, bitter wood, infusion of which is used medically as a tonic; derived from *Quassia amara* (Surinam) or *Picraena excelsa* (Jamaica). Also used as remedy for threadworm, and substitute for hops.

**Quaternary**, geol. period subsequent to the Tertiary and lasting to the present period. **Q. Number**, the mystical number 10 according to Pythagoras (q.v.), as composed of the numbers 1 + 2 + 3 + 4.

**Quatrebras**, hamlet in S. Brabant, Belgium. **Battle of Q.**, action betw. Eng. and Fr., two days before Waterloo.

**Quatrefoil**: see QUARTERFOIL.

**Quattrocento**, term used to describe Ital. art of 15th cent., i.e., before perspective came to be regarded as essential.

**Quaver**, (mus.) note having time-value of half a crotchet (q.v.), twice a semiquaver, four times a demi-semiquaver.

**Quay**, steep reinforcement by wood, masonry, or concrete of a river bank or sea shore, enabling ships to lie alongside; usu. with warehouses, cranes, etc.

**Que.**, abbr. Quebec.

**Quebec**, 1) Prov., Canada, betw. Hudson Bay and Gulf of St. Lawrence; 594,235 sq.m.; pop., 2,874,500; includes Anticosti and most of Labrador (*q.v.*); surface flat or undulating; watered by St. Lawrence and its tribs.; over one-quarter forest-land; lumber indust. most important; wood pulp output more than half Canadian total; cattle, sheep, pigs, horses; dairy farming; fur farming; fisheries; minerals include asbestos, gold, copper, lead; manuf. paper, leather, textiles. Cap., *Quebec*; largest city, Montreal. 2) Cap., prov. of Q., at confluence St. Charles and St. Lawrence rivs. (*Quebec* rly. bridge, 1917); pop., 131,000 (90% R.C.); two catheds.; R.C. univ.; important port; shipping and rly. centre; exports timber, wheat, cattle. Taken from the French in 1759 by the Eng. under Wolfe, who was mortally wounded in the assault.

**Quebracho**, S. Amer. hard wood: *Q. colorado* (red), for constructions (rly. sleepers, telegraph poles) and for tanning. A tincture made from bark of *white Q.* sometimes used as a tonic bitter and febrifuge and in asthma.

**Queen Anne's Bounty**: see ANNATES.

**Queen-bee**, the fertile female of a bee colony; see BEE.

**Queenborough**, munic. bor. and seapt., Isle of Sheppey, Kent; channel port. 2 m. S. of Sheerness; pop., 2,900.

**Queen Charlotte Islands**, group off coast Brit. Columbia; 3,800 sq.m.; pop., c. 2,000; timber, fisheries.

**Queensberry, John Sholto Douglas**, 8th Marq. of (1844-1900), Brit. sportsman; patron of boxing; responsible for *Q. Rules*, 1866; succ. his father, 7th marq., 1858; repres. peer for Scotl., 1872-80. **Q., Wm. Douglas**, 4th Duke of (1724-1810), known as "Old Q."; Brit. sportsman, endeavoured to develop horse-racing on scientific lines; notorious for his dissolute life; repres. peer for Scot., 1761; succ. his cousin, Chas., as Duke of Q., 1778; friend of Pr. Regent.

**Queens' College**, Cambridge, fndd., 1448, by Margaret of Anjou, wife of Henry VI, and refndd. by Eliz. Woodville, wife of Edward IV (hence pl. form of name: cf. "Queen's" Coll., Oxford).

**Queen's College**, Oxford, fndd., 1340-41, by Robert de Eglesfield. Buildings by Wren and Nicholas Hawksmoor. Two anc. customs preserved: On Christmas Day a carol is sung in the hall while a boar's head is carried in; on New Year's Day a threaded needle is presented to members.

**Queen's County**: see LEIX.

**Queensland**, State, N.E. Australia; bordered W. by S. Australia (and N. Territory), S. by New South Wales; Cape York Penins. in N.; crossed by Dividing Range (*q.v.*), water-parting of rivs. E. to Pacific (Burdekin,

Fitzroy, Burnett, Brisbane), N. to Gulf of Carpentaria (Flinders, Gilbert, Michell), W. to S. Austr. Salt Lakes (Diamantina, Cooper), and S.W. to Darling Riv. (Warrego, Condamine); region E. of Dividing Range fertile (with forests), W. of it largely pasture or desert; area, c. 670,500 sq.m.; pop. c. 970,000 (excl. aborig.). Climate trop. in N., rainfall abundant. Sheep, cattle, horses, pigs; wheat, oats, barley, maize, sugar; timber; gold, copper, tin, coal; exports wool, meat, hides and skins, sugar, dairy produce. Cap., Brisbane.

**Queen's Royal Regiment** (West Surrey), Brit. infantry regt.; old 2nd Foot (raised 1661); depot, Guildford; record office, Hounslow; 25 battalions in World War.

**Queenstown**: see COBH.

**Quem di diligunt, adolescens moritur** (Lat.), whom the gods love die young.

**Quem vult perdere Jupiter prius dementat** (Lat.), whom Jove would destroy, he first drives mad.

**Quercia**, Jacopo della (1371-1438), Ital. sculptor; *Fonte Gaia* at Siena.

**Quercitron bark**, inner bark of American tree, *Quercus velutina*; yields yellow and orange flavine dyes.

**Quern**, primitive hand-mill for grinding corn, spices, etc.; consisting of 2 large flat stones, the upper being pierced and connected with lower by a stick, on wh. it turns.

**Quesnay**, François (1694-1774), Fr. economist; fndd. Physiocrats (*q.v.*).

**Question**, in Eng. Parl. usage, any mem. of Hse. of Lds. or Hse. of Com. may, subject to rules of procedure, put formal questions to ministers upon their administration. See INTERPELLATION.

**Quetsal, trogon**, bird of the Centr. American mtn. forests, with a beautiful metallic sheen on the feathers and long upper tail-coverts.

**Quetta**, fortified cap., Brit. Baluchistan, India, on the Bolan Pass (caravan route to Afghanistan); pop., 49,140.

**Queue**, 1) tail of a wig, also wig itself. 2) Tail. *To queue up*, to stand and wait in line.

**Quevedo y Villegas**, Francisco Gomez (1580-1645), Span. poet and satirist; *Visiones*.

**Quicklime**: see LIME.

**Quick-return motion**, in machines with reciprocating parts, slow motion in one direction and fast in reverse (usually unloaded) direction; used in planing machines, etc.



Quern



Quetsal

**Quicksand**, loose wet sand in a mass, yielding easily to pressure, liable to engulf those attempting to cross it.

**Quicksilver**: see MERCURY.

**Quicunque vult** (Lat.), whosoever wishes; first words of the Athanasian Creed; see CREED.

**Quidde**, Ludwig (1858-), Ger. politic.; Nobel Peace Prize, 1927.

**Quidnunc** (Lat.: what now?), a person who pretends to, or is importunately anxious to, know everything that happens; a pot-house politician.

**Quid pro quo** (Lat.), something for something; repartee, tit for tat; fair equivalent.

**Quieta non movere** (Lat.), do not disturb peaceful things; let sleeping dogs lie.

**Quietism**, relig. movement begun by Molinos, in Rome, and popularised by Fénelon in France (17th cent.); characterised by extreme passive mysticism, renunciation of initiative in prayer, claim to individual inspiration, entire subordination of will to God; condemned by R.C. Church.

**Qui facit per alium, facit per se** (Lat.), he who does a thing through another, does it himself; a principal is responsible for the acts of his agent.

**Quilimane, Kilimane**, seapt., Mozambique, Portug. E. Africa; 12 m. from mouth of riv. of same name; pop., 7,200.

**Quill**, (zool.) centr. shaft of bird's feather, partially filled with air.

**Quiller-Couch**, Sir Arthur (1863-), Eng. author and critic; *Troy Town, On the Art of Writing*, etc.; ed. *Oxford Bk. of Eng. Verse* (1900), etc.

**Quimper**, cap. dépt. Finistère, France, at junction of rivs. Steir and Odet; pop., 19,400; pottery; iron foundries.

**Quince**, *Pyrus cydonia*, tree of pear family with hard woody fruits; used to make marmalade, etc., and as a flavouring; seeds are used in med. as a demulcent in dysentery, etc., and also as a mucilage.

**Quincunx**, arrangement of any five things so that they are placed at four corners and centre of a square; applied esp. to trees, wh. are often planted in this formation.

**Quinet**, Edgar (1803-75), Fr. histor. and writer.

**Quinine**, an alkaloid of cinchona (q.v.).

**Quinoa**, small S. Amer. plant, cultivated in Chile and Peru for food purposes; meal from its seeds made into cakes or gruel; green parts used as pot herb.

**Quinquagesima** (Lat.: 50th), Sunday



Quevedo: after Velasquez

before Ash Wednesday; so called because the 50th day before Easter.

**Quinquennium** (Lat., *quinque*, five), period of five years.

**Quintal** (abbr. q.), metric measure equal to 100 kilograms or 220.46 lb. **Q., Spanish**, equals 100 Castilian lb. = 46.01 kgs. = 101.43 avoirdupois lb. Used in Latin America and Centr. America.

**Quintessence**, in old chem. and alchemy, 5th or last and highest essence in a natural body; hence, pure or concentrated essence.

**Quintet** (mus.), comp. written for 5 instruments or voices.

**Quintilian** (c. 35-95 A.D.), Marcus Fab., Rom. rhetorician, 1st cent. A.D.; *Institutio Oratoria*.

**Quippu**: see KNOT-WRITING.

**Quire**, (paper meas.) 24 sheets.

**Quirinal**, one of the Seven Hills of Rome named after the sanctuary of Quirinus (Romulus), the tribal deity of the Rom. people (*Quirinalia*, festival in his honour). 2) Palace, begun 1574; orig. residence of the Popes; since 1870 palace of Kgs. of Italy. 3) (fig.) The It. monarchical régime as distinguished from Papal authority (the Vatican).

**Quirites**, early name for burgesses of anc. Rome; Romans in their civic as opp. to their imperial capacity; possibly orig. name of one of the tribes uniting to form the earliest Roman settlement.

**Quis custodiet ipsos custodes?** (Lat.), who will guard the guardians themselves?

**Qui s'excuse, s'accuse** (Fr.), he who excuses himself, accuses himself.

**Qui tacet, consentire videtur** (Lat.), he who is silent appears to consent; silence gives consent.

**Quito**, cap. repub. of Ecuador, 9,350 ft. abv. sea-lvl.; pop., 81,000 (mostly Indians); cathed., univ.; woollens, cottons, carpets, leather; hot mineral springs in neighbourhood.

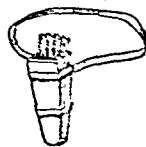
**Quiver** (archery), case for arrows.

**Qui vive?** (Fr.), who goes there? To be on the *qui vive*, to be on the alert.

**Quod erat demonstrandum** (Lat.), which was to be proved, *Q.E.D.*; **quod erat faciendum**, which was to be done, *Q.E.F.*; formulas placed at conclusion of Euclid's theorems and problems respectively.

**Quod vide** (Lat.), which see, abbr. *q.v.*, formula used in referring the reader to another entry in a book of reference. For two or more entries "*qq.v.*" is used.

**Quoins**, 1) (bldg.) square or angular stones, or bricks, built in at external angles of walls. 2) (printing) wooden or metal wedges used for fixing type, etc., in a chase (*qq.v.*).

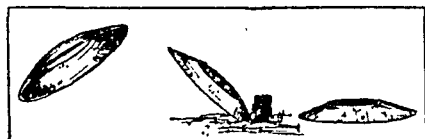


Quiver



Quince

**Quoits**, game, prob. of Eng. or Scot. origin, played with iron rings ("quoits"), *c.*



Quoits

9 lbs., having one surface rounded and the other flat; 2 "ends," or beds of clay with an iron pin or other mark to show the centre, are placed 18 yds. apart; the quoits are thrown from one end to the other, to pitch as near as possible to the centre pin; a "ringer," falling so as to encircle the pin, scores highest. Mentioned as early as beginning of 15th century. **Deck q.**, game played on board ship; rings of rope are thrown across a net; rules similar to those for lawn tennis; alternatively, to those of badminton.

**Quorn**, Eng. hunt, fndd. *c.* 1700; named after *Quorndon*, vill. in Leics; hunts Leics; kennels at Barrow-on-Soar.

**Quorum**, minimum no. specified, for some purposes in Eng. law, wh. must attend a meeting in order that proceedings may be valid.

**Quos ego** — (Lat.), whom I —; an unuttered but implied threat; example of

apostrophe, rhetorical device of breaking off in the middle of a sentence.

**Quota**, proportion or share. In commerce govts. may regulate imports of specified commodities by assigning Q., or max., and allowed to enter from a given country. In production, limitation of quantity produced, and of areas of distribution; means adopted for reguln. of prices. **Q.**, or *share agreement*, (insur.) arrangmt. by wh. cos. agree as to share of risk for wh. each is liable.

**Quotation**, 1) adducement of written passage or verbal repetition of an utterance. 2) (Stk. Exch.) statement of prices of securities in wh. dealings take place; publ. each day the S.E. is open for business.

**Quot homines, tot sententiae** (Lat.), as many men, so many opinions; opinions differ.

**Quousque tandem?** (Lat.) how much longer (will you abuse our patience?). Opening words of Cicero's first speech against Catiline.

**Quo vadis?** (Lat.: whither goest thou?) words spoken by Christ when He appeared to Peter on the Appian Way as he was fleeing from the Neronian persecutions. Title of a novel by H. Sienkiewicz, trans. into English 1896.

**q.v.**, abbr. *quod vide* (Lat.), which see.

**Q.V.**, abbr. *quantum vis* (Lat.), as much as you please.



# R

**R.**, abbr., 1) Réaumur (thermometer). 2) Incorrectly, on prescriptions, for *recipe* (Lat.), take. 3) Rt.-angle ( $90^\circ$ ).

**r.**, abbr. radius.

**Ra**, Egypt. sun-god; chief god of the pantheon; under Amenhotep IV (Akhaton) attempt made to make him sole God under name of Aton (sun-disk.)

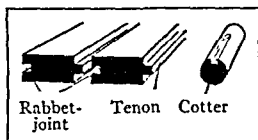
**Ra**, (chem.) symbol of radium (*q.v.*).

**Raab**: see GYÖR.

**Rabat**, cap. of Fr. zone, Morocco, on the Atlantic; one of the four capitals of Morocco; pop., 53,100 (20,800 Europeans).

**Rabaul**, cap. and chief port of New Britain (*q.v.*), and of mandated terr. comprising former Ger. New Guinea; pop. (white), 1,500.

**Rabbit**, (tech.) groove cut in wood or other material to receive correspondingly shaped material closely fitting it, usu. either a tongue cut on another piece of material to be fitted into the first or a cotter fitting into similar grooves cut in each part.



Rabbit

**Rabbi** (Hebr., master), Jewish teacher of the law; title conferred by a number of Jew. colls. in Europe and U.S.A. (= degree of D.D.); also by individual rabbis in E. Europe. A chief R. is the spiritual head of the community and pres. of the eccles. court. There is only one recognized C.R. in the Brit. Empire.

**Rabbit**, a rodent of the same family as the hare; smaller and shorter limbed; lives in burrows; very prolific and voracious, and causes much damage to vegetation; skin used for fur and felt.



Rabbit

**Rabelais**, François (c. 1495-1553), Fr. physician and satirist; *Gargantua and Pantagruel*.

**Rabies**, contagious disease of dogs, communicable to man or domestic animals by bite of dog. The animal becomes restless, excited, and tends to bite at every object it meets; later paralysis may occur; death ensues in 5-12 days. Incubation in man,

40-50 days, then similar symptoms. Prophylaxis: cauterisation of the wound by red-hot metal or chemicals; Pasteur's vaccine treatment.



Belgian Hare:  
Large breed of domestic Rabbit

**Rabshakeh**, (O.T.) officer of Kg. of Assyria, sent agst. Jerusalem, temp. Hezekiah.

**R.A.C.**, abbr., Royal Automobile Club.

**Raccoon**, small carnivore of N. Amer., with stout body, broad head, pointed muzzle, moderate tail; fur thick and short; almost omnivorous feeder, hunting along banks of streams and lakes, washing its food in the stream; partly arboreal, female giving birth to her cubs in hollow tree-trunk; hibernates.



Raccoon

**Raceme**, (bot.) inflorescence in wh. the flowers branch out from main stem on subsidiary branches.

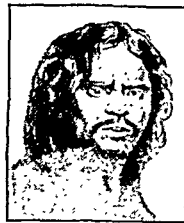
**Races of man**, (for origin of man see PRE-HISTORY). Classification of present-time man has been attempted by basing it on different characteristics, e.g.: *Colour* (white, yellow, black); *Shape of skull* (dolichocephalic, brachycephalic, *q.v.*); *Facial characteristics* (nose, lips, shape of jaw, measured by facial angle); *Hair* (straight, curly, wiry); also with help of linguistic and cultural peculiarities. *Asia*: Ainu, Veddas, Chinese, Malays; *Australasia*: extinct Austrln. aborigines, Papuo-Melanesians; *Africa*: Negro, dwarf, Akkas, and Bushmen; Bantus of Central Africa; *America*: Indians; *Europe*: Nordic Races (Scand., Gt. Brit., N. Ger. etc.); Oriental and Slav races (Cent. and N.E. Europe); Dinaric (Alps); Mediterranean races.

**Rachel**, (O.T.) dau. of Laban; fav. wife of Jacob; mother of Joseph and Benjamin.

**Rachmaninov**, Sergei Vassilievich (1873- ), Russ. composer and pianist;



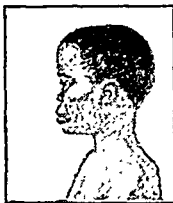
Australian  
Aborigine



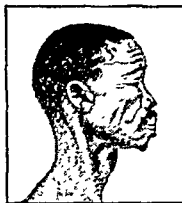
Veddah  
Southern India



Ainu  
N.E. Japan



Akka  
Central Africa



Bushman  
South Africa



Papuan  
South Sea Islands



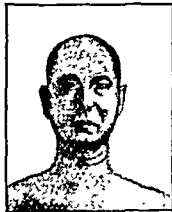
Semang  
Eastern Asia



Red Indian  
North America



Eskimo  
Greenland



Chinese  
Eastern Asia



Chinese Woman  
Eastern Asia



Samoan  
Half-breed



Mexican  
Half-breed



Half-breed  
Negro-White



Half-breed  
White-Hottentot



Hawaiian



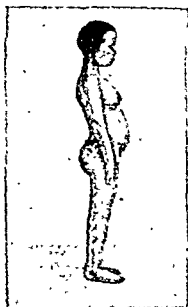
Negro  
Kilimanjaro Country



Ainu  
N. E. Japan



Bush-woman  
South-West Africa



Akka Woman  
Central Africa  
Primeval Forest



Singhalese Woman  
Ceylon



Negro Couple  
Central Africa



South-American-  
Indian Woman



Malay Woman  
Malay Archipelago

operas, symphonies, choral music; *Aleko*; *The Avaricious Knight*; *Prelude* in C sharp minor.

**Racine**, Jean Baptiste (1639-99), Fr. dramatist; *Phèdre*; *Athalie*; *Andromaque*.



Racine

**Racing**: Horse-racing; a sport practised since very early times (Greece and Rome). As now known in England it is divided into *Flat-racing* from late March to late November, and *Steeplechasing* during winter and early spring, most of the important races being included in the former. Outstanding dates in history of the sport in England are: 1st known reference c. 1174; public races held at Chester, 1512; great



Horse-race, after Manet

encouragement by Stuart kgs., and beginnings of Epsom and Newmarket as racing centres *temp.* Jas. I. *Racing Calendar* establd., 1727; estabtd. of great 3-year-old races, St. Leger, 1776; Oaks, 1779; Derby, 1780; Goodwood, 1802; Ascot Gold Cup, 1807; Newmarket—2,000 Guineas, 1809; 1,000 Guineas, 1814; Cesarewitch and Cambridgeshire, 1839; Lincoln Handicap, 1853; Grand National Steeplechase, 1839. Handicaps are races in which horses (5 yrs. and over) carry weights in accordance with their estimated capabilities. The whole sport is managed and supervised by the Jockey Club, whose activities are governed by three stewards, one of whom retires and is replaced each year. Not the least important aspect of horse-racing is its association with betting and bookmaking, (*q.v.*). See also BETTING: TOTALISATOR.

**Rack**, oblong wooden frame with arrangement of pulleys and levers, formerly in use in Eng. and elsewhere as instrument of torture to extract evidence from prisoners by dislocation of their joints; in 1628 judges decided its use was opposed to laws of England. **R.-railway**, mtn. rly. with driving cog-wheels gripping into racks.

**Racking**, process of straining or drawing-off clear liquid from lees, sediment, etc., in making of beer and wine.

**Racquet**, long-handled oval implement consisting of an open wooden frame tightly strung with catgut, for striking the ball at tennis, lawn tennis, racquets, etc., and for striking the shuttlecock at badminton.

**Racquets**, game for 2 or 4 players in a crt. with walls, against which a small leather-covered ball is struck with a racquet.

**Radak Islands**: see MARSHALL ISLANDS.

**Radautz**, tn. in Bukovina, Rumania; pop., 17,000; school of agriculture.

**Radcliffe**, Ann (1764-1823), Eng. novelist of the "Terror" school: *The Romance of the Forest*, 1791; *The Mysteries of Udolpho*, 1794; *The Italian*, 1797. **R., John** (1659-1714), Eng. physician; M.P., 1690-1711; bequeathed property for fndg. 2 medical travelling fellowships, etc., to Univ. Colln., Oxford, and further funds employed to the R. observatory, hospital, and library, Oxford, and to extend St. Bartholomew's Hospital, London.

**Radcliffe**, tn. in Lancs, Eng.; pop. 24,700; cotton, coal, iron.

**Radek**, Karl (1885- ), Russ. Bolshevik politician; took part in revn., 1917 and in Brest-Litovsk negotiations, 1918; in Ger., 1919 and 1923, where he lost influence; Rector, Chinese Univ. in Moscow, 1921; expelled to Vologda 1927, for opposing Stalin; later, chf. leader-writer Russ. offic. journal *Izvestia*.

**Radetzky**, Josef, Ct. of Radetz (1766-1858), Austr. F.M.; as cmdr. of Austr. Army in Italy, 1848, checked insurrectionary movement (Custoza, Novara). **R. March**, by Johann Strauss, senr., is dedic. to him.

**Radial artery**, artery, beat of wh. can be felt at wrist, 1½ in. from base of thumb (*see* PULSE). **R. nerve**, may be paralysed in cases of lead-poisoning, causing *wrist-drop*.

**Radiant heat baths**, for treatment of lumbago, chronic arthritis, sciatica, etc.; electric incandescent lamps as heating agents. Baths may be used for the whole body or separate limbs, their value depending on hot air and light rays emitted.

**Radiation**, 1) (phys.) energy appearing in form of electro-magnetic waves (elec., heat-, light-waves, X-rays) caused by vibration of electrons or vibrations within atomic nucleus (X-ray). *Pressure of r.*, due to R. of all kinds on bodies exposed to it; pressure of sun's light on very small particles may exceed its gravitational action on them. Arrhenius (*q.v.*) suggested that living germs may thus be transported thr. space. 2) (Meteorol.) Nocturnal loss by earth of surface and atmospheric heat absorbed into space.

**Radiator**, internally heated metallic object having large surface facilitating transference of heat to surrounding air. For heating rooms, number of flat-section pipes heated by steam or hot water;



for cooling motorcar engine, fine hollow-walled, honey-comb structure of thin sheet-copper, through which cooling water is circulated.

**Radič:** see RADITCH.

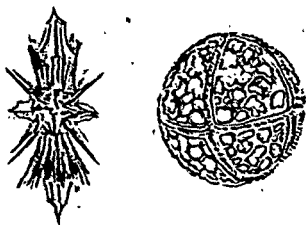
**Radical**, in polit.; a party advocating root-and-branch reform; in U.S.A., generic term for "left wing" (*q.v.*); in Gt. Brit., chf. advanced wing of Liberalism (*q.v.*).

**Radicals**, groups of atoms unable to exist other than in combination in a molecule with other groups or single atoms; e.g.,  $\text{NH}_4$  (ammonium),  $\text{CH}_3$  (methyl).

**Radio:** see WIRELESS TELEGRAPHY. **R-activity**, (phys.) disintegration or "decay" of some chem. elements (uranium, thorium, radium, potassium, etc.); a certain propor. of the atoms explode spontaneously in a given time (50% of radium atoms in 4,500 years), with emission of  $\alpha$ -,  $\beta$ -, and  $\gamma$ -rays, and formation of new element (radium changes to radium emanation, a gas of argon family).  $\alpha$ -rays are positively charged helium atoms, velocity  $\frac{1}{10}$  that of light;  $\beta$ -rays are electrons (*q.v.*) veloc. up to  $\frac{1}{10}$  of light;  $\gamma$ -rays are very hard X-rays (*q.v.*). All rays ionise gases and affect photographic plates;  $\alpha$ - and  $\beta$ - rays are deflected by magnet;  $\gamma$ - rays are not,  $\alpha$ -rays produce flashes on fluorescent screen, and can thus be counted singly; on striking nucleus of other (non-R.-A.) atoms, latter may burst and be charged into other elements. All radio-active elements are "descended" from uranium or thorium. Applications: treatment of cancer and rheumatism; luminous paint. **R-compass**, **frame aerial** (*q.v.*), wireless receiver, the aerial being rotatable against a scale of angular degrees; object being to estimate direction of a transmitting station by rotating aerial until reception ceases.

**R-gramophone**, gramophone combined with wireless receiving-set and elec. pick-up, used in place of sound box; vibrations of needle cause very feeble induced currents, wh. are fed into amplifier and so to loud-speaker. **Pick-ups** (*q.v.*) of various types.

**Radiolaria**, unicellular marine Sarcodina,



Radiolaria

which secrete silica skeletons of various shapes.

**Radiometer**, (phys.) "light mill" invented 1874 by Sir Wm. Crookes; vanes of aluminium or thin mica blackened on one side; attached to vertical spindle inside an exhausted bulb; heating of vanes by light on black side causes them to revolve. Effect not due to "pressure of radiation" but to residual gas in bulb.

**Radioscope**, apparatus for direct examination of objects and human body by X-rays (*q.v.*). The rays throw a shadow of the object onto a screen coated with barium platino-cyanide, which fluoresces brightly where the rays strike it. Used for medical and anatomical examination.

**Radiotherapy**, treatment of disease by means of radio-active substances, e.g., X-rays, radium.

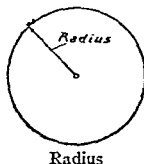
**Radish**, *Raphanus*, cruciferous plant with a thick root; wild radish, *R. raphanistrum*, is yellow flower with purple veins; cultivated variety, *R. sativus*, used as a relish.

**Raditch**, (*Radič*) Stjepan (1871-1928), Yugoslav statesm., leader Croatian Peasants' party; murdered in Parl. by Serb deputy.

**Radium**, chem. element, sym. Ra; at. wt. 225.97, m.p. 700°C.; discovered by Prof. and Mme. Curie (1898); occurs in pitchblende and other uranium-contg. ores in Cornwall, Belgian Congo, and Ontario. Exhibits radioactivity (*q.v.*). In treatment of cancer R. screened with lead so that  $\gamma$  rays only penetrate. **Radon** (R. emanation, niton) at. wt. 222, also radioactive, and used for malignant disease. R. costs c. £20,000 per gm., assayed by comparison with standards kept in London, Paris, and Vienna. Used also for luminous paint.

**Radius**, *r* (math.) half the diameter of a circle.

**Radius Vector**, distance betw. any point on a curve, and a fixed point within it, e.g., R.V. of parabola (*q.v.*). 2) (Anat.) External bones of the forearm; extend from elbow to wrist, and lie to the thumb side of the forearm. **R. of gyration**, (mech.) of solid disk or cylinder =  $\frac{1}{2}$  moment of inertia (*q.v.*) divided by mass.



**Radley College**, College of St. Peter, at Radley, nr. Abingdon, Berks; Eng. public school for boys, fndd. 1847; c. 340 boys.

**Radnorshire**, inland co., centr. Wales; area, 470 sq.m.; pop., 21,300 (English-speaking); high moorland (*Radnor Forest*, 2,186 ft.); watered by Riv. Wye; mainly pasture (stock-raising, Welsh ponies); min. springs at Llandrindod Wells; co. tn., *Pres-teign*.

**Radom**, tn. in prov. Kielce, Poland; pop., 78,000; tanneries and leather industries.

**Radon:** see RADIUM.

**Radoslavov**, Vasil (1854-1929), Bulg.

statesm.; Pr. Min., 1913-18; alliance with Centr. Powers to gain Macedonia.

**Raeburn**, Sir Hy. (1756-1823), Scot. portrait painter; R.A., 1815; known as "The Scottish Reynolds."

**R. A. F.**, abbr. Royal Air Force.

**Raff**, Joseph Joachim (1822-82), Ger. composer; symphonies, sonatas, etc.

**Raffia palm**, tree found in E. Africa, leaf stalks of wh. are used for *R. fibre*, hemp-like fibre sometimes used in upholstery, etc., and *R. bast*, for tying up garden plants.

**Rafflesia**, giant Malaysian, evil-smelling, parasite flowers, freqtly. 3 ft. in diameter; named after Sir Stamford Raffles.

**Raffles**, Sir Stamford (1781-1826), Brit. administrator; E. India Company bought Singapore (*q.v.*) at his suggestion, and he was its first governor, 1819.

**Rag-frame**, **ragging-frame**, used in ore-dressing (*q.v.*) to separate the heavy and valuable minerals from the light in the "slimes" (*q.v.*), or very fine suspensions in water, which are allowed to flow over a suitably inclined table in such a way that the heavy particles settle on the table while the light are carried off.

**Ragged-robin**, *Lychnis flos-cuculi*, wild herb of Europe and N. Amer., with pink flowers and reddish, hairy stems.

**Ragged school**, charitable institution for clothing, feeding, and training destitute children; 1st Eng. R.S. started at Portsmouth by John Pounds, 1819; movement carried on by R.S. Union (fndd. 1844), Thos. Guthrie (1803-73), Mary Carpenter (1807-77), and others, till superseded by industrial school system (1st Industr. School Act, 1857), and spread of educ. after 1870.

**Raglan**, loose overcoat having sleeves cut in one piece with collar and no shoulder-seams. Named from 1st. Bn. Raglan (1788-1855), who fought at Waterloo and commndd. Brit. troops in Crimean War.

**Ragoût**, highly seasoned stew.

**Rag-time**, strongly syncopated music as in Negro dances and songs. See *syncopation*.

**Ragusa**, 1) see DUBROVNIK. 2) Tn. in prov. of Syracuse, Sicily, divided into Upper and Lower Ragusa; total pop., 33,000; agriculture, vineyards.

**Ragwort**, Europ. weed, resemb. groundsel, c. 2 ft. high, with bright yellow flowers; name also applied in Amer. to other allied species, esp. *Golden ragwort*.

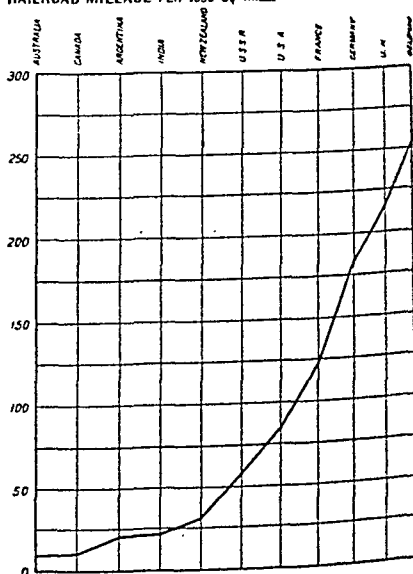
**Raikes**, Robt. (1735-1811), Eng. educationalist; printer and publisher of *Gloucester Journal*; originated modern Sunday-schools at Gloucester, 1780.

**Rail**, fam. of birds, esp. *landrail* or *cor-crake* (*q.v.*) and *water-rail* or *skiddy*, with reddish bill and olive-brown and grey plumage, found in marshy districts throughout N. Temperate regions.

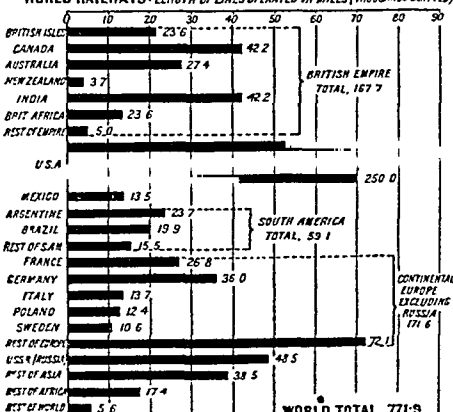
**Rails**, bars on which flanged wheels of railway vehicles run. **Bull-head r.**, held by chair (*q.v.*) used in England, and part of Continent of Eur. **T r.**, spiked to sleepers, used in America and elsewhere. **Gauges** (*q.v.*) and shape standardised. length of single rail, 30 to 40 feet. Rail joined by *fish-plates*; allowance made for expansion by leaving small space betw. each successive rail. **Tramway r.**, embedded in road pavement, are often welded end to end.

**Railway**, road for vehicles having parallel metal rails for wheels, with flanges which keep them on rails. First used early 19th cent., with horses and steam locomotive.

RAILROAD MILEAGE PER 1000 SQ MILES



WORLD RAILWAYS - LENGTH OF LINES OPERATED IN MILES (THOUSANDS OMITTED)



U. S. A. mileage greater than total of that of all European Countries.

in mines; first steam passenger-rly., Stockton and Darlington, 1825. Stephenson's "Rocket" (*q.v.*), introduced tubular boiler, forced draught, direct drive on wheels, 1829. Rs. built under powers for compulsory acquisition of land by Act of Parliament; route must be surveyed and planned so as to avoid gradients exceeding 1 in 15. Cost of construction of Brit. rlyws. average £35,000 per mile (total mileage, end-1931, 20,408); capital, authorised £1,311,617,653, issued, £1,209,053,431. Road or permanent way formed of *ballast*, broken stone, or gravel. On this are *sleepers*, which carry rails, held by *chairs*. **Elevated r.**, rly. supported on iron girders and carried above streets of town. **R. records**, see next page.

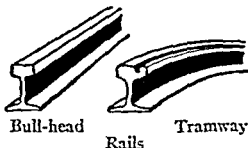


Photo L.M.S.

Railway Buffet Car, Bar

**Railway vehicles**, rolling stock of a rly. line: *passenger carriages*, coaches, or cars, of many types; long cars have two 4-wheeled bogies (*q.v.*); *Pullman cars* are not divided by partitions and are entered from end; *sleeping cars*, divided into cubicles; *corridor cars* have connecting passage from end to end and the separate units are connected by flexible bellows at either end. Weights betw. 25 and 45 tons. *Goods trucks*, wagons, or vans, of all sizes; British are smallest type and suffer from disproportionate wt. of wagon as compared with load; 5-ton wagon carries only 6 tons of coal, whereas 35-ton wagon carries 100 tons. Average capacity: Britain, 10½ tons; continental, 20-40 tons. Half of British wagons privately owned. Special types: tank wagons for liquids, refrigerator wagons for food; horse boxes, cattle trucks, etc.

**Rain**, atmospheric moisture condensed by cooling, forming drops of water around nucleus of dust, and falling to earth's surface after becoming too heavy for atmosphere to support. **Rainbow**, arc showing colours

of spectrum in concentric bands formed in sky opposite sun, or moon (*lunar rainbow*), by refraction and reflection of its light through falling drops of rain; identical effect produced by spray of waterfall, etc. **Secondary rainbow**, larger, similar arc above rainbow, with order of colours reversed by double refraction and reflection. **Rainfall**, amount of precipitation (*q.v.*) from atmosphere over specified area, or at given place during given period, as measured by rain-gauge (*q.v.*). Classified as: *Concectional*, falling in equatorial belt every afternoon; *relief*, result of moisture-laden winds being forced upward into cooler air by striking mountain side; *cyclonic*, result of wind from all sides being forced up after having filled an area of low pressure. **Distribution of rainfall**: *Wet areas* (over 40 in. annual

RAINFALL MEAN MONTHLY RAINFALL IN INCHES IN GREAT BRITAIN &amp; IRELAND (1881-1915)

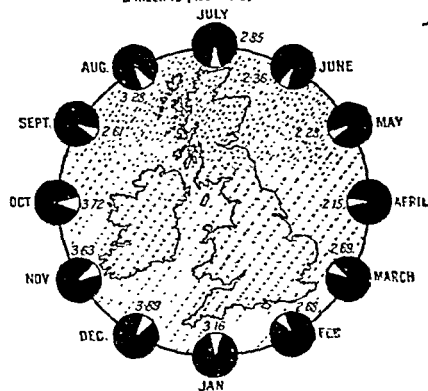


Diagram illustrates comparative evenness of distribution of rainfall, winter months being rather wetter than summer. September, with low rainfall, comes betw. 2 comparatively wet months.

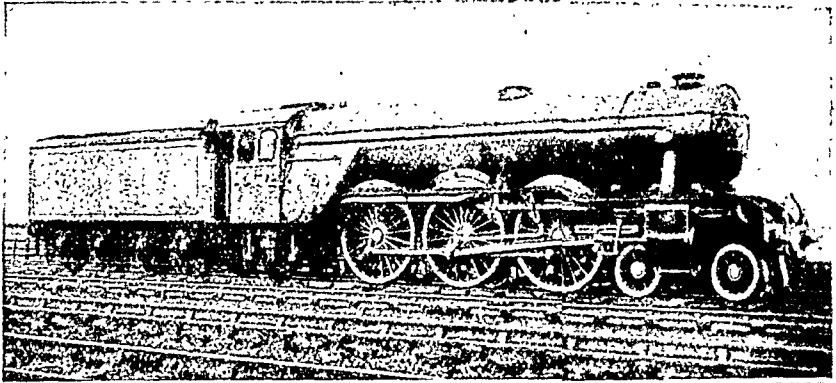
rainfall), e.g., primeval forest district of Amazon, Assam (see CHERRAPUNJI), Hawaii; *dry areas* (under 10 in.), e.g., deserts of N. Africa, India, Australia, W. South America. Driest locality in world, Iquique in Chile with 0.118 in.; heaviest rainfall in Europe, S. Dalmatia, 177 inches. Annual rainfall of given place recorded on *Rainfall Charts*. **Rain-gauge**, cylindrical vessel with collecting funnel through wh. rain falls into a graduated glass, wh. shows depth of rainfall in cms. or inches. **Rainy seasons** occur in equatorial belt during the periods of sun's zenith (*q.v.*); further N. and S. of Equator these merge into one rainy season in summer; in temperate zones, there are no clearly defined rainy seasons, but rain more frequent in winter as a rule. See also MONSOON.

**Rainbow Bridge**, Natnl. park (1910) in Utah, U.S.A. 160 acres, natural bridge, shape of rainbow, 309 ft. high, 278 ft. span.

# Railway Records:

## WORLD RECORDS FOR STEAM TRAINS (ALL HELD BY GT. BRITAIN)

FASTEST SCHEDULE (Start to Stop)	HIGHEST SPEED	FASTEST SCHEDULED RUN OVER 130 M. (Start to Stop)	LONGEST SCHEDULED RUN AT OVER 60 M.P.H. (Start to Stop)
G.W.R. "Cheltenham Flyer," Swindon to Pad- dington; 77.3 m. in 65 min., 71.4 m.p.h. On June 6, 1932, the run was made with 195 tons in 56 min. 47 sec., at 81.7 m.p.h.	102.3 m.p.h. maintained over $\frac{1}{2}$ m. by G.W.R., May 9, 1904.	L.M.S. Crewe to Welles- den Jn., 152.7 m. in 142 min., 64.5 m.p.h.	L.M.S. "Manchester," Wilmslow to Preston, 176.9 m. in 172 min., 61.7 m.p.h.
	LONGEST NON-STOP RUN L.N.E.R., "Flying Scots- man," London (King's Cross) to Edinburgh and vice versa, 392.7 m. in 450 min., 52.3 m.p.h. (in summer months only).	On July 18, 1932, the run was made with 295 tons in 136 min. 53 sec., at 66.9 m.p.h.	On July 18, 1932, the run was made with 375 tons in 165 min. 15 sec. at 64.3 m.p.h.

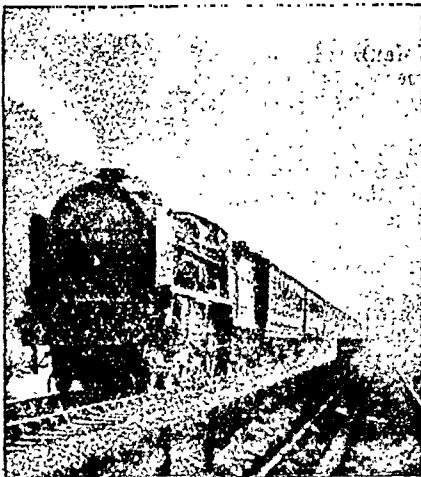


By courtesy of L.N.E.R.

"Flying Scotsman" Express Passenger Locomotive with Passenger Tender

## FASTEST TRAINS OF OTHER COUNTRIES

FRANCE: *Nord*; Paris to Jeumont (start to slow pass) 147.7 m. in 134 min., 66.1 m.p.h. Paris to St. Quentin (start to stop), 95.1 m. in 88 min., 64.8 m.p.h.



By courtesy of L.M.S.

London-Manchester Express from Euston.

GERMANY: *German Railways*; Berlin (Lehrter Bhf.) to Hamburg, 178.2 m. in 179 min., 59.7 m.p.h. *Diesel Electric*; "Flying Hamburger" (railcar). Berlin (Lehrter Bhf.) to Hamburg (as above), 142 m., 75.3 m.p.h. (On Dec. 28, 1932, the run was made with 80 tons in 138 min. at 77.5 m.p.h.).

ITALY: *Ital. State Railways*; Padua to Verona 51 m. in 50 min. (start to stop), 61.2 m.p.h.

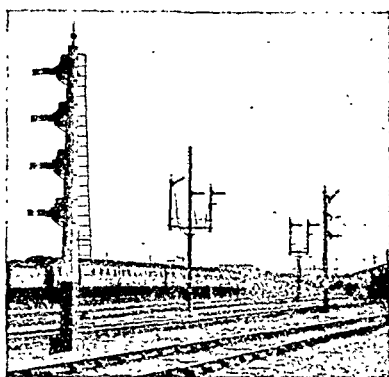
CANADA: *C.P.R.*; Smith's Falls to Montreal West, 124 m. in 108 min., 68.9 m.p.h. *Can. Nat. Rly.*, Brockville to Cornwall 57.9 m. in 55 m., 63.2 m.p.h.

U.S.A.: *Pennsylvania R.R.*: Absecon to Egg Harbor, 10.7 m. in 10 min., 64 m.p.h. Plymouth to Fort Wayne, 64.1 m. in 61 min., 63 m.p.h. Gary to Plymouth 58.7 m. in 56 min., 62.9 m.p.h. *N.Y. Central*; Galion to Linndale, 73.8 m. in 70 min., 63.3 m.p.h. Elkhart to Toledo 133 m. in 128 min., 62.3 m.p.h. *Reading R.R.*: Egg Harbor to Pleasantville, 11.9 m. in 16 min., 64.5 m.p.h.

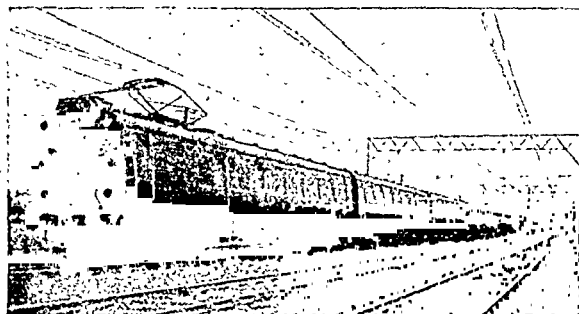




Electric 232—Lever Signal Box, King's Cross



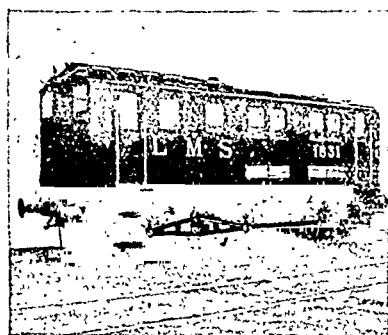
Electrically Worked Signals



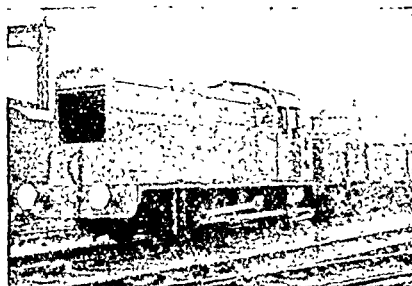
Six-coach Electric Train



Four-aspect  
Colour Signal  
Light



Heavy Oil Electric Shunting Locomotive



Electric Freight Locomotive

*By courtesy of L.M.S. and L.N.E.R.*

## USE OF ELECTRIC POWER ON RAILWAYS

**Rainier, Mount**, extinct volcano of Cascade Range, Washington, U.S.A.; 14,408 feet.

**Rainy, Lake**, on frontier betw. Minnesota, U.S.A., and Canada, 345 sq. miles.

**Raised beaches**, orig. sea-beaches, now raised above sea-lvl. to various heights and, in many cases, far from sea-coast; due either to the rising of the land or sinking of the sea.

**Raisins**, dried grapes from Mediter. countries and Asia Minor; *grape-raisins*, *berry-raisins*: large, light, and stoneless; *sultanas*: large, long-shaped raisins.

**Raison d'état** (Fr.), reason of State; **raison d'être**, reason for existence.

**Raisuli**, Mulai Ahmed-er- (1868-1925), Moroccan sharif and leader of insurgents agst. Europ. rule, 1916-1925.

**Rajah, Raja**, title of a Hindu prince. *Maharajah* prince of greater importance; head of a confederacy of rajahs.

**Rajputana**, collectn. of 21 Indep. States, N.W. India (128,950 sq.m.), under an agent of the governor-general; includes Jaipur, Jodhpur, Udaipur, Bikanir. Desert of Thar forms a large part of area. Pop., 9,844,385; mostly Hindu. Cap., *Ajmer*.

**Rajputs**, aristoc. natives of Rajputana, and Oudh, of obscure origin; arose 8th cent. A.D.; claim descent fr. orig. Kshatriyas ("of the royal stock"), the warrior caste of the Hindus; assimilated many fighting clans and till Moham. conquest (late 12th cent.) most powerful rulers in India.

**Rake**, (agric.) 1) long-handled garden tool for gathering together loose grass, weeds, etc., and smoothing surface of soil. 2) Horse drawn implement with curved prongs for raking hay. 3) (Gaming) Small wooden implement used by croupier to draw in stakes won by bank at a gaming-table.

**Raleigh, Sir Walter** (1552-1618), Eng. navigator, named Amer. settlement "Virginia" in honour of Qn. Elizabeth; introd. potato and tobacco; exec. on charge of high treason preferred by Jas. I in 1603; pubd. essays, etc., and *History of the*

*World*. **R., Sir Walter** (1861-1922), Eng. critic and man of letters; *The English Novel*, 1894; *Shakespeare*, 1907; *Romance*, 1917.

**Raleigh**, cap. North Carolina, U.S.A.; pop., 37,400; Negro univ. (1865); cotton.

**Ralik Islands**, see MARSHALL IS.

**Rallentando**, (mus.) abbr. *rall.*, gradually slowing down.

**Ralph Roister Doister**, comedy by Udall (q.v.), 1540, in doggerel verse, after manner of Plautus; perhaps acted by Eton boys while Udall was still headmaster.

**Ram**, 1) uncastrated male sheep. 2)

(Mech.) kind of water-pump working automatically, pumping to a high level a small propor. of a low-pressure waterstream. This enters a pipe and flows more and more rapidly until rush of water



Ram, Antique Bronze

closes a valve; inertia of moving water thus stopped generates a high pressure, and some of it escapes thr. a 2nd valve, wh. lifts under the pressure; this is led to a tank at high level. When flow ceases, main stream flows again and process repeats itself.

**Rama**, (Hindu myth.) incarnation of the god Vishnu, hero of the ancient Indian legend, *Ramayana*.

**Ramadan**, 9th month of Mohammedan year, during wh. complete fast from food and drink is observed from sunrise to sunset; as Moham. year is lunar, it falls successively at all seasons of solar year, e.g., in 1927, 5 Mar. to 4 Apr., in 1933, 18 Dec. to 16 Jan., 1934.

**Ramah, Rama**, (O.T.) 1) b.-place of Samuel (I Sam. i). 2) City, N.W. of Gennesaret.

**Ramayana**, histy. of Rama (q.v.); great epic poem of anc. India; 24,000 stanzas; dating from c. 5th cent., A.D.

**Rambouillet**, Catherine, Marquise de (1588-1665), held literary salon.

**Rambouillet**, tn., N. France, dépt. Seine-et-Oise; pop., 6,270; remains of 14th-cent. château; res. of Louis XVI.

**R.A.M.C.**, abbr. Royal Army Medical Corps.

**Rameau**, Jean Philippe (1683-1764), Fr. composer, and writer on theory of music; *Hippolyte et Aricie*, 1733; *La Princesse de Navarre*; *Traité de l'harmonie*, 1722.

**Ramekin dishes**, small china individ. dishes for serving eggs, soufflés, or other delicacies.

**Rameses**, Kgs. of Egy. 1300-1100 B.C.

**R. II**, is probably the Pharaoh of Jewish oppression.

**Ramie**, fibre from plant *Boehmeria nivea*, E. Indian nettle-like plant; also called China grass and rhea; cultivated for its strong, silky fibres, which are spun and woven.

**Ramillies**, tn. in prov. Brabant, Belgium. *Battle of Ramillies*, 23 May, 1706; victory of the English, under Marlborough, over the French and Bavarians.

**Ramón y Cajal**, Santiago (1852- ), Span. histolog. and patholog.; Nobel Prize



Sir Walter Raleigh



Mummy of Ramses II

(Med.), 1906; fndd. Cajal Institute, Madrid, 1922. *Elementos de Histologia normal y de Técnica Micrográfica*, 1889; *Histologia del Sistema Nervioso de Hombre y de los Vertebrados*, 1897-1904.

**Ramp**, 1) inclined platform at edge of bldg., etc., and (in theatre) leading from stage across orchestra-well to auditorium. 2) Some dishonest practice with view to obtng. money, esp. a means of financial exploitation of public by cornering commodity and raising prices.

**Rampion bell flower**, *Campanula rapunculidus*, grows c. 3 ft. high; small blue flowers; at one time cultivated for its root, wh. was used as a vegetable.

**Rampolla**, Mariano (1843-1913), Ital. cardinal; Sec. of State to Pope Leo XIII; proposed election to Holy See vetoed by Austria, 1903.

**Rampur**, cap. native State same name, United Provs., India, in plain of the Ganges; pop., 73,160; silk manuf., textiles.

**Ramsay, Allan** (1686-1758), Scottish poet; started life as barber and bookseller; pub. *The Tea Table Miscellany*, 1724; *The Gentle Shepherd*, 1729; etc. His son, **Allan** (c. 1713-84), portrait painter; painter-in-ordinary to Geo. III; friend of Johnson. **R., Sir William** (1852-1916), Brit. chemist; with Rayleigh (q.v.), discovered gas, argon, 1895; also helium, neon, xenon, and krypton; Nobel Prize (Chem.), 1904.

**R., Sir Wm. Mitchell** (1851- ), Brit. archaeologist; travelled widely in Asiatic Turkey from 1880; prof. of classical art, Oxford, 1885; Levering lecturer, Johns Hopkins Univ., 1894; Romanes lecturer, Oxford, 1913; *Historical Geography of Asia Minor*, 1890; *The Cities of St. Paul*, 1907; *Sir W. M. Ramsay Asianic Elements in Greek Civilisation*, 1927, etc.



**Ramsey**, 1) Scapt. and watering-place, N.E. coast, Isle of Man; pop., 4,700. 2) Mkt. tn., Hunts, Eng.; pop., 5,000.

**Ramsgate**, popular seaside resort in Isle of Thanet, Kent, Eng.; pop., 33,600; harbour; fishing. Over 100 air-raids in the World War.

**Ramus**, Petrus (1515-72), *Pierre de la Ramée*, Fr. humanist and philosopher, *Aristotelice Animadversiones*, 1543; *Dialecticæ Partitiones*, 1543.

**Rancé**, Jean le Bouthillier de (1626-1700), fndd. Trappist Cistercians, La Trappe.

**Ranch**, cattle-farm in U.S.A. and Canada.

**Rancid**, term applied to fats and oils wh. have devel'd. excess of free fatty acids, often due to exposure to air; rancidity may be re-

moved by washing with solution of alkalis, e.g., sodium carbonate.

**Rand**: see WITWATERSRAND.

**Randers**, 1) dist., Jutland, Denmark; 952 sq.m.; pop., 147,210. 2) Cap. of dist., on Randers Fjord; pop., 26,860; fishing; dairy-farming.

**Randolph Field**, aerodrome, Texas, U.S.A.

**Ranelagh**, 1) Eng. sports and social club, fndd. 1878 with premises at Fulham; transferred to Barn Elms, Barnes, S.W. London, 1883. Manor of Barn Elms was owned by canons of St. Paul's Cathed., 925-1580; then presented by Qn. Elizabeth to Sir Francis Walsingham; grounds of club cover c. 132 ac. and are laid out for polo, golf, etc. 2) Formerly mansion in Chelsea, built by E. of R. (c. 1690); in 1742 house and grounds became pleasure resort; closed 1803, when grounds acquired by Chelsea Hospital.

**Range-finder**, horiz. tube with two mirrors, the images of the target on two being made to coincide by means of an adjustable prism; the degree of rotation of the prism gives the range.

**Rangoon**, cap., Burma, on Rangoon Riv. (E. distributary, Irrawaddy); pop., 400,400; third port in India; Buddhist temples; Shwe Dagon Pagoda; rice mills; exports rice (two-thirds total Ind. exports), cotton, petroleum, teak.

**Ranjitsinhji**, Kumar Shri (1872-1933), Maharajah of Nawanagar; cricketer; played for Sussex, 1895-1904; capt., 1899-1903; headed batting averages for All England, 1896 and 1900; toured Australia, 1897-98; succ. as maharajah, 1907; served in World War; repres. Indian States at League of Nations Assembly, 1920; Vice-Chanc. of Indian Chamber of Princes.

**Rank**, degree of command and precedence esp. in the armed forces; see OFFICERS. **Substantive r.**, permanent R., as distinct from honorary, acting, temporary, local, lance (q.v.), or brevet rank. **Brevet r.**, accorded for disting. services or talents, confers seniority in the army but not in the unit.

**Ranke**, Leopold von (1795-1886), Ger. histor.: *History of the Popes*, 1834-36.

**Rankine**, William John MacQuorn (1820-72), Brit. engin.; co-Indr. mod. science of thermodynamics.

**Rannoch, Loch**, lake (7½ sq.m.) N.W. Perthsh.; fed by Riv. Ericht; outlet Riv. Tummel; at foot is vill. of Kinloch Rannoch.



Ranke

**Ranters**, 1) popular name for Primitive Methodists (q.v.). 2) Relig. sect prominent in England during the Commonwealth.



sim. to badger, with grey upper and black lower parts; short, thick body and legs; sometimes alleged to dig up dead bodies.

**Rates**, monies levied to pay for loc. government. Originating under Elizabeth, to provide for poor after dissolution of monasteries, afterwards, leviable for other purposes. Normally charged upon occupier of property in proportion to estimated letting value, but by Local Govt. Act, 1929, certain properties are wholly or partly relieved. See DERATING.

**Rathenau**, Walther (1867-1922), Ger. statesm. and industrialist; est. board for supply of raw materials, 1914; at Spa Conference, 1920; Min. of Reconstruction, 1921; For. Min., 1922; Treaty of Rapallo, 1922, with Russia; assassinated; *The New Society*.

**Ratification**, acceptance by State of respons. for unauth. act of official; consent by State to treaty neg. by its representatives.

**Ratings** (naval), seamen and petty officers as distinct from commissioned officers.

**Ration**, allotted portn. of provisions or cattle-food; **emergency r.**, canned, condensed food, tea, sugar, bully-beef, etc., supplied esp. to soldiers in field, only to be consumed in emergency.

**Rationalism**, 1) philos. view, recognising no source of cognition except reason; ant.: *Empiricism*. 2) Doctrine that rejects all relig. beliefs wh. cannot be proved to be based on reason (Voltaire, Diderot).

**Rationalisation**, elimination of waste, esp. industr.; inclds. simplifying processes, reducing surplus cap., speeding up production, and (esp.) amalg. or arrangements by wh. unremun. factories are shut and finan. unstable firms wound up.

**Ratisbon**, Regensburg, cap. of Upper Palatinate, Bavaria, on Riv. Danube; pop., 78,000; 13th-cent. Gothic cathed. and many other mediaeval churches; abbey (cloisters); 14th-cent. town hall; house of Kepler (d. here 1630); manuf. iron and steel, pottery, tobacco. The Romans settled in Celtic *Ratesbona* and renamed it *Castra Regina*; bpric. since 739; meeting-place of the Imperial Diet, 1663-1806.

**Ratsbane**, poison for destroying rats and mice, consisting of arsenic, strychnine, phosphorus, etc., mixed with oatmeal or dripping. "Virus" is a culture of a bacillus which causes a typhoid disease in mice and rats, but they are liable to become immune, while very virulent preparations may cause disease in domestic animals and man.

**Rattan**, species of E. Indian climbing-plant of genus *Calamus*; has slender, jointed,

flexible stem, used in basket- and chair-making, etc. **Ground r.**, stem of a small palm, used for walking-sticks.

**Rattlesnake**, very venomous snake, of N. and S. Amer.; the tail is provided with horny scales that rattle when it moves, and increase in number the longer the snake lives. Chiefly inhabits dry sandy districts; frequently lives in the warrens of the prairie-marmot in N. Amer., preying on the young. Hibernates during winter.



Rattlesnake

**Ratzel**, Friedrich (1844-1904), Ger. anthrop. geographer; *Anthropogeography*; *Political Geography*; *The Earth and Life*.

**Ravel**, Maurice (1875- ), Fr. composer: *Pavane pour une infante défunte*; operas (*L'Heure Espagnole*, etc.); ballets.

**Raven**, large, handsome bird with glossy, blue-black plumage and powerful bill; largest of the *Corvidae*; found all over Europe, parts of Africa, Asia, and Amer.; still found in parts of Eng., generally near the coast; more numerous in the wilder parts of Scotland. R. is solitary in habit and highly intelligent; the male and female are alike in colour and pair for life; feeds on carrion of all kinds, and small birds and mammals.



Raven

**Ravenna**, tn., N. It.; cap. dept. of Ravenna (715 sq.m.; pop., 260,000); pop., 75,000; R.C. abp.; old churches; tombs of Theodoric the Great and of Dante; National Museum, Academy of Art; vine and silk cultivation; agriculture. Cap. of Western Empire, 404-476; and of Ostrogoths kgs. in 5th-6th centuries.

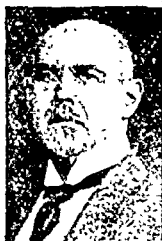
**Ravenscroft**, Thomas (c. 1593-c. 1630), Eng. composer: *The Whole Booke of Psalmes*, 1621; *Deuteromelia*, 1609 (incldg. *Three Blind Mice*).

**Ravenspur**, submerged port on coast of Yorks, where Bolingbroke (Henry IV) landed in 1399 and Edward IV in 1471.

**Rawal Pindi**, tn. and mil. station, Punjab; pop., 101,145; silk manuf. and trade.

**Raw hide**, compressed untanned leather, used for making silent gear-wheels and other objects subjected to great wear. **R. materials**, unworked materials destined to be used in manuf. of finished products. **R. silk**, silk unravelled from cocoon of mulberry silk-moth; also *grège-silk*, prelim. product of reeled silk.

**Rawlinson**, Sir Henry Creswicke (1810-95), Eng. soldier and orientalist; political



Walther Rathenau

agent, Kandahar, 1840; deciphered Pers. cuneiform inscriptions. **R.**

**Henry Seymour**, 1st Bn. Rawlinson of Trent (1864-1925), Brit. gen.; fought at Antwerp, Ypres, Neuve Chapelle, Loos, 1914; com. IV Army 1916 (Somme); II army, 1917; Brit. rep. Supreme War Council, 1918; conducted withdrawal Brit. troops from N. Russia, 1919; c-in-c., India, 1920.



Lord Rawlinson

**Rawtenstall**, munic. bor., N.E. Lancs; pop., 28,600; cotton-mills, woollens, stone quarries.

**Ray**, 1) (phys.) according to modern physics, a ray may be described as a stream of particles in rapid movement. Particles are of three kinds: *photons*, which constitute light rays, and move with constant velocity (see LIGHT); *electrons*, which constitute cathode rays (*q.v.*), and  $\beta$ -rays of radio-active bodies (*q.v.*); *atoms of matter*, which constitute canal rays (*q.v.*) and the  $\alpha$ -rays of radio-active bodies, these being atoms of helium; velocity of these varies widely. All rays have also wave-like properties; in case of light, these were discovered first, and hence light was formerly regarded as a pure wave motion, a ray of light being considered as an abstraction. Discovery of diffraction (*q.v.*) of electrons and canal rays shows that these have also wave-like properties. A *beam* is a bundle of rays of considerable section; a ray is regarded as of negligible area. 2) The skate, a flat, somewhat triangular-bodied elasmobranch fish, allied to sharks and dogfish. Several species, including the thornback, common skate, and cuckoo ray are abundant round British coasts. The largest and most hideous are the so-called *eagle-rays*, *devil-rays* and *sting-rays* of tropical seas, some being up to 40 ft. in circumference. See ELECTRIC RAY.



Ray

**Rayleigh**, John William Strutt, 3rd bn. (1842-1919), Eng. physicist; with Ramsay, (*q.v.*), disc. argon gas; Nobel Prize (Chem.), 1904.

**Raynaud**, Maurice (1834-81), Fr. physician; **R.'s disease**, characterised by numbness and sometimes gangrene of the fingers and toes.



Lord Rayleigh

**Rayon**, kind of artificial silk.

**Razorbill**, N. Atlantic sea-bird, resemb. guillemot, but with larger, furrowed bill and wedge-shaped tail.

**Rb**, (chem.) symbol of rubidium (*q.v.*).

**R.B.A.**, abbr. Royal Society of British Artists.

**Ré, île de**, isl. (33 sq.m.), off the W. coast of Fr.; part of dépt. Charente Inférieure; cap., *St.-Martin-de-Ré*, on N. coast; pop., 10,030.



Reaction

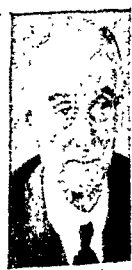
**Reaction**, 1) action in response to stimulus; change resulting from physical or mental influence; reciprocal or reflex action. 2) (Chem.) change in substance produced by contact with another or by exposure to heat, light, etc.; see REAGENTS. 3) (Med.) Physical or mental exhaustion or ebullience prod. by contrast with their opposites. 4) (Politics, etc.) Revulsion of feeling agst. a revolution, or agst. progress in thought, religion, or politics. 5) (Psychol.) Sensation and movement in response to a stimulus or suggestion; mental consequence of extreme emotional experience. **R. turbine**, utilises recoil of a jet of water or steam; see TURBINE.

**Reade**, Cash. (1814-84), Brit. novelist; *Peg Woffington*, 1852; *Never Too Late to Mend*, 1856; *The Cloister and the Hearth*, 1861; also wrote plays, incl. *The Lyons Mail*, 1854.

**Reader**, 1) (acad.), univ. lecturer below professorial rank. 2) (Eccles.) Layman licensed to read service of Ch. of Eng., and assist clergy in church work. 3) (R.C.Ch.) A lector (*q.v.*). 4) Proof-corrector, in newsp. or publishing office. **Publisher's r.**, person employed to report on literary works submitted to publisher.

**Reading**, Daniel Rufus Isaacs, Marquess of (1860- ), Brit. Liberal politic.; Viceroy of India, 1921-26; For. Min., Aug.-Nov., 1931.

**Reading**, 1) Co. tn. of Berks, Eng., on rivs. Thames and Kennet; pop., 97,200; univ. (1926); manuf. biscuits; floriculture. 2) Tn., Pa., U.S.A.; pop., 111,300; ironworks.



Lord Reading

**Reagent**, (chem.) any chemical substance employed to react with another; in analyt. chem., single or mixed chemical substance of known strength, used for determining presence and/or amount of some other chemical.

**Real**, obsolete Span. silver coin, = 1 peseta (*q.v.*), or 2½d.

**Real image**, (optics) image formed by lens or mirror of an object, the rays of light proceeding from any point of same being brought to a focus by lens or mirror, so that if screen be placed at focus, an image of object is produced on it, as in focusing screen of camera. Ant.: VIRTUAL IMAGE.

**Realism**, 1) doctrine that the universal essence of, e.g., a man, a house, has a *real* existence apart from particular men, houses; particular things sharing in this universal essence; see NOMINALISM. 2) Metaphysical view, opposed to idealism, that there exists some reality independent of thought and sensation.

**Real numbers**, (math.) all positive and negative (integral, rational and irrational) numbers, including nought, in contrast with complex numbers.

**Realschule**, secondary school for modern, as opposed to classical, education in Germany.

**Realty**, real estate or real property; property in lands, tenements, and rights and titles of honour appertaining thereto.

**Ream**, (paper meas.) 20 quires, or 480 sheets; 516 sheets of printing paper.

**Reamer**, (tech.) implement for enlarging holes in metal articles to an exact size by scraping action.

**Réaumur**, René (1683-1757), Fr. physicist; invented R. thermometer, 1730.

**Rebecca**, (O.T.) wife of Isaac, mother of Jacob and Esau.

**Rebus**, 1) riddle in which words, or their syllables, mottoes, etc., are pictorially or otherwise represented. 2) (Heraldry) Allusive representation of a name or title, as (in Westminster Abbey) a comb followed by the word "ton" for Abbot Compton.

**Rebus sic stantibus** (Lat.), things being as they are.

**Recalescence**, self-reheating of a mass of steel, cooling from white-heat, on reaching about 690° C., at which point formation of *cementite* (*q.v.*) and passage of iron from  $\gamma$  to  $\alpha$  state causes sufficient heat to be liberated to raise temperature visibly.

**Récamier**, Julie (1777-1849), Fr. leader of literary and political society in Paris.

**Receipt**, written acknowlmt. that money or goods have duly been recd.; should state amount, date of R., name of person or firm from whom recd., and signature of recipient. In Gt. Brit. if amt. recd. exceeds £2, signature must be made over a 2d stamp; unstamped receipts, however, are legally admissible as evidence.

**Receiver**, 1) officer of court to collect the rents or debts pending a suit. A receiver in bankruptcy collects the assets of the bankrupt. 2) (Chem.) vessel, conveniently adapted for experiment, exhausted by air-pump. Usu. a bell-jar of glass standing on a flat plate of metal.

**Receiving**, offence of obtaining, for value, control over stolen goods from person who stole them, with knowledge of fact that they are stolen. **R. order**, (finan.) order by the courts wh. may be made on a *bankruptcy*

*petition* of a creditor agst. a person who has become a bankrupt (*q.v.*).

**Rechabites**, (O.T.) Bedouin tribe in Palestine; abstained from strong drink, and did not live in houses. **Independent Order of R.**, benefit society for total abstainers, fndd. in Eng., 1835, and U.S.A., 1842.

**Recipe**, prescriptn. for makg. some combination. esp. for med. or cookery.

**Reciprocal** (Lat.: mutual), (math.) *R. numbers* multiplied by each other give: one; e.g., 3 and  $\frac{1}{3}$ , 25 and .04.

**Recitando**, (mus.) in the manner of a narration or recitation.

**Recitative**, (mus.) declamation; in operas and oratorios, the "narrative" recitation that precedes or connects the arias, usu. with *piano* accomp. by the orchestra.

**Recklinghausen**, tn., Westphalia, Prussia; pop., 80,000 (1931); iron, textiles, timber, coal mines.

**Recognition**, (dipl.) formal acceptance of foreign country by a new govt. after revolutionary upheavals; acceptance of dipl. credentials.

**Recoil**, (phys.) Newton's law that "Action and reaction are equal and opposite"; body projecting part of itself, e.g., gun, a bullet or charge, is acted upon by equal and opp. force; being heavier, it does not move so fast. *R.* of gun utilised by setting barrel in guides; in machine gun and automatic pistol, motion utilised to eject cartridge, reload, and fire; in big guns stored up and used to re-elevate gun. *R.* of atom throwing off *alpha* particle or electron, important in atomic physics.

**Recollects**: see OBSERVANTINES.

**Reconnaissance** (Fr., milit.), scouting, exploration.

**Reconnoître** (Fr., milit.), to make a prelim. exam. of an area for milit. purposes.

**Record**, 1) best achievement in a sporting event, either for the world (*World record*) or for a country or locality. 2) Gramophone: see GRAMOPHONE.

**Recorder**, barrister (of at least 7 years' standing) acting as paid chairman of Quarter Sessions (*q.v.*) in city or borough. Whole-time appt. in London; not elsewhere.

**Recording instrument**, apparatus marking automatic record of its own readings, e.g., of atmospheric pressure, temperature, on paper disks or rolls kept in motion by clock-work; trace made by pen or pencil attached to pointer of instrument, or by ray of light reflected from mirror on to sensitised paper. Used in factories, gas and electricity generating-stations, aircraft, etc.

**Record Office**, building in London where nat. records kept with expert staff for cataloguing, and assisting students. Anc. records incl. Domesday Book; modern, all papers of govt. depts. unless destroyed under permit from Master of the Rolls.

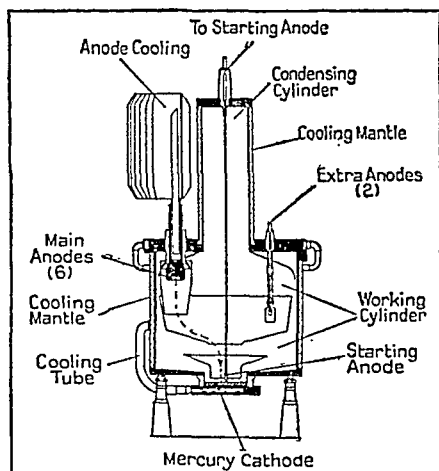
**Recourse**, (finan.) right of holder of a dishonoured bill of exch. to collect from endorser and drawer of bill (except where an endorser has written *without recourse* against his endorsement).

**Rectangle**, (geom.) a parallelogram having 4 right angles. Particular case of R. is the square (R. with 4 equal sides).

**Rectification**, (chem.) purification of a volatile substance by repeated distillation.

**Rectifier**, (elec.) transforms alternating current into direct current; many systems.

**Mercury vapour r.**, evacuated glass container filled with mercury vapour in wh. an arc is formed from the mercury cathode to the carbon anode wh. allows a current to pass in



Rectifier

one direction only. **Electrolytic r.**, electrode of aluminium (tantalum, etc.) paired with another electrode (lead, etc.) in electrolyte (ammonium phosphate, etc.). Allows current to pass freely one way only. **Valve r.**, glowing filament and anode in high vacuum (see VALVE). **Copper oxide r.**, layer of copper oxide betw. metal plates. **Tuned reed r.**, vibrating contact-maker and heater operated magnetically by alternating current.

**Rector** (Lat.: ruler, 1) (Ch. of E.) a parish priest, incumbent of a benefice to whom the great tithes are paid; distinct from a vicar (q.v.). 2) (Educ.) Headmaster of various schools in Scotl. and various R.C. schools in Gt. Brit.; title of heads of Exeter and Lincoln Colls., Oxford; head of German university. **Lord R.**, title of president of a Scottish university.

**Rectum**, portion of intestine opening at the anus. Bleeding from R. is usu. due to hemorrhoids (q.v.) or piles. **Rectal fistula**, **Razori**, (surg.) a small, sharp, curved instrument, used to cut out a sinus, or to cut a guillemot, or to cut a perineum, or to bladder. **wedge-shape**

**Rb**, (chem., r)

**Reculer pour mieux sauter** (Fr.), back in order to leap better; "He who retreats and runs away, lives to fight another day." **Reculver**, vill., N. Kent coast, at Rom. port *Regulbium*.

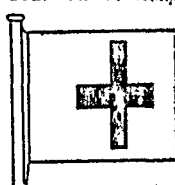
**Recusant**, refusing to conform to authority, esp. in relig.; e.g., R.Cs. who refused to attend services of English Ch. in 16th and 17th centuries.

**Red admiral**, a common butterfly of temperate regions, having red and black wings; larvae feed on stinging nettles. **cardinal**, bird of finch family, with a scarlet crest; found in Southern States of U.S.A., Mexico, Brit. Honduras. **R. Cross**, an international organisation with headquarters in all countries signatory to the Geneva Convention (q.v.), which cares for wounded sick in war-time, and in peacetime does valuable work through its sisters, women's assoc., ambulance corps, etc.; in Turkey, Red Crescent. **Royal R. Cross**, Brit. decoration (instd. 1883) for ladies and nursing sisters for distinguished services to sick and wounded. **R. C. Society**, internat. body, fndd. 1864, as result of Geneva Conference, for care of wounded and sick in time of war. **British R.C. S.**, fndd. 1870, incorpd. 1908, supplies nurses and

voluntary aid detachments (V.A.D.) to fighting forces. **R. deer**, large species of deer, with branching antlers; still wild on Exmoor and in Scotland and N. Europe. **R. Guards**: see GUARDS. **R. heat**, (phys.) temp. at wh. a heated body emits red rays; lowest temp. at wh. visible red light is emitted c. 500° C. **R.-hot poker**, popular name of a liliaceous plant (*Kniphofia*), with tall, leafy spike of flame-coloured flowers. **R. lead**, lead oxide ( $Pb_3O_4$ ): see LEAD. **R. ore** (or *Crocoite*), a natural red, translucent chromate of lead. **R.-legged partridge** (or *French partridge*), bird with long wings and compact body, and red legs and bill. Found over Europe and on Mediterranean islands; introduced into Eng. c. 16th century. **R. mullet**, brilliantly coloured, marine, bony fish, with a pair of barbels at the lower jaw, which distinguishes the family from other *Perciforme* fishes. Widely distributed in European and tropical seas. **R.**



Red Cross Society



Red Cross Flag



Red Cross Medal



1, Brit. song-bird, *Acanthis linaria*, closely related to the linnet (*q.v.*), with reddish-brown plumage and crimson crown. **R. Ring Hood**, legend. figure from children's fairy tales by the bros. Grimm. **R. River**, tribut. of Mississippi, 1,275 m., flows through Texas and Louisiana. 2) R. R. of the north, 5 m., flows through Minnesota to Lake Winnipeg, Canada. **R. Russia**, before World War, division of Poland (Galicia, Podolia, Volhynia, and parts of Moldavia and Lublin), inhabited by Ruthenians (little Russians and Red Russians). **R. sandstone**:



**SANDSTONE**. **R. Sea**, a dividing Africa and Arabia and connecting Gulf of Aden (Indian Ocean) with Mediterranean; extends from Strait of Bab el Mandeb in S.E. to Gulf of Suez and Canal in N.W.; length, 1,456 m.; breadth, 10-250 m.; max. depth, 7,875 feet. Numerous coral reefs and isls. make navign. dangerous. Heat intense. Important trade route for steamers betw. Europe, S. and E. Asia, and Australasia. **R.-short**, (tech.) brittleness of red-hot iron owing to presence of sulfur. **R. shift**, (phys.) in Einstein's Relativity Theory, displacement of spectrum lines of chem. elements towards the red under influence of gravitational field. **R. silver**, designation of two ores containing large quantities of silver; **dark r.s. ore**, antimony sulphide, or pyrrargyrite; **light r.s. ore**, sulphide of arsenic, or proustite. **R. snow**, snow in high mountains and arctic regions, 1. appears red owing to presence of masses small algae (*q.v.*).

**Redcar**, munic. bor. and seaside resort, N. Riding, Yorks, Eng.; pop., 20,200.

**Redditch**, urb. dist., E. Worcs; pop., 1,300; manuf. needles, fish-hooks, motors.

**Redemption**, 1) (relig.) (Lat. "buying back") restoration by Christ of mankind to communion with God from bondage of sin; doctrine that Christ took upon Himself, and by His death made to God vicarious satisfaction for the sins of the whole world. 2) (Stk. Exch.) repayment of a loan; bonds are usually redeemed at fixed dates, or during a fixed period; they may be drawn (see DRAWINGS) for R., e.g., British 4% Victory Bonds. **Redemptorists**, R.C. relig. order founded by Alfonso dei Liguori, 1732, for preaching to, and teaching, the poor and outcast.

**Redhill**, tn., Surrey, adjoining and included in Reigate (*q.v.*).

**Rediscounting**, (finan.) transference of

bills purchased (discounted). **Discount Houses** rediscount bills bght. by them at Bk. of Eng. when funds borrowable from Jt.-Stk. Bks. are scarce. In U.S.A., R. with Fed. Reserve Bks. is reg. procedure and not confined to occas. when borrowings from Jt.-Stk. Bks. have been called in. See DISCOUNT. **Rediscount rate** (or **Bank Rate**), ann. interest at wh. centr. bank will R. bills; influences discount market.

**Redmond**, John Edw. (1856-1918), Irish politician; M.P., 1881-1918; champion of Home Rule; accredited leader of Parnellites, 1891; chmn. of Nationalist party, 1900; took part in Buckingham Palace Conference, July, 1914; declined seat in Asquith's Coalition ministry, 1915; urged Irish support of Engl. in World War; opposed Sinn Fein.

**Redolet lucernam** (Lat.), it smells of the lamp; phrase applied to literary or other work which shows evidence of laboured workmanship.

**Redondilla**, early verse form in wh. 1st and 4th, and 2nd and 3rd, lines of stanza rhymed; later, in Span., applied to verses of 6 or 8 sylls. with rhyme, or assonance only.

**Redoubt** (Fr.), enclosed strong point in a fortified zone.

**Redruth**, urb. dist. and mkt. tn., Cornwall; pop., 9,900; tin and copper mines.

**Redshank**, Old World shore bird, *Totanus calidris*, allied to the plovers (*q.v.*), with brownish upper and white lower parts and bright orange-coloured legs and feet. **Redskin**, Amer. Indian. **Redstart**, small Passerine bird; summer migrant. Wide European range from N. Scandinavia and Gt. Brit. to Mediterranean; winters in Africa and Persia. Bright, ruddy, and greyish black plumage; white forehead; female brownish grey.

**Reducing agent**, (chem.) substance that readily takes up oxygen, chlorine, and other electro-negative elements. Hydrogen and carbon are powerful R.a.'s at high temps. and are used to reduce oxides and sulphides of metals. In solution, ferrous salts, sulphites, pyrogallol, and generally all photographic developers are reducing agents. **R. valve**, (tech.) applied to a source of high-pressure gas or liquid, delivers same at a constant lower pressure.

**Redwing**, species of thrush (*q.v.*), a winter visitant of the Brit. Isles; under-wings bright orange-red; conspicuous white streak above the eyes.

**Redwood**, general term for various trees having reddish timber and yielding a red dye; esp. the Californian giant *Sequoia* or *Welling-tonia*.

**Reed**, 1) general name for grass-like plants growing in marshy places. 2) (Mus.) Part of many mus. instr. wh. produces the note (e.g., organ, harmonium, clarinet, oboe,

bassoon). A tongue of cane or metal over a slot periodically interrupts stream of air; no. of interruptions gives pitch of note. **R.-buck** (*Waterbuck*), Afr. antelope, characterised by long sub-lyrate ringed horns of the males. **R.-mace**, cat's-tail, *Typha Latifolia*, aquatic plant, grows 8 ft. high, with club-like flower spike. Sometimes wrongly called bulrush. **R.-warblers**, small passerine birds of the family *Sylviidae*, widely distributed throughout Old World. Many familiar summer migrants to England, e.g., nightingale, willow-warbler, blackcap, reed marsh, sedge-, and grasshopper-warblers. All expert nest-builders and sweet singers.

**Reef**, (naut.) to reduce surface of sail by tying up lower portion.

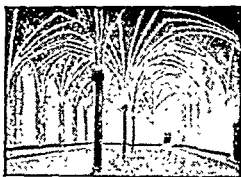
**Reel**, Scot. nat. dance for 2 or more couples (4-some, 6-some, 8-some), mus. prov. by bagpipes or fiddle.

**Reeve**, 1) (ornith.) female of ruff (*q.v.*). 2) Early Eng. (and modern Canada), chief magistrate of a town.

**Reeves**, John Sims (1818-1900), Eng. tenor singer; minor parts, Drury Lane, 1841-43; début in Ital. opera, as Edgardo in *Lucia*, Scala, Milan, 1847; foremost Eng. singer of period: apprd. in opera, oratorios, etc.

**Re-examination**, (leg.) third examination of a witness, by counsel for own side. (Examination, cross-ex. by opposing counsel, then re-ex.).

**Refectory**, (archit.) dining room, esp. of a monastery or college.



Refectory

**Referee**, one appointed to supervise a sport or game and see that the rules are observed. (See also UMPIRE). **R.s' court**, division of Eng. High Crt. to wh. mercantile cases involving complicated transactions and accounts are referred.

**Referendum**, popular vote on proposed law. Constitu. requirement in some countries for certain laws, or may be spec. ordered by legis. if doubtful of electoral support.

**Refine**, (tech.) to remove impurities from raw materials. *Metals* by electrolysis, e.g., copper, lead, zinc; *sugar* by treatment with lime, animal charcoal, etc.

**Reflation**: see INFLATION.

**Reflection**, (phys.) throwing back of waves of light and sound by surfaces of bodies. *Law of R.*, of light: angle of incidence equals angle of reflection.

**Reflector**, 1) any mirror set behind light source to throw light in desired direction. 2) Astron. telescope with parabolic mirror. 3) Parabolic mirror in searchlight for collecting light.

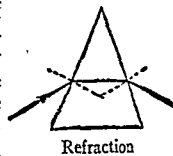
**Reflex**, movement following a sensory

stimulus without participation of the will and resulting from nervous pre-arrangement, e.g., adjustment of the eye to the distance of an object.

**Reformation**, (relig.) movement at beginning of 16th cent., developed from seed sown in 14th cent. by *Wycliffe* and *Huss*, directed to purification of Western Christianity from alleged corruptions of R.C. Ch.; particularly sought to replace authority of the Ch. and tradition by exclusive appeal to Scriptures; initiated by Luther's denunciation of sale of indulgences, 1517; spread rapidly in Ger. and throughout N. and Centr. Europe; produced numerous reformed or *Protestant* (*q.v.*) sects and nat. churches (e.g., Calvinists, Huguenots, Zwinglians); reached Eng. c. 1530, when Henry VIII assumed title "Supreme Head of Ch. of Eng."; extension checked after Council of Trent, 1563, by R.C. revival known as *Counter-Reformation* (*q.v.*).

**Reformatory Schools**, institutions for industrial training of juveniles (under 16 yrs.), convicted of criminal offences; limit of detention, age of nineteen. First *Ref. Sch. Act*, 1854.

**Refraction**, (phys.) of light (also sound and electro-magnetic waves); change in direction of propagation by passage from one medium to another, or in same medium betw. parts of diff. density; e.g., light rays passing from air to glass or water are not bent unless they strike surface of latter obliquely; they are then bent away from it. *Law of r.*, angles of incidence and reflection are measured betw. direction of ray and the *perpendicular* to surface; the law says that ratio of the sines of these angles (*the refractive index*) is constant for any 2 media but diff. for light of diff. colours, red being the most *refrangible*, violet least. **Effects of r. of light**, light from heavenly bodies is bent in passing thr. air owing to varying density of same, hence apparent displacement; sun visible after it has set. Lenses and prisms depend upon refraction. Brilliance of precious stones and paste substitutes depends upon high *refractive index*.



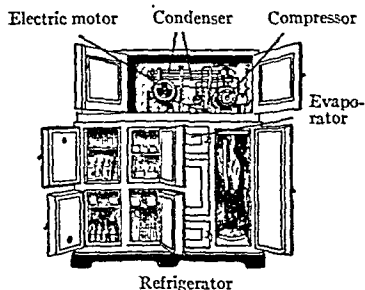
Refraction

**Refractor**, astron. telescope with lens objective glass, forming image by refraction (*q.v.*).

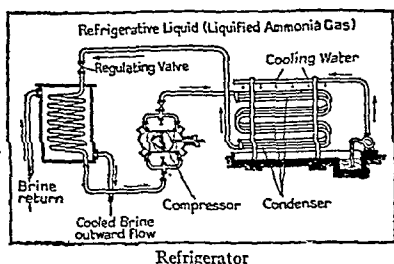
**Refrain**, burden or chorus recurring at end of each division of poem.

**Refrigerator**, machine for lowering temperature. Two principal systems depending: 1) on absorption of heat by compressed gas expanding with performance of mechanical work, 2) on heat absorbed by evaporation of liquid, usually sulphur dioxide or ammonia gas under pressure. For large installations,

brine or strong calcium chloride is cooled and circulated, e.g., in cold-storage chambers,



breweries, etc. Recent progress consists in using exact temperature and air composition



(moisture, carbonic acid) most suitable for preservation of food (fruit, meat), flowers, etc., by cold storage.

**Refuge, Cities of**, (O.T.), 6 cities, 3 E. and 3 W. of Jordan, set aside for protection of slain as distinct from murderers; incld. Ramoth-Gilead, Shechem, and Hebron.

**Refuse**, waste matter, garbage. **R. disposal** effected by town authorities; usu. after prelim. screening or sorting, R. may be dumped at sea (cheap, but difficult in bad weather); pulverised and sold as fertilizer; tipped (cheap, but very insanitary owing to breeding of flies and rats); incinerated in *destructor*, which may be fitted with steam boilers. Slag (q.v.) may be used as fertilizer or for making building blocks. Tin cans may be stripped of metallic tin by chlorine gas; they are usually baled in hydraulic presses and sold as "scrap."

**Regalia**, collective name for symbols of royalty (crowns, sceptres, swords, etc.).

**Regatta**, organised series of sporting events for rowing- and sailing-boats, canoes, etc.

**Regelation**, re-fusing together of bodies of snow or ice having wet surfaces, although the temperature is not below freezing-point; caused by pressure; a phenomenon of glacier movements, exemplified also in the formation of a snow-ball.

**Regency**, style of French art in early 18th cent., during minority of Louis XV.

**Regeneration**, (biol.) renewed formation of lost limbs or parts, in plants and (esp. lower) animals; also in man, e.g., formation of destroyed tissues, re-growth of nails, hair.

**Regenerator furnace** (Siemens), saves heat of spent gases from gas-fired furnace, by passing them thr. one of two regenerators, brick chambers filled with network of bricks, wh. take up heat of gases. When hot, gases are switched over to 2nd regenerator, while unburnt gas and air are passed thr. 1st regenerator, taking up heat stored there.

**Regensburg**: see RATISBON.

**Regent**, governor in place of sovereign prevented from ruling by minority or mental or physical disability. **R. Street**, one of the princ. streets in W. district of London; first laid out (1813) as a route for the Prince Regent betw. Carlton House and Regent's Park. Originally designed by John Nash with a semi-circular quadrant and colonnade. Since 1920 the street has been entirely modernised and rebuilt. **R.'s Park**, in Marylebone, N.W. London, on site of anc. royal hunting-ground. Laid out by John Nash for the Prince Regent (aftwds. George IV) and opened to the public 1838. Roughly circular, covering c. 412 ac. with road encircling outer edge, known as Outer Circle. Grounds incld. park-land, a boating lake, flower beds, tennis-courts, etc.; also, Bedford Coll., for women, attached to London Univ. (q.v.) and moved from Baker St., 1913; St. Dunstan's Lodge, built (1830) for Marq. of Hertford and used as St. Dunstan's Hostel (q.v.) until 1923, when institu. moved to St. John's Lodge, also in Regent's Park. In the N.E. corner are the Zoological Gardens (q.v.).

**Reger**, Max (1873-1916), composer of polyphonic mus. for organ, orchestra, chamber, and piano; songs, choral works.

**Reggio di Calabria**, tn. and dist. cap., on Str. of Messina, S. It.; pop., 130,000; R.C. abpric.; vine and olive cultivation; silk trade. Partially destroyed by earthquake in 1908.

**Reggio nell' Emilia**, tn. and dist. cap., N. It., on Riv. Crostolo (rt. trib. of the Po); pop., 90,000; locomotive works.

**Regillus, Lake**, in Latium, It. (exact site undetermined), scene of battle between Romans and Etruscans (c. 496 B.C.) which won for former hegemony of Latium.

**Regiment**, body of troops: cavalry R., tactical unit about 600 strong, commd. by a Lt.-col. Infantry R., 2 or more battalions, commd. by a col.; displaced as tactical unit in Brit. Army by the brigade.

**Regina**, cap. of Saskatchewan, Canada; pop., 53,050; indust. centre; rly. junc.; W. hqrs. Roy. Can. Mounted Police.

**Register**, 1) alphabetical index. 2) (Mus.) Stop, row of organ-pipes having the same tone colour; organ has many Rs.; their use ("draw stops") depends on the artistic judgment of the performer; also, the compass of an instr. or voice.

**Registration**, 1) Entry or record, e.g., of births, marriages, deaths, etc. 2) (Post.) Offic. record of the dispatch of a packet, receipt being given to sender, and obt'd. from addressee. Minimum fee of 3d ensures compenstn. for loss up to £5; special fees charged for insur. of articles of greater value. **R. Acts**, Acts of Parl. dating from 1836 establg. compulsory R. of births, deaths, and marriages in Gt. Brit., under control of Registrar-General. **R. of business names**, requirement in Eng. law (Act of 1916), providing for registration of business names of all firms not appearing under the true name or names of its individual members.

**Regium donum**, or royal gift, former annual grant, from reign of Charles II, from public funds, orig. to Presbyt. clergy in Ireland, later extended to certain Noncon. ministers in Gt. Brit. also; discontinued by repealing Acts, 1869.

**Regius professor**: see PROFESSOR.

**Regnault**, Henri Victor (1810-98), Fr. physicist and chemist.

**Regula fidei** (Lat.), rule of faith, R.C. doctrine that relig. faith must be grounded upon the Holy Scriptures and the traditional teaching of the Church.

**Regular army**, standing army. **R. system**: see CRYSTALS.

**Regulus**, 1) Marcus Atilius (d. c. 250 B.C.), Rom. gen. in 1st Punic War. 2) 1st. magn. star,  $\alpha$  in constell. Leo; see PL., ASTRONOMY, N.C.H., D.

**Rehoboam**, (O.T.) son and succr. of Solomon; Kg. of Judah (975-957 B.C.); at his accession 10 northern tribes seceded to form kgdm. of Israel under Jeroboam (q.v.).

**Reich**, (Ger., *Empire, Realm*), the Ger. Confed. of States. **Rs. mark**: see MARK. **President of R.**, since 1919 head of Ger. State, elected by whole pop. for 7 years; any Ger. eligible after his 35th year. First President, *Ebert*, 1919-25; 2nd, *von Hindenburg*, 1925, re-elected 1932. **R.sbank**, Centr. B. of Ger., fndd., 1875, as centr. issuing bank; reorgnsd. 1924, according to Dawes Plan (q.v.); foreign influence removed by Young Plan (q.v.), 1930; Berlin and 455 branches. Excl. right to issue *R.B. notes*, of wh. 40% must be backed by gold and foreign exch.; declares bank rate; obliged to discount 3 months' treasury bills for govt. up to 400,000,000 R.M. **R.sbanner** (Black-Red-Gold), Ger. polit. organistn. inaug. 1924 to combat rising Nazis and Monarchists crushed by Nazi regime, 1933. **R.sland**, designatn. of Alsace-Lorraine (q.v.) when in

possn. of Germany, 1871-1918. **R.stadt**, Duke of: see NAPOLEON II. **R.stag**, 1st. of Ger. Emp. since 1871 (precursor: *Frank German Diet*, 1867); elected by general, equal, direct, and secret vote, orig. for 3 yrs.; since 1888 for 5, since 1919 by proportional vote for 4 years. No. of members up to 1918, 397; now varying accdg. to no. of voters. **President of the R.stag**, elec. by R. to direct its meetings; controls management, police supervision, and expend. of houses of parliament. **R.swehr** (Ger., *State Defence*). The Ger. Army (*Reichswehr*) and Navy. Army reduced to 100,000, Navy to 15,000, by Treaty of Versailles; 12 years' service; no conscription, no general staff, no heavy artillery or tanks.

**Reid, Thomas** (1710-96), Brit. philos.; fndd. "Scottish School" (q.v.); *Essay on the Intellectual Powers of Man*, 1785; *Essay on the Active Powers of the Human Mind*, 1788. **R., Thos. Mayne** (1818-83), Brit. writer of tales for boys; traded on Red R. and Missouri, 1838-43; capt. in U.S. Army agnst. Mexico, 1846-47; *Rifle Rangers*, 1850; *Scalp Hunters*, 1851; *White Chief*, 1854. **R., Whitelaw** (1837-1912), Amer. journalist and diplomat; edit. *New York Tribune*; ambass. to Gt. Britain, 1905-12.

**Reigate**, mun. bor. and mkt. tn., Surrey, Eng.; pop. (incl. adjoining Redhill), 30,600.

**Reims**: see RHEIMS.

**Reincarnation**, entrance of the soul, after death, into another human or animal body; belief common to Hindu religion and its derivatives (Buddhism, theosophy); taught in Greece by Pythagoras (q.v.) and became widespread among later Greeks and Romans; also commonly found in pagan cults; cf. METEMPSYCHOSIS.

**Reindeer**, large deer of N. regions of Old World; both sexes bear large branching antlers; heavily built, with short limbs and main hoofs widely separable; domesticated in large herds for draught, food, etc. N. American variety is the so-called caribou.



Reindeer

**Reinhardt, Max** (1873- ), Ger. theatrical manager; fndd. Kleines Theater, Berlin, 1902; director of Deutsches Theater (Berlin), 1905-20; in Engl. prod. *The Miracle*, London, 1911-12; *Oedipus Rex*, 1912; leader in new and spectacular school of dramatic production.

**Re-insurance**, passing on of responsibility (or part of same) of an insur. contract by orig. insurer to another party in order to minimise risk to one insurer by spreading liability amongst several.

*Rekha - A symbol of inspiration*

**Réjane**, pseudon. of *Charlotte Réju* (1857-1920), Fr. actress; opened Théâtre Réjane, Paris, 1906.

**Rejuvenation**, renewal of youth, arrest of senility. In modern therapeutics, stimulation of functional cells of body by injection of gland secretion taken from young human beings or apes; theory (practice still in experimental stage) propounded by Brown-Sequard, first acted upon by Voronoff (*q.v.*).

**Relapsing fever**, *Famine-fever*, acute infectious disease caused by spirochaetes, characterised by bouts of fever which usually last 5 or 6 days, disappear for the same time, and recur.

**Relativity**, 1) Theory of ("Special" Theory, 1905; general, 1915; Einstein). Based upon 2 experimental facts: *i*) absolute motion thr. space cannot be detected or measured; *ii*) Velocity of light is same whatever velocity of source relatively to observer. Some consequences: Mass varies with velocity—proved experimentally. Light subject to gravity *a*) deflected in passing through field; star image displaced owing to attraction of sun; *b*) spectrum lines displaced towards red (*see* RED SHIFT) in strong gravitational field. Proof doubtful. Time varies with velocity, likewise dimensions. Ultimate picture of universe is a structure in space of 5 dimensions, time being one of these: matter causes a curvature, wh. is the gravitational field: thus time and space are equivalent (Lorentz-Minkowski). 2) (Philos.) View that: *a*) It is only possible to apprehend the relation betw., not the entity of, things. *b*) True and false, good and bad are relative ideas, *i.e.*, dependent on circumstances, and that the intensity of a sensation is relative to the degree to wh. the mind is already occupied by that kind of sensation.

**Relaxation exercise**, one in which all muscles, etc., are relaxed; esp. useful in nervous disorders.

**Relay**, 1) a place for changing to fresh riding or carriage horses. 2) (Electro-technics) Device for causing a feeble current to switch or otherwise control a more powerful current, *e.g.*, feeble current received in cable or wireless telegr. or teleph. operates R. (triode valve, electro-magnetic, etc.) to feed strong current to loud-speaker, or retransmitter. **R. race**, usu. 1 m., betw. teams, usu. of 4, each man running  $\frac{1}{4}$  m. Olmp. Games distances: 800 and 1,600 metres.

**Relic**, an object preserved and treasured as a memento of the past. In religion, portion of body of, or article associated with, a saint, preserved as object of relig. veneration and credited with miraculous properties.

**Relief**, 1) in sculpture and metal-work, the modelling of figures projecting slightly (bas-relief) or prominently (high relief) from a flat ground. In painting, the illusion of re-

lief is got by gradation of tones. **R.-printing**, method of reproduction in which the printing surface is in relief. *See* LINE, HALF-TONES; THREE-COLOUR PROCESS. 2) (Milit.) Troop taking over duties from others. **R. work**, work provided by local authorities (under *Unemployed Workmen Act*, 1905) for relief of unemployment.

**Religion**, 1) belief in a superhuman power or powers wh. govern the course of nature and human life, and are entitled to some form of worship. 2) Specif. system of such belief; doctrines concerning relations of man to God; developed from animism through polytheism to monotheism. 3) (R.C.) The monastic life. *Natural R.* considers God as manifested in nature; *revealed R.*, God as supernaturally manifesting Himself to man directly or through inspired intermediaries, as in Judaism, Christianity, Mohammedanism.

The religions of the world are distributed among the population in the following percentages:

Religion	Percentage of World Population
<i>Christians</i>	
Roman Catholics .....	17.91
Orthodox Catholics .....	7.78
Protestants .....	11.18
Total Christians .....	36.9
<i>Non-Christians</i>	
Jews .....	.9
Mohammedans .....	11.3
Buddhists .....	8.2
Hindus .....	12.43
Confucians and Taoists .....	18.9
Shintoists .....	1.35
Animists .....	7.3
Unclassified .....	2.75
Total Non-Christians .....	63.1

Of the Christian pop. of the world, 49% are claimed by the R.C.Ch., 21% by the Orthodox Ch., and 30% by the Protestant Churches.

**Reliquary**, receptacle to hold relics (*q.v.*) of saints, usually ornamented with carving, jewellery, or enamel.

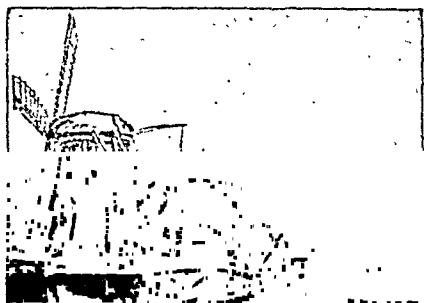
**Remand**, (leg.) sending back into custody or on bail accused person, to allow of further inquiry.

**Remarque**, Erich Maria (1898- ), Ger. author: *All Quiet on the Western Front*; excluded from Germany by Nazis, 1933.

**Rembrandt**, Harmensz van Rijn (1606-69), Dut. painter and etcher; m. Saskia van Uylenborch (portrait in Cassel; portrait of himself with Saskia, Dresden); portraits—*Jan Six* (1654)—group pictures, *Night Watch* (1642), etchings *Flight into Egypt*, *Landscape with the Three Trees*, etc.; etc.

**Remigius**, St. (c. 435-c. 523), Abp. of Rheims; baptised Clovis, Kg. of the Franks, 496.

**Remonstrance, The Great**, (Eng. hist.), 1691, statement of grievances presented by Parliament to Charles I.



Dutch Windmill, after Rembrandt

**Remonstrants:** see ARMINIANISM.

**Remote control**, (mechan.) control of machinery from a distance, as when valves, switches, gear-changes, etc., are operated by magnets energised by currents sent along wires or by wireless from a distance. Highest development is control of crewless ship, airship, or airplane by wireless.

**Remscheid**, tn., Düsseldorf, Ger.; pop., 102,500 (1921); cutlery centre (the German Sheffield).

**Remus**, with Romulus (q.v.), legend. fndr. of Rome.

**Renaissance**, revival of culture, starting in It. in 15th cent. and gradually penetrating all Eur. countries; greatly influenced by rediscovery of literature and art of classical antiquity; characterised in literature by spirit of free inquiry and criticism (Humanism); in architecture by return to classic orders; in sculpture and painting by study of human form and introduction of secular, esp. pagan, themes. Culminated in 16th cent. (Leonardo, Michelangelo, Raphael); thence degenerated into Baroque (q.v.).

**Renan**, Ernest (1823-92), Fr. orientalist; *Life of Jesus*.

**Renfrewshire**, co., S.W. Scot., on Firth of Clyde; area, 245 sq.m.; pop., 288,600; surface flat in E., moorlands in S. and W.; agric., dairy-farming, cattle; coal and iron, engineering, shipb.; ports include Greenock; largest tn., Paisley. **Renfrew**, county tn. and royal burgh; pop., 15,000. Pr. of Wales is Bn. Renfrew.

**Reni**, Guido (1575-1642), Ital. painter of Bolognese School; *Pietà*; *Mary Magdalene*; *Phoebus and the Hours Preceded by Aurora*.

**Rennes**, cap. dépt. Ille-et-Vilaine, Brittany, Fr.; pop., 83,500; abpric., univ., iron-foundry, textiles. Former cap. of Brittany.

**Rennet**, substance prepared from inner membrane of calf's stomach; contains *rennin*, a milk-curdling ferment which decomposes casein.

**Rennie**, John (1761-1821), Brit. civil

engineer and architect; drained marsh tracts on Solway Firth and in Eastern counties; constructed Waterloo, Southwark, and London bridges; concerned in building of harbours and docks at Grimsby, Hull, H.A. head, etc., and the East India and London docks on the Thames.

**Renoir**, Pierre Aug. (1841-1919), Fr. Impressionist painter: *The Box*; *Bathers*; *La Pensée*.

**Rent**, in economics, the income derived from land or any instrument of production by use or by requiring payment from another for its use, without relation to its orig. cost; in law, a periodical payment made by tenant to landlord for use of land or buildings. Rent not paid at stipulated time may be recovered without judicial process by distress, or seizure by landlord of tenant's goods. **Ground r.**, rent payable for use of land separately from buildings upon it. **Pepper-corn r.**, a nominal rent for premises held on long lease. **R. Restriction Acts**, Acts of Parl. from 1911 onward, restrictg. inc. of rent and mortgage int. for smaller residential properties. Similar enactments in most Eur. countries.

**Rentenmark**, first stabilised Ger. money after inflation (1923); now replaced in large measure by *Reichsmark*; all R. banknotes must be withdrawn from circulation by 1934.

**Rentes** (Fr.) govt. loans; interest-bearing stocks; income. **Rentier** (Fr.), person living on his income.

**Rep**, thick, corded, ribbed matl. of silk or wool or a mixture of both, used for curtains and upholstery.

**Reparations**, gen. term for liabilities placed by allied and assoc. Powers on Centr. Powers deftd. in World War. Acc. to the fundamental idea underlying it, these are in reparation for damage caused by Centr. Powers during war to civil pop. First determined at the Treaty of Versailles (q.v.). *London Conference*, 1921: 132 milliard marks to be paid in 37 years. *Dawes Plan*, 1924: re-arrangement of amount of yearly payments and method of levying, but with no decision as to total amt. payable. *Young Plan*, 1930: yearly payments reduced from those settled in Dawes Plan; payments spread over 59 years. (Capitalised present debt at c. 60 milliard). With int. and compound int., 114,5 milliard marks has to be paid by Ger. to allied Powers betw. 1930 and 1988. Betw. Sept., 1924, and Hoover Moratorium in summer of 1931, c. 8.7 milliard RM was paid. At Lausanne Conf. (1932) a total payment of £150,000,000 in bonds was agreed upon. **R. Commission**, inter-allied commission (1919-25) set up by Treaty of Ver-



Renoir

saïles to assess amt. of damages inflicted by Centr. Powers in World War, and to put provisions of treaty in force. See VERSAILLES.

**Repeat business**, business in wh. one party has right to deliver or take delivery of a fixed quant., or multiples of same at diff. dates at price agreed upon for first transaction.

**Repertoire**, stock of stage plays used by trained theatrical company; list of an actor's rôles.

**Replacement value insurance**, through wh., in the event of an accident, full price of replacing the destroyed property is repaid, rather than the book value of insured article; sometimes called *Reinstatement Insurance*.

**Répondez, s'il vous plaît** (Fr.), answer, if you please, abbr. R.S.V.P.; formula placed at end of letters, or cards, of invitation.

**Répoussé**, metal-work with figures or patterns in relief (*q.v.*), fashioned by hammering back of metal with a punch or hammer, the forms thus obtained being finished by chasing.

**Representation of the People Acts**: Series of Acts of Parl. conferring electoral franchise in Gt. Britain. Most important: 1832, '67, 1918.

**Representative**, member (esp. when popularly elected) of governing or legis. body. Specific title in U.S.A. for members of lower House of Congress. **R. Democracy** (*indirect D.*), govt. by reps. elected by body comprising large proportion of population. Governg. body small compared to no. of voters, but distinguished from oligarchy (*q.v.*) by responsibility to electorate. See IMMEDIATE DEMOCRACY. **R. government**, form of constitution in wh. legis. or governing body is selected by governed. Practised in some anc. Gr. States, but developed mainly in 19th century.

**Repression**, in *psycho-analysis*, autom. subduing of an instinct or inhibition of certain mental processes from conscious fulfilment; unconscious or subconscious resistance to certain normal stimuli.

**Reprisals**, coercive measures taken by one State agst. another in retribution for a breach of internat. law.

**Reprise**, (mus.) repetition.

**Reptiles**, those cold-blooded vertebrate animals constituting the great class *Reptilia* which include the crocodile, alligator, tortoise, turtle, lizard, chameleon, snake, and tuatara. Geologically reptiles are of greater antiquity than either birds or mammals, their earliest fossil remains having been found in Permian strata. See GEOLOGICAL FORMATIONS.

**Repton School**, Eng. public sch. for boys; fndd., near Derby, 1557; 425 boys.

**Republic**, State without hered. head in

wh. supreme power vests in group of pers., sometimes small (as med. Venice), sometimes whole population.

**Republican Calendar, French**, the re-division of the year legalised in Fr. after Revolutn., Oct., 1793; abolished Dec., 1805. Year consisted of 12 mnths. of 30 days, with 5 additional days at end of last month. Each month had 3 decades with a day of rest on every 10th day. The months were re-named: Vendémiaire; Brumaire; Frimaire; Nivôse; Pluviôse; Ventôse; Germinal; Floréal; Prairial; Messidor; Thermidor; Fructidor, with "Sansculottides" (the additional days). **R. Guards**: see GUARDS. **R. party**, in U.S.A., party formed orig. to favour centralisation of functions in federal govt., and traditionally assocd. with high tariffs and manufact. interest.

**Requiem** (Lat.), rest: in the R.C.Ch., a Mass celebrated for the soul of one or more persons departed; named after 1st word of Introit: *Requiem æternam dona eis, Domine* "Grant unto them, Lord, eternal rest"; music specially composed for such Mass.

**Requiescat in pace** (Lat.), abbr. R.I.P., "may he rest in peace"; final words in Cath. Requiem mass (*q.v.*); frequently placed on memorial cards and tombstones.

**Requisition**, formal demand made by one State or govt. upon another for surrender of fugitive from justice; quota of supplies or necessities in war, exacted without payment.

**Reredos**, screen at back of altar in a ch., usually ornamented with carving.

**Res angusta domi** (Lat.), narrow resources at home; poverty.

**Rescript**, official decree, communication.

**Resection**, (med.) operative removal of a portion of tissue.

**Reservation**, 1) (polit.) tract of public land reserved for some spec. use, as for natives in N. Amer., S. Afr., etc. 2) (Law) Clause in instrument by wh. something is reserved out of thing granted; proviso. 3) (Relig.) Practice of preserving one or both consecrated elements, but esp. the *Host* (*q.v.*), for use in communicating the sick or absent, or for devotional purposes.

**Reserves**, (finan.) of a co., bank, etc., proportion of profits set aside to be used for special contingencies, amt. of wh. is usu. determined by articles of the co., or by resolution at a gen. meeting; known as *Voluntary R. Fund*, and shown in publ. statement of accts. *Hidden R.* are those wh. do not appear on balance sheet (*i.e.*, deliberate low valuation of assets).

**Resht**, cap. prov. of Gilan, Persia; pop., 180,000; trading centre; silk, rice, cotton.

**Resident** in India, Brit. rep. at capital of State not under Brit. rule, acting as adviser to native government.

**Residual magnetism**, magnetism remaining in magnetisable iron after removal of magnetising force (other magnet, current). See also HYSTERESIS.

**Residuary legatee**, person designated in a will to receive unallotted residue of estate.

**Resins**, amorphous, inflamm. veg. products, insoluble in water, mostly soluble in alcohol, ether, and volatile oils; freq. obt'd. by exudation from trees; most common, colophony (*rosin*), residue from crude turpentine, used in polishes, soaps, varnishes, etc.; *copal*, also found as fossil, used for high grades of varnish; *dragons' blood*, from rattan palm, used as colouring agent; *amber*, a fossil resin; *guaiacum*, used in medicine for gout, rheumatism, and syphilis; *jalap* and *podophyllin*, medicinal resins (purgatives); *gum-lac* (which, when melted and allowed to set in thin sheets, is *shellac*), used for making spirit varnishes and French polish. **Synthetic r.**, organic chem. compound, product of condensation of *phenol* (*q.v.*) and its derivatives with formaldehyde, e.g., bakelite. Used for insulators, electr. switches and switch-plates and other articles of daily use, which are formed hot in moulds under great pressure. **Resinates**, of the metals, resin soaps, used to make coloured transparent coatings on glass and leather.

**Resistance**, (phys.) forces tending to arrest movement, e.g., inertia, friction, elect. R. of conductors. In electr., R. of a current depends on substance, diam., and length of conductor; measured in ohms ( $\Omega$ ); a tension of 1 volt acting thr. a R. of 1 ohm creates a current of 1 ampère. (See OHM'S LAW). **Electric r.**, varies directly as length and inversely as cross-section; each material has specific R. = R. of 1 cm. cube. Technical R. made of nichrom, platinoid, manganin, constantan, and other alloys, also of carbon and carbonised materials.

**Res judicata** (Lat.), case or point upon which a legal decision has already been arrived at.

**Resolution**, 1) decision of court or vote of assembly present at meetg. 2) (Chem.) Act of separatg. compound into its elements or parts.

**Resonance**, (phys.) occurs when any system possessing a tendency to oscillate at a certain frequency (e.g., pendulum, boat floating on water, string of piano, elec. wave circuit) receives impulses of same or near frequency; e.g., car on springs, boat in water, oscillate violently if subjected to timed pushes or waves in road or on water. R. dangerous in machines, suspension bridges; fundamental in all mus. instr., troublesome in concert halls; basis of all wireless reception (tuning of receiver so as to resonate to waves).

**Resorcin**, **resorcinol**, *m*-dihydroxy-

benzene ( $C_6H_4(OH)_2$ ), white crystals used medic. in lotions or ointments for eczema and dandruff; basis of many azo-compounds (*q.v.*).

**Respighi**, Ottorino (1879- ), Ital. composer: opera, *Belfagor*, 1923; symphonic poems, *Aretusa*, 1911; *Pini di Roma*, 1924.

**Respiration**, 1) the process of exchange of gases betw. living organisms and the medium in which they live. In fishes, R. takes place thr. gills, in man and lower animals thr. lungs. 2) Process of breathing with the lungs; in man, the lungs expand with each breath, and air is drawn in, so that it comes in close contact with the blood capillaries. Oxygen is absorbed by the blood and carbon dioxide is given off. Expansion of lungs is due to the action of muscles, esp. diaphragm. **Artificial r.**, restoration by artificial means of function of breathing; performed in cases of asphyxia, due to drowning, gas-poisoning, etc. Sylvester's method most commonly used: arms are raised above the head and then flexed and pressed agst. the sides and lower part of chest; these movements are repeated 15-20 times a minute.

**Respirator**, apparatus through which remedies in the form of vapour are inhaled; also protective device agst. inhaling noxious gases or dust in factories, etc. **Respiratory exercises**, strictly regulated exercises in breathing, for purpose of strengthening lungs, heart, blood-vessels, chest, and abdominal muscles, and of promoting digestion and metabolism.

**Response**, (eccles.) part of liturgy said or sung by choir and congregation in reply to priest. **Responsory**, anthem sung by choir after lesson.

**Responsions** ("Smalls"), 1st of 3 exams. for B.A. degree at Oxford University.

**Rest**, (mus.) temporary silence of one, several, or all the parts of a composition.

**R.-harrow**, *Ononis arvensis*, member of the pea and bean family; thorny wild flower with bright red blossoms.

**Restif**, Nicolas Edme (1734-1806), called R. de la Bretonne, Fr. writer; autobiog.: *Monsieur Nicolas*.

**Restoration**, replacing in a former state, e.g., to restore a work of art. In polit., reinstatement of a deposed dyn., i.e., of Stuarts in Eng., and Bourbons in France. The word is also applied to period immediately following those events, to wh., as witnessing an attempt to restore the *status quo ante*, it is equally appropriate. **R. dramatists**, Eng. dramatists, *temp.*, Charles II, incldg. D'Avenant, Wycherley, Congreve, Otway, Vanbrugh, Farquhar, Dryden, Shadwell, Etherege.

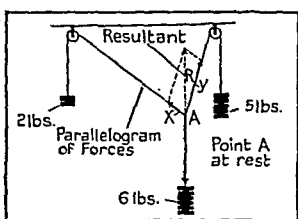
**Restriction of credit**, deflation of credit, may occur in var. ways, esp. by action of a centr. bank in Open Market Operations, i.e.,



sales of securities, by raising Bank Rate (provided foreign funds are not thus attracted) and by limitation of rediscounting of bills.

**Resultant**, (phys.) combined effect of sevr. forces, velocities, or other phys. effects.

**Parallelogram of forces** (also velocities): R. of 2 forces obtd. by drawing lines repres. direction and strength (in length), completing



parallelog. and drawing diagonal wh. represents R. in direction and strength.

**Résumé** (Fr.), comprehensive short survey.

**Resurgam** (Lat.), I shall rise again.

**Resurrection**, 1) Christ's rising from the grave after the Crucifixion. **General R.**, the rising of all mankind from the grave on the last day. **Community of the R.**, Ch. of Eng. community of priests fndd., 1802, at Mirfield, Yorks, by Bp. Gore, for evangelistic, missionary, and educational work.

2) Revival or renewal of anything. **R. man**, body-snatcher, one who exhumed corpses illegally for sale to anatomists. **R.-plant**, 1) *Anastatica hierochuntina*, or Rose of Jericho; small Asiatic plant; when the dry, globular plant is placed in water it unfolds and appears to blossom; 2) variety of club moss wh., when dry, appears dead and shrivelled but expands when moistened.

**Reszke, De**, Polish singers: 1) **Edouard** (1856-1917), bass; apprd. in leading rôles at Opéra, Paris, and Covent Gdn., 1876-1900. 2) His bro. **Jean** (1850-1925), tenor; apprd. as baritone, Venice and London, 1874; début as tenor, Madrid, 1879; apprd. Covent Gdn., 1888-1900; New York, 1893-99; famous in Wagnerian opera; retired, 1900.

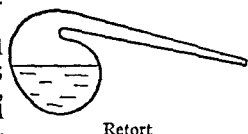
**Retable**, (eccles.) shelf, ledge, behind and above an altar, on wh. the cross, lights, vases are placed.

**Retail trade**, selling of goods in small quantities, generally direct to consumer.

**Retina**, (anat.) innermost coating of the eye, composed of the sensitive terminals of the optic nerve, or nerve of sight.

**Retort**, vessel used in distilling; in laboratories, hollow glass vessel with long-drawn-

out neck; in tech. industries made of metal; in masonry, of clay; e.g., gas retorts for generation of coal gas by heating coal.



**Retouching**, (photog.) treatment of negatives or prints, to remove defects; usually done by pencil or brush.

**Re-trial**, on point of law or on emergence of new facts, Crt. of Appeal may order crt. of trial to re-try an action.

**Retriever**, large sporting dog, with wavy or curly coat (black or golden), trained to retrieve game. **Labrador r.**, a black, smooth-coated variety.



Retriever

**Return**, (bldg.) that part of the walling of a bldg. wh. turns at an angle (usu. a rt. angle) to its main face.

**Reuben**, (O.T.) eldest son of Jacob and Leah; fndr. of one of tribes of Israel.

**Reuchlin**, Joh. (1455-1522), Ger. humanist, Hebraist, and statesman; *De Rudimentis Hebraicis*.

**Réunion**, Fr. isl., one of the Mascarenes (q.v.), 400 m. E. of Madagascar; 970 sq.m.; pop., 187,000; volcanic, mountainous (up to 10,335 ft.); fertile soil; exports: sugar, rum; cap., *St. Denis* (pop., 21,538); chf. port, *Pointe des Galets*. Discovered by Portug., 1505.

**Reunion, Chambers of**, courts estab. by Louis XIV at Metz, Breisach, Besançon, and Tournay to determine what lands had at any former time belonged to the areas ceded to him since 1648. These (e.g., Strassburg) he occupied by force of arms.

**Reuss**, until 1918, two Ger. principalities, whose rulers were descended from lords of Weida (c. 1120); divided in 1564 betw. elder and younger line; amalgamated in 1920 with Thuringia (q.v.).

**Reuter, Ludwig von** (1869- ), Ger. adm.; c.-in-c. of fleet to be surrendered to Brit. at Scapa Flow, 1919; gave order to sink ships. **R., Paul Julius**, Bn. de (1816-99), Ger., fnder. of *Reuter's News Agency*, London, 1851; nat. Brit. subject.

**Reutlingen**, tn., Württemberg, in Black Forest area, on Riv. Echatz; pop., 32,000; textiles; weaving; leather; machinery; sulphur baths.

**Reval**: see TALLINN.

**Reveal**, (bldg.) vertical side of an opening in a wall (e.g., of a window), perpendicular to its face.

**Reveille**, milit. call to awake gen. given by bugle.

**Revelation**, (relig.) truth revealed directly by divine action. **R. of St. John**, (N.T.) only distinctly prophetic bk. of N.T.; written by John during exile on Isle of Patmos, prob. c. A.D. 97.

**Revenons à nos moutons** (Fr.), let us return to our sheep; i.e., to the point in question.

**Reventlow**, Ernst, Ct. von (1869- ), Ger. politic. and author: *Political History Preceding the Great War*.

**Revenue**, income derived from taxes, see NATIONAL BALANCE SHEET. **Tariff for r.:** see CUSTOMS DUTIES.

**Reverend**, venerable; title given, on documents and in polite reference, to clergymen; for deans, **Very R.**; for bps., **Right R.**; for abps., **Most Reverend**.

**Reverberation**, prolonged, echoing sound, caused by reflection of sound waves from walls, ceilings, etc. Important in construction of concert-halls, broadcasting studios, etc. See WAVES; WIRELESS TELEGRAPHY.

**Reverse**, (numis.) back, crest-side of a coin, in contradistinction to obverse side, wh. bears head or main device.

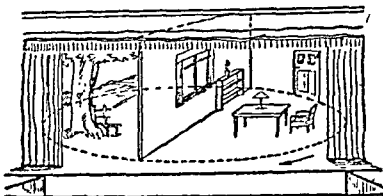
**Reversible process**, (phys.) one wh. proceeds without degradation of energy, and hence can be completely reversed. Ant.: *irreversible*, in wh. some energy is converted into low-temp. heat and is rendered unavailable.

**Review**, 1) (milit.) inspection of troops under arms by commander. 2) (Lit.) Critical examination of new publications; periodical publication containg. critical essays on matters of pub. interest, new books, etc.

**Revoke**, (cards) failure to follow suit when able.

**Revolution**, sudden overthrowing of nat. order, often prepared for long beforehand by social and intellectual changes that eventually lead to dissolution of old customs. Partic. significant in history: **Amer R.**, 1776, independence of N. American colonies received; **French R.**, 1789, put an end to feudalism and declared "rights of man" leading to dominance of Third Estate (bourgeoisie); **Year of Rs.**, 1848, Rs. in France, Germany, Austria, Hungary, Italy, ephemerally successful; **Russ. R.**, 1917, first successful proletarian R.; **Ger. R.**, 1918, result of war defeat, effects largely undone by **Nazi R.**, 1933. **Revolutionary Tribunal**, in Fr. (1793), special court instit. by Robespierre for trial of "suspects."

**Revolver**, pistol with a cylinder drilled with chambers for sev. cartridges wh. rotates automat. on a shot being fired; in machine tools, a movable gripping device for several tools.



Revolving Stage

**Revolving credit**, applied to C. of an importer with a bank, allowing exporter selling

him goods to draw bills up to a certain amount, C. being constantly repaid when the bills are paid and redrawn. **R. stage**, stage floor wh. turns on centr. pivot making possible quick change of scenery.

**Revue**, theat. performance, strictly, one reviewing and burlesquing temporary events; hence spectacular theatr. medley.

**Reykjavik**, cap. of Iceland, on S.W. coast; pop., 25,200; cathed.; Govt. buildings; fisheries.

**Reynard the Fox**, Med. animal epic, with fox hero; earliest versions in Lat. and Flemish; mod. version by Goethe (*q.v.*); Masefield (*q.v.*) has poem with same title.

**Reynolds**, Sir Joshua (1723-92), Brit. painter; 1st P.R.A., 1768; Presid. addresses: *Discourses*; *Mrs. Siddons as the Tragic Muse*; *Viscountess Crosbie*. **R., Stephen** (1881-1919), Eng. author and fishery expert; served on var. committees on fishery questions; pub. *A Poor Man's House*, 1908, etc.

**R.F.A.**, abbr. Royal Field Artillery.

**R.G.A.**, abbr. Royal Garrison Artillery.

**Rh**, (chem.) sym. for rhodium.

**Rhadamanthus**, (Gr. myth.) a judge of the Underworld.

**Rhaetia**, Roman prov. (formed 15 B.C.) occupying the dist. betw. the Upper Danube and the Engadine (incl. most of Tyrol).

**Rhaetian Alps**, range, S.E. Switz. and It.; divided by Engadine; *Piz Bernina*, 13,290 ft., betw. rivs. Inn and Adda; *Bernina Pass*, 7,650 ft. (with rly. from St. Moritz to Tirano, in N. Italy).

**Rhaetic**, (geol.) belonging to a group of strata found at top of Triassic and base of Jurassic systems. See GEOLOGICAL FORMATIONS.

**Rhamnus**: see BUCKTHORN.

**Rhapsodies**, in anc. Greece, poems "sewn together," hence songs connected into form of an epic and recited aloud; Homer probably a rhapsodist.

**Rhatany**, dried root of Brazilian or Peruvian plant, used medic. as astringent, gargle, and haemostatic.

**Rhayader**, mkt. tn., Radnor, Wales; pop., 1,000; reservoir of Birmingham Corp'n. waterworks.



Reynard the Fox, after Kaulbach.

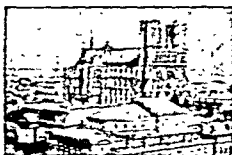


Sir J. Reynolds

**Rhea**, 1) (Gr. myth.) daughter of Uranus (Heaven) and Gaia (Earth), mother of Zeus (g.r.); worshipped esp. in Crete. 2) S. Amer. 3-toed flightless bird of ostrich fam., considerably smaller than Afr. ostrich; of brownish hue.

**Rhea Silvia**, (Rom. myth.) mother of Romulus and Remus.

**Rheims, Reims**, city in west Champagne. dépt. Marne, France, on Riv. Vesle and Aisne-Marne Canal; pop., 101,000; abprie; cathed. (13th cent.; restored after partial destruction in World War); museum; picture gallery; Rom. remains. Manuf. champagne and woollen goods.



Rheims Cathedral

Rom. *Durocor-  
torum*, cap. of the Remi. Egs. of France crowned at R., 1180-1184. Severely damaged and partly evacuated in World War.

**Rheingau**, region in Hesse-Nassau, Ger., betw. S. slope of W. Taunus Mtns. and Riv. Rhine; vineyards.

**Rheinessen, Rhenish Hesse**, prov. of Hesse, Ger.; 542 sq.m.; pop., 400,000; cap., Mainz.

**Rheinland**: see RHINELAND.

**Rheinwaldhorn**, highest point Adula Alps, Switzerland; height 11,50 ft.; source of the Hinter-Rhein: see RHINE.

**Rhenium**, (chem.) recently disc'd. element of the manganese group. sym. Re; at. wt. 186.31; occurs in platinum ores.

**Rheostat**, electr. resistance wh. can be varied at will.

**Rhesus**, Bengal monkey: see MACAQUE.

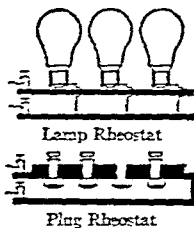
**Rhetic-Roman-  
sch**: see LANGUAGE  
SURVEY, *Romance Lan-  
guages*, group of dia-  
lects spoken in S.E.  
Switzerland.

**Rhetoric**, theory and practice of eloquence spoken or written; art of using lang. to persuade others; artificial oratory; declamation. **Rhetorical question**, one to wh. no answer is expected.

**Rheumatism**, disease wh. may take the form of acute **rheumatic fever** or **chronic rheumatism**. The former is a disease in wh. there are high fever and extremely painful, swollen joints; often leads to valvular disease of the heart. The latter is also a disease of the joints, without fever; is common in the elderly, and often cannot be completely cured. Term R. is freq'tly. incorrectly applied to pains in the muscles.

**Rhin**, two dépts. in Alsace, E. Fr.; forests, lignite, oil-wells; metal, wood, and textile factories. 1) **Bas-R.**, 1,848 sq.m.; pop., 688,242; cap., *Strasbourg*. 2) **Haut-R.**, 2,405 sq.m.; pop., 516,726; cap., *Colmar*.

**Rhine, Rhein**, river, W. Europe; 820 m. (navig. to Strasbourg); rises in Switzerland (Canton of Grisons). The *Vorder-Rhein*, rising in L. Toma, near the Oberalp Pass, flows E.N.E. (joined on the S. by the Mittel Rhein, Valser Rhein, and other tribs.), to Reichenau; here it joins the *Hinter-Rhein*, rising from the glaciers of the Rheinwaldhorn (Adula group). From Reichenau the riv. flows N. betw. Switzerland and Austria and through the L. of Constance, when it turns W. At Schaffhausen it forms the Falls of the Rhine, and then generally follows the Swiss-German frontier, receiving Riv. Aar opp. Waldshut. At Basle (here known as the Upper Rhine) it changes direction N., in an artificially corrected course separating Baden (Ger.) from Alsace (Fr.). Leaving the frontier soon after passing Strasbourg, it continues N. betw. Mannheim (conflu. of Riv. Neckar) and Ludwigshafen, to Mainz and so through the Rhine Slatz Mountains. Passing Wiesbaden and Coblenz (conflu. of Riv. Moselle) enters the N. German Plain at Bonn; beyond Cologne passes through the indust. region of Rhenish Prussia (Düsseldorf, Duisburg-Hamborn) to Holland, where it divides. The N. arm soon forks again: into *Riv. Lek* (g.r.) and the *Old Rhine* (N.); entering North Sea beyond Leyden). The more important S. arm becomes the *Waal* (g.r.), also flowing into the North Sea. Connected by Rhine-Rhone and Rhine-Marne canals with S. and centr. France; by Rhine-Main-Danube Grand Canal (g.r.) with S.E. Europe. Navigation controlled by Internat. Rhine Commission (hdqrs. at Strasbourg). Plays an important part in German romance (see NIBELUNGS and LORELEI). **R., Confederation of the**, formed 1806, under the protection of Napoleon I, eventually includg. all Ger. States except Prussia, Brunswick, Electorate of Hesse, and Austria; dissolved, 1813. **R. Cities, League of the**, fndd. by numerous Rhenish tns. c. 1250, with a view to maintaing. peace; dissolved c. 1400. **R. (Neckar)-Main-Danube Grand Canal**, projected and partly constructed; from the Rhine (nr. Mainz) to the Danube (nr. Passau), utilising sections of rivs. Main and Altmühl. Important artery of traffic betw. W. and S.E. Europe. Navig. for vessels up to 1,500 tons. **R. Palatinate, Palatinate**, or **Bavarian Palatinate**, detached prov., Bavaria, on left bank of the Rhine; 2,125 sq.m.; pop., 932,000; cap., *Speyer*. Since 1919, 169 sq.m. in S.W. have been incorporated in the Saar Territory. **R. Province**,



**Rhineland**, most densely populated prov. Prussia, drained by the Rhine; area, without Saar Territory, 9,478 sq.m.; pop., 7,300,000 (73% R.C.). Rhine Slate Mtns. (*q.v.*) extend from the S. to the Dut. frontier. Orchards and vineyards on Rhine and Moselle; indust. areas in basins of Ruhr and Saar (coal and iron); iron and steel (Solingen); machinery (Essen); univs. at Bonn and Cologne. Divided into admin. dists. of Coblenz, Düsseldorf, Cologne, Treves, and Aix-la-Chapelle. Cap., *Coblenz*. **R. Slate Mountains**, ranges on either side of Riv. Rhine below Mainz; right bank: Taunus (*Feldberg*, 2,887 ft.), Westerwald with the Siebengebirge, Rothaargebirge, Sauerland, and Haar; left bank: Hunsrück with Soonwald, Eifel, Schneifel, Ardennes, Hohes Venn. **R. wines**, or hocks, produced on banks of Rhine, chiefly white (Liebfraumilch, Niersteiner, Steinberger, Hochheimer, etc.) but some red (Assmanshäuser).

**Rhinegold**, *The*, (*Rhinegold*, *Das*), see RING OF THE NIBELUNGS.

**Rhinoceros**, largest representative of odd-toed (*Perissodactyle*) ungulates. Five species still extant; found in Asia and Africa; huge, ungainly animals with large heads, massive limbs, and very thick skin. The single horn on



Rhinoceros

forepart of head consists of agglutinated mass of hair-like substances not connected with bones of skull. R. of Sumatra has 2 horns. **R.-beetle**, large tropical beetle; male has a recurved horn on the head.

**Rhizome**, (*bot.*) underground stem sending up shoots from upper surface and producing roots from lower.

**Rhizopoda**, division of the Protozoa (*q.v.*); one-celled microscopic, aquatic animals moving and capturing their food by means of *pseudopodia* or temporary elongations of the body; e.g., amoeba, foraminifera.

**Rhodanates**, former name for *Thiocyanates* (*q.v.*).

**Rhode Island** ("Little Rhody," "Plantation"), smallest state in U.S.A.; 1,250 sq.m.; pop., 687,000; textiles, machinery; jewellery, gold and silver plating; graphite and chalk deposits; cap., *Providence*.

**Rhodes**, Cecil (1853-1902), Brit. Imperialist and statesman; formed Brit. S. Africa Company (Chartered) to administer territory ceded by Lobengula, Kg. of the Matabele, up to Zambezi Riv., 1889; Pr. Min., Cape Colony, 1890-96;



Rhodes

directed and controlled Jameson Raid (*q.v.*), 1896; negotd. peace settlement after Matabele Rebellion, 1896; took part in 2nd Boer War (Kimberley). Fndd. Rhodes Scholarships, tenable for 3 yrs. at Oxford by selected students from Brit. colonies and dominions, U.S.A., and Germany.

**Rhodes**, **Rodi**, 1) Isl., Aegean Sea, largest of the Dodecanese (*q.v.*), off S.W. coast Asia Minor; 542 sq.m.; pop., 45,180; interior mountainous. 2) Cap. and port of isl.; exports wine and grapes. Anciently one of the chf. Medit. trading ports; conquered by Knights of St. John, 1309; by Turks after famous siege, 1522; Ital. since 1923. *Colossus of Rhodes*, bronze statue of the sun-god (105 ft. high; c. 280 B.C.); was one of the Seven Wonders of the World. **Knights of R.**: see HOSPITALIERS.

**Rhodesia**, Brit. terr., S. Africa, named after Cecil Rhodes; bounded N. by Belgian Congo and Tanganyika Terr., E. by Nyasaland and Portug. E. Africa, S. by Transvaal and Bechuanaland Protectorate, and W. by Angola; divided by Zambezi Riv. into S. and N. Rhodesia. **Southern R.**, Brit. dominion, self-governing since 1923; area (incl. Matabeleland and Mashonaland), 150,300 sq.m.; pop., 1,108,900 (50,000 whites); surface mainly a high plateau (to 5,000 ft.); Zambezi Riv. (with Victoria Falls) on N. border; Limpopo on S.; climate subtropical but generally healthy; cattle-breeding, dairy-farming; exports gold, asbestos, maize; cap., *Salisbury*; largest tn., Bulawayo. **Northern R.**, N. of Zambezi; Brit. protectorate; high tableland (over 4,000 ft.); contains L. Bangweulu, part of L. Mweru, and S. and L. Tanganyika; 288,000 sq.m.; pop., 1,300,000 (14,000 whites); exports tobacco, copper, cereals, lead; big game; cap., *Livingstone*; projected cap., *Lusaka*.

**Rhodium**, (*chem.*), element, sym. Rh, at. wt. 102.91, m.p. 1970°C.; metal found with and resembling platinum; sp. gr. 12.47; gen. used alloyed with platinum; e.g., for elec. pyrometers.

**Rhododendron**, large, evergreen shrubs, with magnificent red or white blooms, indig. to mountainous regions of N. hemisphere.

**Rhodope**, **Despoto Dag**, mountn. range in S. Bulgaria (W. Thrace); well wooded; highest peak, 10,500 ft.

**Rhombic dodecahedron**, crystal form of the regular system: body bordered by 12 rhombs: see CRYSTALS. **R. system**: see CRYSTALS.

**Rhombohedral**, crystal form of the hexagonal system: body formed by 6 rhombs; see CRYSTALS.

**Rhombus** (*geom.*) oblique-angled, equal-



Rhododendron

sided parallelogram. **Rhomboid**, oblique-angled parallelogram with two unequal pairs of sides.

**Rhondda**, Glam., S. Wales, third-largest tn. in Wales; pop., 141,300; coal-mining centre.

**Rhone**, 1) riv., Switzerland and Fr.; rises Rhone Glacier (6 m.), in Bernese Alps; flows W. and S.W. through L. of Geneva; pierces the Jura; at Lyons joined by the Saône and turns S.; drains through delta W. of Marseilles into Gulf of Lions (Mediterranean); length, 495 m.; navig., 300 m.; chf. tribs.: Ain, Saône, Isère, Drôme, Ardèche, Durance; connected by canals with Rhine, Seine, and Loire. 2) Dépt., France, on rt. bk. of Saône and Rhone; 1,100 sq.m.; pop., 994,000; cap., Lyons.

**Rhopalic**, hexameter where each succeeding word contains 1 syll. more than its predecessor.

**Rhubarb**, 1) garden plant (*Rheum raphaniticum*) the thick, fleshy leaf-stalks of wh. are cooked and eaten as fruit. 2) Eastern variety, known as **Chinese r.**, root of wh. is dried and used in medicine as a purgative.

**Rhumb**, 1) **R.-line**, any straight course sailed by a ship or drawn on a chart. 2) One of the 16 princ. points of the compass, or the angular distance ( $11^{\circ} 15'$ ) betw. two adjacent points.

**Rhyl**, seaside resort, Flintsh., N. Wales; pop., 13,500.

**Rhyme**, identity of sound in the last syllables in verse; male (heavy) rhyme, i.e., find, bind; female (sonorous) rhyme, i.e., pavilion, vermilion; see also ALLITERATION.

**Rhythm** (Gr.: flowing), measured swing or recurrent movement of stresses in poetry, notes in music, actions in dancing, etc., applied by extension to any regularly recurring sound or motion; in verse depends on quantity or length of syllables (esp. in anc. poetry) or on accent or regular recurrence of stressed words (esp. in modern poetry); in prose writing, on arrangement of words and clauses; in music, on varying degrees of stress on notes.

**R.I.**, abbr. 1) *Rex Imperator* (Lat.), King (and) Emperor; 2) Rhode Island.

**Rialto** (*Rivo alto*, high bank), largest and first settled of the isls. composing Venice; connected with San Marco by the famous Rialto Bridge (1588) over the Grand Canal.

**Ribble**, riv., N.W. Eng.; rises Wherside, Yorks, flows across Lancs, past Preston, into Irish Sea; length 75 miles.

**Ribbon**, narrow web of silk or cotton (usu. coloured) used for decoration or fastening of dress, woven on special R.-loom; manuf. esp. at Coventry (Eng.), St. Étienne (Fr.), Crefeld (Ger.); military and other medals or

orders are worn suspended from R. of distinctive colour or colours, the R. being, except on "full-dress" occasions, worn alone on left breast without its medal; if several are worn, they take order of precedence from right to left of wearer; on certain ceremonial occasions widows or near relatives of deceased holders of distinctions gained in World War may wear corresp. ribbons on right breast.

**Ribbon Falls**, in Yosemite Nat. Park, California, U.S.A.; 1,612 feet.

**Ribbon-fish**, *Trachypteridae*, family of fishes having long, narrow bodies and living at great depths of the ocean. Many have long filaments attached to the fins; see OARFISH. **R.-grass**, *Phalaris arundinacea*, ornamental garden grass with broad white-striped leaves.

**Ribera**, Giuseppe de (1588-1652), Lo Spagnoletto; Span. painter; *Conception*, 1635; *Adoration of the Shepherds*, 1650.

**Ribot**, Alexandre (1842-1923), Fr. statesm.; Pr. Min., 1914-17. **R., Théodule A.**, (1839-1916), Fr. psychologist; *Heredity*.

**Ribs**, (anat.) bony supports of the thorax, or upper part of the trunk; man has 7 true and 5 false ribs.

**Ricardo**, David (1772-1823), Eng. pol. econ.; *Principles of Political Economy and Taxation*, 1817.

**Ricci**, Matteo (1552-1610), Ital. Jesuit missionary to China, 1583; admitted to



Rice-harvest in Japan

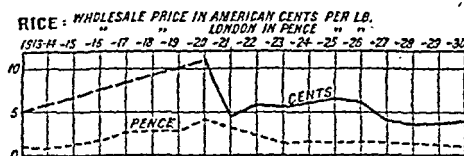
Peking, 1600; wrote *Memoirs and Letters on China*; d. at Peking.

**Rice**, cereal grass (*Oryza sativa*), widely cultvtd. in Asia on marshy land and irrigated fields, main article of food in S. and E. Asia; grains are husked and polished; the residue or *broken rice* is milled for **r. flour**, and also used in distilling of arrack and saké (*qq.v.*). See next p. for statist. graphs. **R.-bird**: see BOBOLINK. **R.-paper**, very thin paper made from pith of a Chinese tree. Used by Chin. for water-colour drawings, in making artificial flowers, and as cigarette paper.

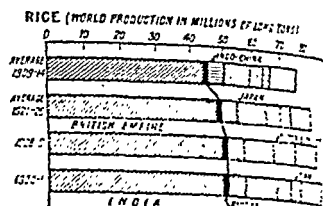


Rice

**Richard**, St., of Wyche (c. 1197-1253), Eng. bp. of Chichester; Chanc. of Oxford;



World prodn. has increased steadily in recent years. India still produces more than half total. During World War used as substitute for wheat. American prices normally higher than English.



Chanc. of diocese of Canterbury under St. Edmund Rich (q.v.).

**Richard**, name of 3 kgs. of England: **R. I**, *Cœur de Lion* (1157-89-99), 3rd son of Hy. II; leader of 3rd Crusade; taken prisoner by Leopold of Austria; delivered to Emp. Hy. VI; released on payment of ransom. **R. II** (1367-77-99-1400), younger s. of Edw., Black Prince (q.v.); suppressed Wat Tyler's rebellion; deftd. by Duke of Hereford (Hy. IV); abdicated; d. at Pontefract. **R. III** (1452-83-85), youngest son of R., Duke of York; last Plantagenet; prob. responsible for murder of nephews in Tower; deftd. and killed at Bosworth by E. of Richmond (Henry VII).



Richard II

**Richard**, of Cornwall (1209-57-72); 2nd son of Kg. John; E. of Cornwall; led expedition to recover Aquitaine, 1225; Governor of Gascony, 1225-27; apptd. co-regent, with Eleanor, during Hy. III's absence, 1253; sole regent, 1254; chosen Kg. of Romans by 4 of 7 electors; crowned at Aachen, 1257; establd. authority in Rhine districts, but forced to return to England, through lack of funds and support; captured at battle of Lewes, 1264; released after battle of Evesham, 1265; returned to Ger., 1268; d. of paralysis.



Richard III

**Richardson, Owen Williams** (1879-), Brit. physicist; stud. emission of electricity from hot bodies, "thermionics"; Nobel Prize (Physics), 1928. **R., Samuel** (1689-1761), Eng. novelist: *Pamela*, *Clarissa*.

**Richborough Castle** (Rom. *Rutupiae*), ruined fort, on Stour estuary, chief Rom. port in S.E. Eng.; famous for oysters. The mod. *Richborough* (1916) is a Channel-ferry port.

**Richelieu**, Armand Jean du Plessis, Duc de, cardinal (1585-1642), Fr. statesm.; for 18

years the First Min. of Fr.; fndd. Fr. demy, 1635, and enlarged the Sorbonne (Univ. of Paris).

**R. work**, embr. in wh. pattern is cut out of the material after edges have been outlined with stitches. See also BRODERIE ANGLAISE.

**Richepin**, Jean (1849-1926), Fr. poet, novelist, and dramatist; poems: *Chanson des gueux*, 1876; *Les Blasphèmes*, 1884; novels: *La Glu*, 1881; *L'Aimé*, 1893; plays: *Nana Sola*, *Don Quichotte*, 1905.

**Richet**, Charles (1850-), Fr. Nobel Prize (Med.), 1913; pres. of Soc. for Psychical Research of London, 1905.

**Richmond**, 1) tn. in Surrey, on Thames; part of Greater London, 37,800; famous park. 2) Tn., N. Yorks, Eng., on Riv. Swale; famous pop., 4,800. 3) Cap., Virginia, U.S., Riv. James; pop., 182,900; manuf. iron. 4) City, Indiana, U.S.A., 32,500; manuf. machinery, furniture. Bor. and co., Staten Isl., New York pop., 158,400.

**Richmond and Gordon**, Duke titles in peerages of Eng., Scot., and

**Charles Lennox** (1672-1723), s. of II and Duchess of Portsmouth, 1st Mar. Duke of R. and Lennox, 1697.

**Charles**, 2nd Duke (1701-50), inherited title of Duke of Aubigny; his dau. G. was mother of Charles James Fox;

3rd Duke (1735-1806), Brit. ambas. 1765; Sec. of State, 1766; supp. debates preceding Amer. War of

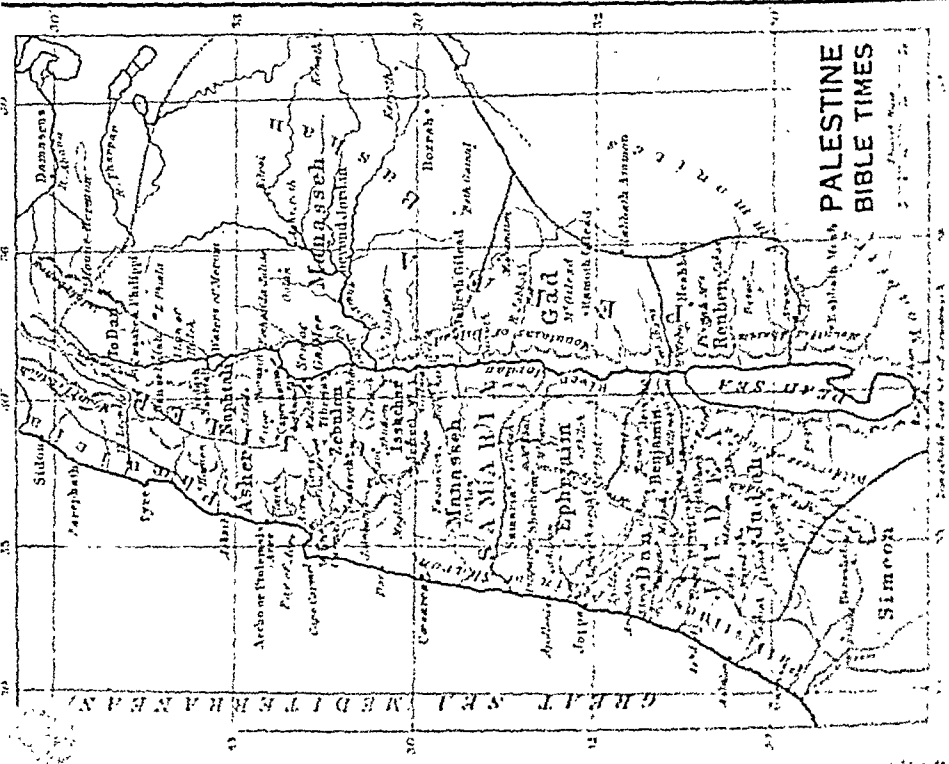
succ. by nephew, **Charles** (1764-1811). Charlotte, dau. of 4th Duke of G. gave ball at Brussels on eve of

his s., **Charles**, 5th Duke (1792-1846) (as E. of March) in Penins. War (in Hse. of Lds.) R.C. emancipated inherited estates of his uncle, 5th Duke

don, and adopted name of **Gordon**, 1836; his s., **Charles Henry**, 6th (1818-1902), held office in Ministries of Derby, Beaconsfield, and Salisbury; of Gordon (peerage of U.K.), 1874.

**Henry**, 7th Duke (1845-1908); **Charles Henry**, 8th Duke of Rich-







Lennox, and 3rd Duke of Gordon (1870- ), is hereditary constable of Inverness Castle; was A.D.C. to Lord Roberts in S. Afr. War, 1900; has written *A Duke and His Friends* (1911).

**Richter, Hans** (1843-1916), Hung. conductor; director of *The Ring*, Bayreuth, 1876; conducted Wagner festival at Albert Hall, 1877; fndd. R. concerts, London, 1879; conducted Birmingham Trien. Festival, from 1885; and Wagnerian opera at Drury Lane, 1892; special performances of Ger. opera from 1904; Hallé Orchestra, Manchester, 1900-11; retired, 1911. **R., Jean Paul Friedr.** (1763-1825), Ger. satirist and miscell. author; pseud. "Jean Paul"; *The Awkward Age*, 1804-05.

**Richtshofen, Ferdinand, Bn. von** (1833-1905), Ger. geograph. and explor., esp. in China; fndd. oceanographical museum; named *Riesengebirge*, N. chain of Nanshan Mtns. **R., Manfred, Bn. von** (1892-1918), Ger. aviator, 1914-18.

**Rickets**, disease of children in wh. there is lack of calcium in bones, so that they remain soft, and bend under weight of the body; this leads to bow-legs and knock-knees. Treatment: cod-liver oil, sunlight, etc.

**Ricketts, Charles** (1866-1931), Brit. artist and stage designer; A.R.A., 1922; R.A., 1928; fndd. Vale Press, 1896; paintings: *Don Juan* (Nat. Gall.); *The Plague* (Luxembourg), etc.; pub. *Tilian*, 1906; *Pages on Art*, 1913.

**Rickmansworth**, urb. dist. and resid. tn., Herts, on Riv. Colne; pop., 10,800; home of Wm. Penn (q.v.), 1672-77.

**Ricksha**, two-wheeled carriage pulled by coolies; used in the Far East and S. Africa.



Ricksha

**Riddell, Geo.** Allardice R., 1st bn. (1865- ), Brit. newsp. propr.; rep. Brit. Press at Peace Conferences, 1919-22; Washington Conf. on Disarmament, 1921.

**Riddle**, 1) puzzle devised for amusement of finding solution; gen. in form of a question. 2) Coarse sieve for sifting (screening) gravel, ore, etc.

**Ridge**, Wm. Pett (1864-1930), Eng. novelist; orig. railway clerk; pub. *Mord Em'ly*, 1898; *Erb*, 1903; *The Wickhamses*, 1906, etc.

**Ridge harrow** (agric.), implement with contrivance for throwing up double ridges in soil preparatory to sowing seed.

**Riding** (orig. *thriding*, "third part"), name applied to three territorial divisions (East,

West, and North) of county of Yorksh.; each has separate county council and local administn.; city of York is, for administrative purposes, independent of all 3 ridings. Co. Tipperary, I.F.S., is also divid. into Rs., but only two, viz., North and South.

**Riding lights**, lights displayed by ships at anchor or tied up to a buoy at night; black, ball-shaped objects are used by day instead of lights.

**Ridley, Nicholas** (c. 1500-1555), Bp. of London, 1550; sided with Reformation; burned at Oxford with Latimer (q.v.).

**Riemann, Bernard** (1826-66), Ger. mathematic.; fndd. *Riemannian Geometry*. **Riemannian spaces**; see SPACE.

**Rienzi, Cola di** (1313-54), proclaimed himself Tribune of Roman people, opposing power of nobles; abdic. and fled, 1347; murdered while escaping from a tumult in Rome; subject of opera by Wagner (q.v.), 1842.

**Riesengebirge**; see GIANT MOUNTAINS.

**Rievaulx Abbey**, ruined Cistercian abbey, N. Riding, Yorks, fndd., 1131.

**Rif**, mtn. range, Morocco, on Mediterranean coast, inhab. by independent Moors (*Rif-kabyles*).

**Rifle**, fire-arm with a barrel the interior of wh. is spirally grooved; gen. provided with a cartridge magazine. **Rifling** invented in the 16th cent.; not perfected until the 18th. Spinning movement imparted by spiral grooving steadies projectile (bullet) in flight, enabling the cylindro-conical shape to be used. **Sporting R.**, light, breech-loading weapon with grooved barrel, small bore (.256-.450), low trajectory and high muzzle-velocity, for shooting big game, etc. **R.-shooting**, shooting at targets with "Service," "Match," or "Sporting" rifles; the chief Eng. meetings take place at Bisley (cf. KING'S PRIZE).

**Rifle Brigade (Prince Consort's Own)**, Brit. rifle regt., raised 1800; uniform green with black facings; depot and record office, Winchester; 21 battalions in World War.

**Rifle regiments**, regts. in Brit. Army with distinctive drill; orig. armed with rifles at a time when other infantry carried smooth-bore muskets, e.g., *Rifle Brigade* and *King's Royal Rifle Corps*. Privates in these regts. are called *Riflemen*. See also CHASSEURS and JAEGER.

**Rift Valley**, steep-sided vall., result of sinking of a strip of land; e.g., the **Great R.V.** of Syria and E. Africa, and the Rhine valley betw. Black Forest and Vosges.

**Riga**, cap. and port of Latvia, on both banks of Riv. Dvina, 8 m. above its mouth in Gulf of Riga; pop., 377,925; govt. buildings; parliament house; old churches; "Hall of the Black Heads" (1200); rubber, textile, and metal indust.; breweries. Fndd. c. 1200; Hanseatic tn. in Mid. Ages; taken by Rus-

sians, 1710; occupied by Germans during World War, 1917-19. Free state of Latvia proclmd. here, 1918; peace treaties betw. Latvia, Finland, Poland, and Russia, 1920-21. **Gulf of R.**, inlet of Baltic, washing coast of Latvia and Estonia; almost landlocked by Estonian isls. of Saare Maa and Hiiumaa; 100 m. by 40 m.; frozen four months of year.

**Rigaud**, Hyacinthe (1659-1743), Fr. portrait painter: *Louis XIV.*

**Rigel**, brilliant white double 1st magn. star,  $\beta$  in constell. Orion (*q.v.*).

**Rigging**, the ropes of a ship and the furniture of its masts; esp. *standing R.*, the shrouds and stays which support the masts, and *running R.*, the braces, sheets, halyards, clew lines, etc., by which the yards are braced and sails made or shortened. A vessel is called *square-rigged* when its principal sails are extended by square yards (*see YARD*); *fore-and-aft rigged* when its sails are extended by stays, gaffs, booms, and lateen yards, and are so set that they point to the stem and stern when in their middle position. *See also BOOM; BRACE; CLEW; GAFF; HALYARD; LATEEN; SHEET; SHROUD; SPAR; STAY.*

**Right**, in Europ. politics, parties formed to preserve existing or restore former institutions are said to be on *R. Wing*. *See CENTRE, LEFT.* **R. ascension** of celest. body corresponds to longitude of terrestrial body; angular distance of celest. body from Vernal Equinox (1st point of Aries) reckoned from the equinoctial (*q.v.*). **R. Honourable**, prefix in Eng. of members of Privy Council, Peers, and Peeresses, and Ld. Mayors of London and York (*no others*). Also Ld. Provosts of Edinburgh and Glasgow, and Ld. Mayors of Belfast, Dublin, and Austral. State capitals. **R. of way**, public right of free passage over road, path, etc., esp. one establd. by usage through private property; the road or path so subject. Generally speaking, estab. by 20 years' use; often limited to specific traffic, *e.g.*, pedestrians; may be lost through 20 years' disuse. **R.-whale** (*Balaena mysticetus*, or *Greenland whale*), largest (60-70 ft. long) of whalebone whales, in wh. teeth are replaced by horny parallel plates (whalebone).

**Rights of Man, Declaration of**, (econ.) document drawn up by *French Nat. Assembly*, 1789, largely based on the *American Decl. of Independence*, 1776, wh. proclaimed the natural equality of men, and their right to "life, liberty, and the pursuit of happiness," and the doctrine that govts. exist to secure these rights, and derive their authority from the consent of the governed.

**Rigi**, mtn. massif, Switzerland, betw. lakes of Lucerne and Zug; max. alt., *Rigi-Kulm*, 5,906 ft.; mtn. railways.

**Rigoletto**, opera by Verdi (*q.v.*), 1851.

**Rigor**, (med.) an attack of shivering, accomp'd. by a feeling of cold, chattering of teeth, and marked rise of temperature. **R. mortis**, stiffening of muscles of a corpse owing to coagulation of the protein; begins, at the earliest, 2 hours after death, and lasts from 2 to 6 days.

**Rig-Veda**: *see VEDAS.*

**Riley**, James Whitcomb (1853-1916), Amer. poet; *The Boss Girl*, 1886; *Home Folks*, 1900; poems and *Sketches in Prose*, 1897-1914, etc.

**Rilke**, Rainer Maria (1875-1926); Ger. lyric poet and writer; *Stundenbuch*; *Malle Laurids Brigge*.

**Rilo-Dagh, Rila Planina**, peak, Rhodope Mtns., S.W. Bulgaria; 8,740 feet.

**Rimbaud**, Jean Arthur (1854-91), Fr. symbol. poet; assoc'd. with Verlaine; abandoned poetry at age of 19 and, after world-wide advnts., establd. trader's business in Abyssinia: *Le Balcon ivre*.

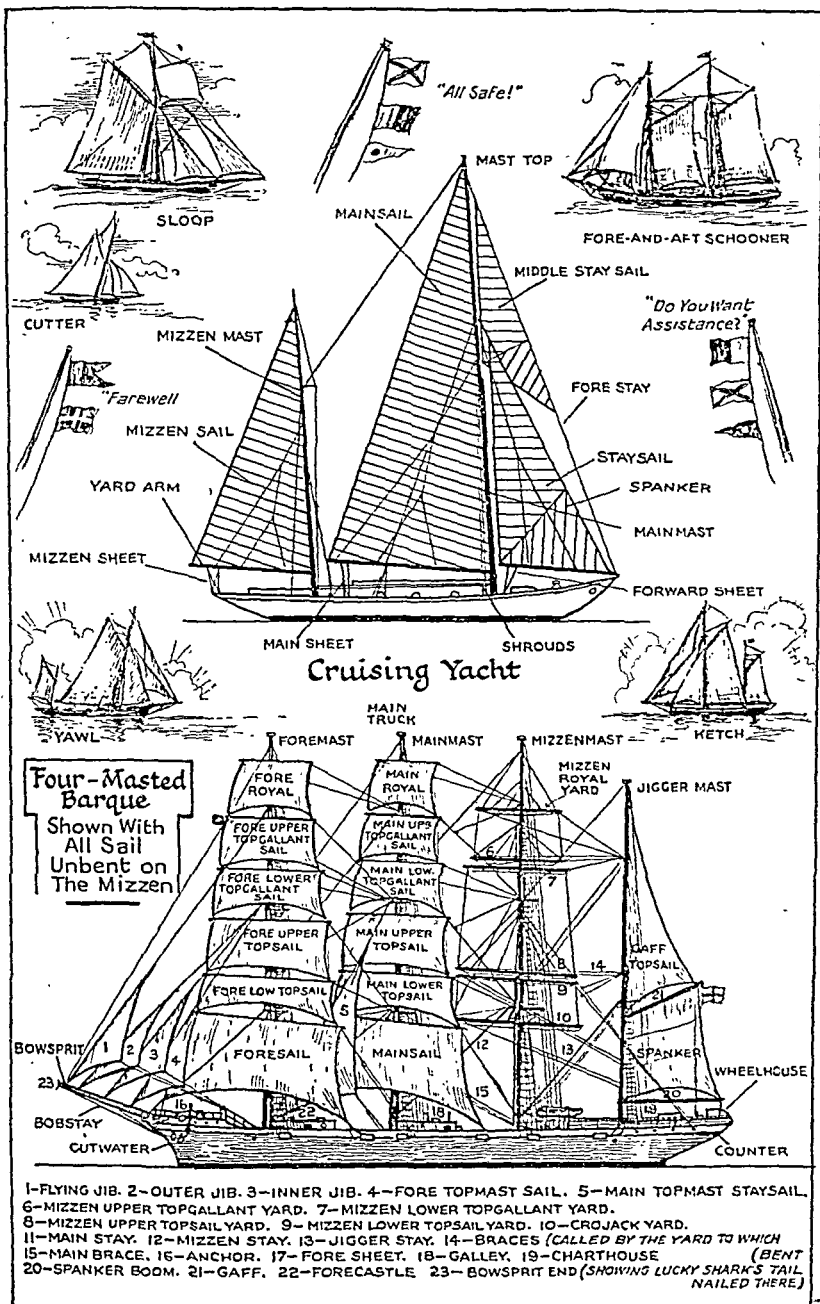
**Rime Royal**, stanzas of 7 decasyllabic lines rhyming ababbcc; so called from use by James I of Scot. in his *King's Quair*.

**Rimini**, seapt. tn., It., on the Adriatic; pop., 53,000; Rom. remains (Bridge of Augustus); cathed.; manuf. silks; sea-bathing. Rom. *Ariminum*; occupied by Caesar after crossing the Rubicon, 49 B.C. Home of the Malatestas in Mid. Ages.

**Rimmon** (O.T.), deity worshipped by Syrians of Damascus. *To bow down in house of R.*, outward conformity with conventional relig. or custom, practised with mental reservation for politic. purposes (II Kgs., v. 18).

**Rinderpest**, infectious disease attacking cattle, sheep, and other ruminants; originated in Asia, and has occas. reached Europe (Eng., 1877; Belgium, 1920) and Australia (1923); at end of 19th cent. and since has caused great ravages in S. Africa; violent fever accomp'd. by eruptions; highly fatal; several methods of preventive inoculation in use.

**Ring**, 1) arena in circus, etc. 2) (Boxing) Roped canvas square in which contests take place. **Rings**, (gym.) attached to long ropes for swinging exercises. **R.-dove**: *see PIGEON.* **R. frame**, spinning frame in wh. spindle revolves in a ring with a steel hoop to control thread. First used in U.S.A., 1832, introd. into England 40 yrs. later. **R. furnace**, built in shape of a ring for continuous burning; used for brick-yards, lime-kilns, cement-making. Fire enters at one point of R., traverses part only of R.; other part of R. cool for clearing and refilling; point of entry and escape of fire moved round continuously. **R. ouzel**, mountain bird of thrush tribe, found N. Europe, shy, sweet songster, blackish-brown, winters N. Africa. **R.-** (or **grass-**) **snake**, non-venomous Brit. snake,



found in vicinity of ponds; swims well and captures frogs and small fishes; hence sometimes called *Water Snake*. Long, slender body, wide gape to mouth; brownish green on upper surface, with broad collar or 2 curved spots of bright yellow behind head. **R. and the Book, The**, poem by Browning (*q.v.*), 1869; subject is the trial of Pompilia for murder of her husband, Guido Franceschini; poem is in form of monologues by principal characters in the case. **R. of the Nibelungs**, sequence of four operas by Wagner (*q.v.*): *The Rhinegold*, 1869; *The Valkyrie*, 1870; *Stiegfried*, 1876; *Twilight of the Gods* (*Götterdämmerung*), 1876. **R. of the Fisherman**, signet-ring engraved with St. Peter fishing; used as private seal of the Popes; appended to solemn pontifical documents since 1265.

**Rio** (Span.), river; also abbr. for Rio de Janeiro. **R. Branco**, riv., Brazil (830 m.), left trib. of the Rio Negro; rises highlands of Guiana. **R. de Janeiro**, 1) maritime, State, N.E. Brazil; 26,600 sq.m.; pop., 2,000,000; maize, sugar-cane, coffee, cotton; cap., *Nichteroy*. 2) Cap. of Brazil, in fed. territory (500 sq.m.), on Bay of Rio; chf. Brazilian port; pop. (with suburbs), 1,470,000; apbric.; univ.; fine modern public buildings, avenues, parks, and gardens; docks; textiles, cotton; sugar refineries; rubber and rly. workshops. Colonized by Portuguese, 1531. **R. de Oro**, Span. colony in West Sahara, N.W. coast Africa; 110,000 sq.m.; pop., c.80,000 (500 Eur.); int. desert; cap., *Villa Cisneros* (pop., 253). Governed by captain-general of the Canary Is. (*q.v.*). **R. Grande del Norte**, riv., N. America (1,750 m.); rises S. Colorado Mtns.; flows through New Mexico; forms boundary between Texas and Mexico; discharges into Gulf of Mexico. **Rio Grande do Norte**, mountainous coastal state of N.E. Brazil; cotton, sugar-cane, tobacco; 22,190 sq.m.; pop., 739,000; cap., *Natal*. **R. Grande do Sul**, southernmost State of Brazil; 91,310 sq.m.; pop., 2,960,000; cattle-breeding; cap., *Porto Alegre*; port, Rio Grande; pop., 40,000. **R. Muni**, dist. of Span. Guinea (*q.v.*), W. Africa; pop., 68,000; cap., *Bata*; exports cocoa, palm oil, and rubber. **R. Negro**, riv., S. Amer. (1,430 m.), left trib. of the Amazon; rises Colombia; forms boundary betw. Colombia and S.W. Venezuela; connected by Riv. Casiquiare with the Orinoco; flows through N.W. Brazil; joins Amazon 10 m. below Manaos. **R. Tinto**, tn., S. Spain, prov. of Huelva, nr. source riv. same name (70 m.); pop., 10,000; noted copper-mines, worked since time of Romans.

**Riot**, assembly, of 3 or more persons, wh. commits breach of peace in seeking to attain its object, whether that object is of itself lawful or unlawful. If 12 or more persons

assemble unlawfully, and do not disperse within one hour of reading of Riot Act by a magistrate, they are guilty of a felony. **R. Act, Reading the**, pop., but inacc., expression for proclamation by magistrate of the Riot Act, 1714, requiring dispersal of assembly. Effect is to make continuing assembly of more than 12 pers. punishable.

**R.I.P.**, abbr. *Requiescat in pace* (Lat.), may he (or she) rest in peace.

**Ripley**, 1) munic. bor., Derbysh.; pop., 13,400; coal and iron. 2) Parish, Yorks, in Nidderdale; 16th-cent. castle. 3) Parish (Send and R.), Surrey, on London-Portsmouth road.

**Ripon**, anc. city, W. Riding, Yorks, Eng., on Riv. Ure; cathed. (12th cent.); pop., 8,600.

**Riposte**, (fencing) quick return thrust.

**Ripping panel**, in a balloon, operated by a *rip line* from the car, for rapid deflation, by tearing open a part of the balloon envelope.

**Ripple-cloth**, textile, usu. of cotton, made of threads of unequal strength and thickness, used for bathrobes, etc. **R.-marks**, ridges produced on surface of sand by action of waves.

**Rip saw**, large, tapering woodworker's saw, with flat blade and no stiffening, so that it can be used for long cuts.

**Riser**, 1) (bldg.) upright part of a staircase between two treads. 2) (Metall.) In casting, the hole through which metal is poured into mould, and in which it finally rises, thereby exerting pressure on the contents of the mould.

**Rising Sun**, Order of the, Jap. order of knighthood, fndd., 1875.

**Risk-premium**, higher rate of premium charged for insur. of enterprises that usually work under conditions involving spec. danger from fire, accident, etc.

**Risorgimento** (Revival), period of struggle for nat. freedom and unity in Italy, 1830-70.

**Risotto**, Ital. dish; rice cooked in fat, gen. mixed with meat (*e.g.*, chicken's liver).

**Rissaldar**, native officer of Ind. cavalry, = lieutenant.

**Ritardando**, (mus.) abbr. *rit.*, slackening, becoming gradually slower; **ritenuto**, held back.

**Rite**, formal act of relig. or other solemn duty; relig. ceremony or usage.

**Ritornello**, short Ital. nat. song; three lines, 1st and 3rd rhyming. Also burden, or refrain, repeated after each verse of a song or melody.

**Ritter**, Karl (1779-1859), Ger. geog-



Ripon Cathedral

rapher; fidd. science of universal comparative geography.

**Ritual**, 1) organised ceremonies of relig. worship, Masonic custom, etc. 2) (Catholic) Book containing forms used for adminstrn. of sacraments. **R. murder**, alleged custom of killing children or others for purposes of relig. ritual; frequent false charge against Jews in Mid. Ages. **Ritualism**, practice of ritual (*q.v.*) and insistence upon its importance in religious or other observances; esp., in derogatory sense, insistence upon elaborate ritual among High Church party of Church of England.

**Riva**, tn. on L. Garda, S. Tyrol; pop., 10,000; health resort; Italian since 1920.

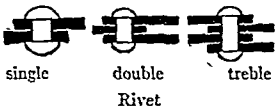
**Riva-Rocci**, Scipione (1863- ), Ital. physiol.; inv. instrument for measuring blood pressure, 1896.

**River-hog**, W. Afr. variety of swine of reddish hue, with white mane and underparts and blackish limbs.

**Rivers**, Wm. Halse Rivers (1864-1922), Brit. psycho-pathologist; *Psychology and Politics*, 1923.

**Rivet**, machine part; metal or iron pin with a head, for joining tin plates, iron sections, etc. R.

(when large, heated) is pushed thr. single double treble stamped or bored holes in overlapping sheets, and the projecting piece is formed into a head by a riveting machine or by hand.



**Riviera**, strip of coast, S. France and N.W. Italy, curving round Gulf of Genoa, from Cannes to Spezia: **French R.**, from Cannes, through Nice, Beaulieu, and Principality of Monaco (with Monte Carlo) to Menton; **Italian R.**, from Ventimiglia through Bordighera, San Remo, Alassio, Genoa, Nervi, and Rapallo to Spezia. Section from Genoa to Spezia known as *Riviera di Levante* ("Coast of the Rising Sun"); section W. of Genoa as *Riviera di Ponente* ("Coast of the Setting Sun"). Coast-road called the *Corniche*. Climate mild; vegetation sub-tropical (date-palms, bananas, pomegranates); cultivation of roses, violets, etc. (scent manuf. at Grasse); dist. sheltered from N. winds by Maritime and Ligurian Alps. Favourite winter resort.

**Riviere**, Briton (1840-1920), Brit. painter and illustrator; R.A., 1880; known partic. for his animal paintings; black-and-white illustrations for *Punch*, etc.

**Rivoli**, vill., dept. of Verona, N. Italy, in vall. of the Adige; pop., 1,700. Here Napoleon defeated the Austrians in 1797.

**Riyadh**, cap. of Nejd, Arabia, on oasis of R.; pop., 20,600; trade in horses, camels, and wools.

**Riza Khan Pahlavi** (1877- ), Pers.

soldier; capt. Teheran, became c-in-c. and War Min., 1921; estab. a govt., 1921, and was declared Shah, 1925; effected many reforms and subdued tribesmen.

**Rizzio**, David (c. 1540-66), Ital. sec. and *valet de chambre* of Mary, Qn. of Scots, over whom he gained a paramount influence; suspected of being her lover; dragged from her presence and murdered by Earls of Lindsay and Morton, etc., 1566.

**R.M.**, abbr., Royal Marines. **R.M.L.I.**, Royal Marine Light Infantry.

**Rn**, (chem.) symbol of radon (niton).

**R.N.**, abbr. Royal Navy. **R.N.L.I.**, Royal National Lifeboat Institution.

**R.N.V.R.**, Royal Naval Volunteer Reserve.

**Roach**, common fresh-water fish, of the family *Cyprinidae*, abundant in Eng., Scot., and Europe. Measures 10 to 15 in. in length; back, dull green, lower fins, dull red; gregarious in habit.

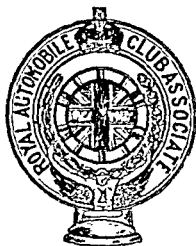
**Road**, artificially prepared track for pedestrian and vehicular communication from place to place; *public Rs.* are maintained by local or other authorities out of rates or taxes, and are usu. free; *private Rs.*, if available to the public, may be subject to tolls. *Arterial Rs.* are main roads, esp. those constructed or reconstructed in Gt. Brit. since c. 1920 for better accommodation of rapidly growing motor traffic. **R. charges**, dues paid to the local authority proportionately by property owners for construction of road or street serving their houses, etc. **R. fund**, fund supplied by motor licence fees, adm. by Minis. of Transport, chiefly devoted to improvement and maintenance of roads and bridges; grants made from Road Fund to highway authorities, 1932, £20,000,000. **R.-making**, building of roads, esp. with surface capable of resisting wear, and "cambered" (sloped) to each side so as to allow rain-water to drain off. Surfaces: *Metalled* (small irregular stones embedded in earth), *macadam* (*q.v.*), water- or tar-bound, paving-blocks (wood, granite "setts," slag, brick, rubber, etc.), asphalt (*q.v.*), cement-concrete (*q.v.*), with or without reinforcement by iron.

**Rule of the r.**, regulations controlling relative position of vehicles, etc., meeting or overtaking on Rs., of ships at sea, etc.; in Gt. Brit. vehicles drive on the left and overtake on the right; in most other countries rule is reversed. **R.**

**Traffic Act**, 1930, defines conditions governing use of public Rs.; deals esp. with motor traffic; abolished speed limit for most private cars; provides for compulsory insurance of motor vehicles (third party), etc. **R. Traffic Organizations**, in Gt. Brit. R.T. controlled by police, acting under Min. of Transport Regulations and assisted by "scouts" of the unofficial organizations, the *Automobile*



Assoc. ("A.A."), and the *Royal Automobile Club* ("R.A.C."), both of wh. confer great benefits on their members and on motorists generally.



R.A.C. Badge

**Roadstead**, partly sheltered area in front of a harbour or nr. mouth of a river or estuary; used as anchorage for ships awaiting pilots, quarantine, etc., awaiting tidal conditions to enter docks, for sheltering during rough weather, etc. Some harbours are known by their roadsteads, e.g., Hampton Roads at lower end of Chesapeake estuary, U.S.A., Yarmouth Roads, Eng., etc.

**Roadster**, 1) horse used for light work on roads. 2) Strongly built vehicle, esp. automobile or bicycle, used on road rather than on race-track.

**Roan**, col. of horse, mixture of grey or white with bay, chestnut, or sorrel.

**Roanoke**, 1) riv. (400 m.), U.S.A.; rises S.W. Virginia, flows through N. Carolina into Albemarle Sound (Atlantic). 2) Tn., Virginia, on 1); pop., 69,200; min. springs; health resort.

**Roaring Forties**, **The**, area betw. 40° and 50° S. lat., where strong W. and N.W. winds are prevalent.

**Roasting**, (tech.) metallurgical process for driving off from ores volatile substances such as sulphur, arsenic, or for *oxidising* or *reducing* some constituent of ore. Usu. accomplished in *reverberatory* furnaces. See FURNACE.

**Robbery**, act of taking a man's goods from his person by actual violence or threats to his person, property, or reputation.

**Robbia**: see DELLA ROBBIA.

**Robert**, *Kings of France*: **R. I** (c. 865-923), crowned Kg. of Franks, 922; killed in battle against Charles III, nr. Soissons. **R. II** (c. 970-1031), s. of Hugh Capet; excommunicated on marriage with Bertha, wife of Ct. Eudes of Blois. *Of Naples*: **R. I** (1275-1343), Kg. of Naples, 1309; leader of Guelphs (*q.v.*) agst. Ghibellines (*q.v.*). *Of Scotland*: **R. I**, *the Bruce* (1274-1329), joined forces of Wallace agst. Edw. I of Eng.; crowned Kg. of Scotl., 1306; refused Irish Crown; continued struggle agst. Eng.; died of leprosy; body buried at Dunfermline, heart at Melrose. **R. II** (1316-90), g.-s. of Robert Bruce; Kg. of Scotland, 1371; fndd. House of Stuart. **R. III** (1340-1406), crowned, 1390; war with Eng. (Homildon Hil', 1402).

**Robert**, name of 2 dukes of Normandy: **R. I**, *the Devil* (d. 1035), succeeded bro. Richard as Duke of Normandy, 1028; sheltered exiled Edw. the Confessor; father of the Conqueror. **R. II**, *Curthose* (c. 1134), s. of Wm. the Conqueror; twice

revolted agst. his father; made no attempt to deprive younger bro., Rufus (Wm. II), of kgdm. of England, but contested title of bro., Hy. I.; captured and imprisoned in Tower of London and castles of Devizes and Cardiff, where he died.

**Robert Guiscard** (1015-85), Norman soldier; conq. Apulia, Calabria, Sicily; attacked Emp. Alexius, 1081; released Pope Gregory VII; besieged by Emperor Henry IV in Castel San Angelo, 1084.

**Roberts**, Sir Frederick Sleigh R., 1st Earl (1832-1914), Brit. F.M.; held various commands in India and deftd. Afghans 1879 (march to Kandahar); c.-in-c. India, 1885-92, 2nd Boer War, 1899-1900, of Brit. Army, 1900. Title descended by spec. remainder to eldest daughter.

**Robertson**, **Thos. Wm.** (1829-71), Brit. actor and playwright; prod. *David Garrick* at the Haymarket Theatre, 1864; also *Society*, 1865; *Castle*, 1867; etc. **R., Sir Wm. Robt.** (1860-1933), Brit. F.M.; Director Mil. Training, 1913; Q.M.G. Exped. Force, 1914; Chf. of Gen. Staff, 1915; Chf. Imperial Gen. Staff, 1915; c.-in-c. Gt. Brit., 1918; com. Brit. Army of Occupation on Rhine, 1919-20. First officer risen from the ranks to pass Staff Coll., 1897-98.

**Robert the Devil**, opera by Meyerbeer (*q.v.*), 1831.

**Robespierre**, Maximilien de, *the Incorruptible* (1758-94), Fr. rev. olnry.; demanded the life of the Kg. for the good of the country, 1792; as member Comm. of Public Safety, 1793, ordered worst excesses of the Terror; decl. outlaw and executed by political opponents.

**Robin**, small brown bird with red breast, belonging to the thrush family, *Turdidae*; common throughout British Isles. Short sweet song to be heard almost throughout the year.

**Robin Hood**, popular hero of Eng. legend, first mentioned in *Piers Plowman* (*q.v.*) and subject of many folk stories and ballads, possibly with some real historical basis; his name is a common element in Eng. place-names.

**Robinia**, rose acacia, *Robinia hispida*, Amer. shrub with racemes of pink flowers.

**Robinson**, Lennox (1886- ), Irish



Lord Roberts



Sir Wm. Robertson



Robespierre



Robin

playwright and author; manager of Abbey Theatre, Dublin, 1910-14, 1919-23; director, 1923; plays: *The White-headed Boy*, 1916; *The Lost Leader*, 1918; *Crabbed Youth and Age*, 1924; novel: *A Young Man from the South*, 1917.

**Robinson Crusoe**, hero of novel (1719) by Defoe (q.v.).

**Robot**, mechanical man; name from Czech *robotnik*, workman.

**Rob Roy**, tradit. nickname of **Robt. Macgregor** (1671-1734), who afterwards adopted surname of Campbell; highland outlaw; supported Pretender in 1715 rebellion; for many yrs. carried on war of reprisals against Montrose, who seized his lands for debt; submitted to Col. Wade, 1722; imprisoned in Newgate, 1722-27; hero of Scott's *Rob Roy*.

**Robsart**, Amy (1532-60), dau. of Sir Jn. Robsart of Norfolk; m. Ld. Robt. Dudley, Qn. Eliz.'s favourite, who was suspected of being responsible for his wife's mysterious death at Cumnor Place, nr. Oxford.

**Roc**, gigantic bird of Arab. mythology.

**Roca, Cape**, headland, Portugal, westernmost point of Europe.

**Rocamboles**, bulbous plant resemb. garlic, fnd. wild in N. Europe; cultivated for bulbs, wh. are used as condiment.

**Roch, St.** (c. 1295-1327), Fr. friar; devoted himself to care of plague victims; patron saint of sufferers from plague.

**Rochdale**, co. bor., Lancs, Eng.; pop., 90,300; manuf. woollens, cottons, machinery.

**Rochefort**, 1) seapt. tn. in dépt. Charente-Inférieure, France, on Riv. Charente, 9 m. above its mouth; shipb.; naval and commercial harbours; pop., 28,275. 2) Tn., S.E. Namur, Belgium, on Riv. Lesse; castle; grottoes; pop., 3,300.

**Rochefoucauld**: see LA ROCHEFOUCAULD.

**Rochelle Salt**: see POTASSIUM; SEIDLITZ POWDER.

**Rochester**, John Wilmot, 2nd Earl (1647-80), Eng. courtier, poet and wit; favourite of Chas. II.; joined fleet serving agnst. Dut., 1665; subject of dedication of Dryden's *Marriage à la Mode*, 1672, but subsequently enemy of Dryden; pub. licentious poems and satires.

**Rochester**, 1) City in Kent, Eng., on Riv. Medway; pop., 31,200; contiguous with Chatham and Gillingham and, across Riv. Medway, with Strood. Anc. cathed., built in 1082-1340, on site of Saxon ch. (c. 604); Norman castle; many Dickens associations. Manuf.: aeroplanes, steam-rollers, agric. machinery, cement, bricks; oil-mills; oyster fisheries. 2) City, Minn., U.S.A.; pop., 20,600. 3) City, New



Rochester Castle

York State, on Genesee Riv. (three falls); pop., 328,100; State industrial school; aqueduct of Erie Canal; manuf. clothing, furniture, photographic apparatus; nurseries; fruit-canning.

**Roche-sur-Yon**, cap. dépt. Vendée, France; pop., 14,540; textiles, hardware, ironmongery.

**Rochet**, (eccles.) white, surplice-like vestment of lawn, worn by bps. under the *chimere* (q.v.); in Ch. of E., the loose sleeves show; in R.C.Ch., sleeves are tight and adorned with lace.

**Rock**, any mass, esp. a large one, of mineral matter forming part of earth's crust; see GEOLOGY; PETROLOGY. **R. crystal**, fine, transparent kind of quartz (q.v.), esp. when found in hexagonal prisms; cut for ornaments and jewellery. **R.-drill**: see DRILL. **R. oil**: see PETROLEUM.

**Rockefeller**, John Davison (1839- ), Amer. financier and philanthrop.; fndd. Standard Oil Co., 1870. Created *Rockefeller Foundation* for advancement of knowledge; *Gen. Educ. Board* for promotion of educ. in U.S.A.; *Laura Spelman Rockefeller Memorial* for promotion of human welfare; *R. Instit. for Med. Research*.



**Rocket**, 1) tube containing charge of explosive, wh. in burning ejects quant. of gas and smoke at high speed; R. travels opp. way by *recoil* (q.v.). Firework: tube attached to stick for steady motion. At top of flight emits coloured lights, sometimes attached to parachute. R. only method at present conceivable of leaving earth and navigating space. Has been used to drive car and aeroplane. In regular use to throw life-lines to stranded ships, and for signalling. 2) (Bot.) *Hesperis matronalis*, garden plant with lilac flowers; esp. fragrant at night. 3) Locomotive built by George Stephenson (q.v.) which won a competition on Liverpool and Manchester railroad, 1829, and so led the way to development of railways.

**Rockhampton**, port, Queensland, Australia, on Riv. Fitzroy; pop., 30,000; outlet for agric. and dairy produce; coal, iron, gold, silver, precious stones, copper.

**Rockling**, small fish of cod fam., allied to ling, frequenting N. Europ. and Japanese waters and S. Indian Ocean; barbels on chin and snout; several Brit. varieties.

**Rocky Mountains**, ranges stretching from New Mexico, through U.S.A. and Canada, to Alaska, c. 2,300 m.; numerous lofty plateaux and peaks (*Mt. Elbert*, Colorado, 14,500 ft.; *Mt. McKinley*, Alaska, 20,300 ft.); gold and silver mines; chf. watershed of N. American continent; many water-

falls, lakes, and canyons. **R. M. goat**, wild N. American, hollow-horned ruminant; shaggy white coat; black hoofs and horns; very wary and active. **R. M. National Park** (1915), Colorado, U.S.A.; 401 sq.m.; in heart of Rockies; pks., 11,000-14,255 feet.

**Rococo**, (archit.) flamboyant decoration, somewhat debased style of 18th cent.; replaced heaviness of baroque by endless multiplications of trivial ornament.

**Rod, pole, or perch**, Brit. and U.S. linear meas.,  $\frac{1}{2}$  yds. **Sq. rod, pole, or perch**,  $30\frac{1}{4}$  sq. yards.

**Rodd**, Sir James Rennell (1858- ), Brit. diplomat, politician, and poet; Brit. envoy to Sweden, 1904-08; Ambassador in Rome, 1908-19; Brit. delegate to League of Nations, 1921, 1923; M.P., 1928; pub.: *Sir Walter Raleigh*; *Social and Diplomatic Memoirs*; *The Violet Crown* (poems), etc.

**Rodenbach**, Georges (1855-98), Belg. poet: *Bruges la morte*.

**Rodents**, members of order *Rodentia*, class of gnawing mammals, all having a similar and peculiar type of dentition characterized, in front of each jaw, by a pair of chisel-shaped teeth which grow continuously throughout life of the animal; specially adapted for gnawing hard vegetable substances. R. incld. rats, mice, beavers, squirrels, rabbits, porcupines.



Rodentia, Dentition

**Rodeo**, gathering together of cattle for branding in Mexico and W. States of U.S.A.; hence public display of cattle-catching by skilled cowboys.

**Roderic**, last Visigothic Kg. of Sp.; def. and slain by Moorish invaders in 711.

**Rodin**, Auguste (1840-1917), Fr. sculptor: *The Burgesses of Calais*, *Le Penseur* (pres. to Brit. nation, 1904, by Ld. Grimthorpe), *Balzac*, *The Kiss*.

**Rodney**, Geo. Brydges (1718-92), Eng. adm.; defeated Span. fleet off Cape St. Vincent, 1780.

**Rodomontade**, vain boasting, empty bluster, after Ariosto's hero, *Rodomonte*.

**Rodrigues**: see MAURITIUS.

**Roe**, popular name for the eggs in the body of a fish. **Roebuck**, small deer living in open country in Eur. and W. Asia; short, cylindrical, three-tined antlers.

**Rogation days** (Lat., *rogatio*: intercession), Monday, Tuesday, Wednesday before Ascension Day, instituted at Vienna in 5th cent., and observed by Cath. Ch. as days of supplication for blessing on the crops, and formerly of fasting. In many Cath. countries penitential processions are held and fields blessed. Mentioned also in Ch. of E. Calendar, though without special observance.

**Roger**, name of two rulers of Sicily: **R. I** (1031-1101), Ct. of Sicily, bro. of Robert Guiscard, conq. Calabria and Sicily, sharing rule with his bro. His s., **R. II** (1093-1154), united Norman possessions in It.; Kg. of Sicily, Duke of Apulia, Pr. of Capua; made Sicily a naval power.

**Rogers**, Sam. (1763-1855), Eng. poet; held literary gatherings at his London house; *Pleasures of Memory*, 1792.

**Roget**, Peter Mark (1779-1869), Brit. physician and writer; *Thesaurus of Eng. Words and Phrases*; *Animal and Vegetable Physiology*, 1834.

**Rohan**, Henri, Duc de (1579-1638), Fr. soldier and writer; leader of Huguenots agst. Richelieu.

**Rohlf**, Gerhard (1831-96); Ger. Afric. explorer; first to cross Sahara, 1865-67.

**Roi Soleil**, Sun Kg., nickname of Louis XIV of France.

**Rojas** (or **Roxas**), Fernando de (fl. 1500), Spanish author: *Celestina*.

**Rokitno Swamps**, marshy dist., on borders of Poland and Russia, watered by the Pripet.

**Roland**, knight of Charlemagne's army; fell at Roncesvalles, Pyrenees, 778. **R.'s Breach**, Pyrenees pass nr. Roncesvalles (q.v.). *Chanson de Roland*, or *de Roncevaux*, 11th-cent., Fr. epic poem ascribed to Théroude or Turoldus, relatg. Roland's deeds and death.

**Rôle**, part performed by actor in a drama.

**Rolland**, Romain (1866- ), Fr. critic, histor., novel.: *Jean-Christophe* (10 vols., 1904-12, romance); biographies: *Michael Angelo*; *Beethoven*; Nobel Prize (Lit.), 1915.

**Rolled gold** (or other prec. metal), plates of base metal coated with prec. metal on one or both sides, rolled out thin and used for making cheap watch-cases, jewellery, etc., also wire with core of base metal similarly produced.



Romain Rolland

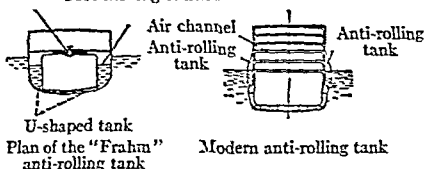
**Roller**, 1) (ornith.) bird belonging to the family *Coraciinae*; has a longish, rather crow-like bill, and brightly coloured plumage; most species have bright, greenish-blue wings and tail. Distributed over Europe to Centr. Asia, Africa, India. 2) (Tech.) Revolving cylinder for crushing, smoothing, rolling, etc., e.g., in roadmaking, agric., printing, rolling mills, paper manufacture. **R. bearing**, bearing with cylindrical rollers betw. concentric cylindrical surfaces. See BALL-BEARING. **R.-skating**: see SKATING.

**Roll film**, (photog.) sensitive film used in camera in form of a roll, which is run off one spool on to another and can be removed from camera in daylight.



**Rolling mill**, (tech.) plant consisting of a pair of grooved rollers driven by power, betw. wh. bars of iron or steel heated nearly to a white heat are fed and so rolled to desired shape: e.g., bars, channel iron (*q.v.*); rly. lines, etc. **R. of ships**, movement caused by waves; means for preventing (*see* also GYRO-

Throttle valve of air channel  
Free-moving surface



Forms of Anti-Rolling Tank

SCOPIC STABILISER), *Frahm's tanks*: one on either side of ship partially filled with water. Air-spaces and water connected by tubes. **R. stock**, (rly.) mobile railway stock: locomotives, passenger coaches, and wagons. *See* RAILWAY.

**Rollright Stones**, pre-hist. stone circle, nr. Little Rollright, N.W. Oxon.

**Rolls**, form. name of bldg. where records of Eng. Chancery Crt. were stored; *see* MASTER OF THE ROLLS; RECORD OFFICE.

**R. Chapel** formerly stood on site of Pub. Record Office, Chancery Lane, London. **R. Series**, reprints of works of early Eng. historians, carried out under direction of Master of the Rolls.

**Romagna**, dist., It., surrounding Bologna; Ravenna (*q.v.*) was the former capital.

**Romaic**, modern Greek lang.; from E. Roman empire.

**Romains**, Jules (1885-), Fr. poet and novelist: *Mort de Quelqu'un*, *Psyche*, *Les Hommes de Bonne Volonté*.

**Roman à Clef**, Fr. *Key novel*, one in wh. existg. persons are treated in such a way that they are recognisable.

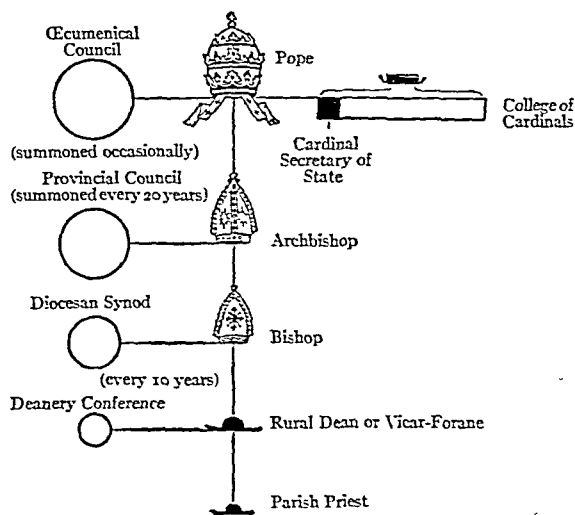
**Roman Calendar**, orig. divided the year into 10 months (March to December) containing 304 days; later a lunar year of 12 months introduced, but replaced, 452 B.C., by solar year of 12 months containing 355 days, with an intercalary month inserted every second year. In 46 B.C. the calendar was revised by Julius Caesar;

*see* JULIAN CALENDAR. Dates in each month were counted from three fixed days: the *Kalends*, always the first day, the *Ides*, the 15th day in March, May, July, October, and 13th in other months; the *Nones*, 9 days before the Ides, counting inclusively, *i.e.*, either the 5th or 7th day of the month; intermediate days were reckoned as so many days before, counting inclusively, the next following of these three fixed dates.

**Roman Catholic Church**, the body of Christians in communion with the Pope (*q.v.*); claims to be the visible body of Christ and the only Christian Ch. in unbroken historical succession with the Apostles; the Pope is Christ's repres. on earth and infallible (Vatican Coun., 1870) when defining faith or morals; membership of Ch., explicit or implicit (*i.e.*, in sense that its authority wd. be accepted if truth of its claims were realized), believed necessary for salvation; until *Reformation* (*q.v.*) practically only organized form of Christianity in W. Europe; now estimated to comprise some 350 million adherents throughout world; includes, besides followers of Roman rite, a number of small *Uniate* (*q.v.*) bodies in Near East; Pope is assisted in its govt. by College of Cardinals (*q.v.*), who form congregations dealing with var. departmental affairs; locally abps. and bps., or in missionary countries vicars-apostolic, govern territorial sees with assistance of vicars-general and rural deans or vicars-forane. *See* INFALLIBILITY; PAPACY; RELIGION.

**Roman Congregations**, committees com-

#### HIERARCHY OF THE ROMAN CATHOLIC CHURCH



posed of cardinals and others wh. assist the Pope in the management of affairs of the Ch.; 13 in number, the Holy Office, Propaganda, and Rites being the best known. **R. Curia**, consultative and administrative body of cardinals and other ecclesiastics which constitutes the govt. of the Pope. Principal divisions: Congregations, Secretariate of State, Vicariate of Rome. **R. Question**, phrase coverg. points in dispute betw. the Pope and Ital. govt. after abolition of States of the Church (1870), settled in 1929 by instit. of Papal State, "Vatican City."

**Romance**, prose narrative fiction originatg. in Fr. *chansons de geste* (q.v.); at 1st always concerned with chivalrous prowess and amours; extended to love-story, whether in a fantastic or everyday setting. **R. Languages**: see LANGUAGE SURVEY, *Latin*.

**Roman de la Rose**, old Fr. poem, begun by Guillaume de Lorris before 1260, continued by Jean de Meung (c.1300); Middle Eng. transl., *Romaunt of the Rose*, attrib. to Chaucer.

**Roman Empire**: see ROME; BYZANTINE EMPIRE.

**Romanes**, Geo. John (1848-94), Brit. biologist; lecturer to Royal Soc., 1875, 1881; prof. of physiol., Royal Institution, 1888-91; fndd. lectureship at Oxford, to be delivered annually on a literary or scientific subject; pubd. *Mental Evolution in Animals*, 1883; *Examination of Weismannism*, 1892; 1st part of *Darwin and after Darwin*, 1893.

**Romanesque**: see ART, HISTORY OF.

**Roman figures**, system of numeration origintd. by anc. Romans and in gen. use in Eur. until (from 10th cent.) Arabic symbols grad. replaced Rom. for general use. I = 1, V = 5, X = 10, L = 50, C = 100, D = 500, M = 1,000; all other figures by combinations, i.e., III = 3, XX = 20, CCC = 300, or by two figures printed together, the first, if the smaller, being deducted from the second, i.e., IX = 9, XL = 40, XC = 90, CD = 400, CM = 900; while if the first is the larger the symbols are added together, as XI = 11, LXX = 70, MCMXXXIV or MDCCCXXXIV = 1934.

**Roman law**, body of laws codified in Mid. Ages from the Twelve Tables of Justinian, is basis of nearly all Europ. systems of jurisprudence. **R. roads**, remains of roads built with highly tech. skill by Röm. from time of Julius Caesar. **R. style**, (archit.) style of early Mid. Ages from 10th to 13th cents.; basilica shape of churches, Roman arches, cross-arched vaults; rich carving on capitals and portals; see COLUMN. Produced wall paintings; valuable artistic work (reliquaries, etc.); developed printing art (ivory bindings, miniatures). **R. Wall**, line of fortification, Northumberland and Cumberland, Eng., from Wallsend on Riv. Tyne to Bow-

ness on the Solway, ascribed to Hadrian (c. 120 A.D.) or to Severus (c. 210). Height 20 ft.; width 8 ft.; strengthened by Mile Castles. Paralleled on S. by *Vallum* (earthworks and trench). **R. W. of Antoninus**: see GRIME'S DYKE.

**Romania**, 1) see RUMANIA. 2) Name sometimes given to Latin Empire of the East, estab. after fall of Constantinople, 1204.

**Romanoff**, Russ. dynasty 1613-1917, see PETER THE GREAT; male line of Peter extinguished, 1730; continued through descendants of Ivan V, ending with his g.g.s., Ivan VI, 1741; throne then passed to female descendants. of Peter; last Czar, Nicholas II, murdered with his wife and family, 1918.

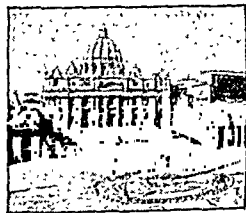
**Romans, Epistle to the**, most important of E. of Paul; written at Corinth, c. A.D. 58; teaching blessedness and responsibility of justification by faith.

**Romanticism**, revolt in art and lit. in late 18th to early 19th cent., from severity, pedanticism, and commonplaceness of class. or pseudo-class. style, to more picturesque, orig., unrestricted and imaginative style.

**Romanus**, 1) Pope (897). 2) 4 Byzantine emperors, occup. throne 919-44, 959-63, 1028-34, 1068-71.

**Romany**: see LANGUAGE SURVEY, *Ind. Languages*.

**Rome, Roma**, cap. of It., on Tiber, 17 m. from mouth; pop., c. 1,000,000. Originally built on the "Seven Hills" (q.v.), later spread over further hills (Janiculum, Pincian, Vatican); surrounded by Campagna di Roma (q.v.). Ancient monuments include the Forum, with the Sacra Via; Temples of Castor and Pollux, of Vesta, of Concord, and of Saturn; Mamertine Prison; basilicas of Julia and Constantine; arches of Titus, Septimius Severus, and Constantine; Palace of Domitian; house of Livia; remains of Temple of Jupiter Optimus Maximus on Capitoline Hill; fora of Augustus, Vespasian, and Trajan (with Trajan's Column); Pantheon (converted into ch., 7th cent.); tomb of Hadrian (re-built as Castel Sant' Angelo); Colosseum; baths of Caracalla and Titus; aqueducts; Cloaca Maxima; catacombs, etc.



Rome: St. Peter's Church

Mediaeval buildings: St. Peter's (q.v.), largest ch. in the world; over 80 chs. dedicated to Mary; many chs. in basilica form; campanili; palaces of the Vatican, Lateran, and Quirinal (qq.v.); palaces and houses by Bramante, Peruzzi, and Michelangelo; baroque work of the 17th-18th centuries. Many of the mediaeval buildings constructed from ancient remains.

Series of museums, picture galleries, and scientific institutions; univ. (1303). In re-



cent years there have been extensive clearances (new roads, etc.) with a view to the better appreciation of the topography of Rome.

**History:** Traditionally founded by Romulus, 753 B.C. Earliest settlement on Palatine Hill (tradit. so called after Arcadian colonists from Pallantium, Greece). At first ruled by kgs.; repub. c. 509 B.C. Invasion of Gauls and sack of Rome, 390 B.C. Punic Wars 264-221, 218-201, 149-146. Social conflicts (Gracchi) 133, 123, ended in establishment of large farms (*latifundia*) and extinctn. of old Roman society. Civil wars of Marius and Sulla, 88-82; of Caesar and Pompey, 49-48; assassination of Caesar, 44. Triumvirate: Augustus, Antony, Lepidus. After battle of Actium (31), Augustus sole ruler; Roman Empire, 27. Reached greatest extent under Trajan (98-117 A.D.). After 200, distracted by rival soldier-emperors: conflicts halted by extreme centralization under Diocletian (284-305). Under Constantine cap. transferred to Constantinople, 330. Final separation of E. and W. Empires, 395; W. cap. transferred to Ravenna, 402. Sack of Rome by Alaric, 410, by the Vandals under Gaiseric, 455. End of W. Empire, 476. Temporal power of the Pope estab. in 8th century. Papal residence removed to Avignon, 1309-77. Republic, 1798-99. In possession of France, 1808-14. Republ. (Mazzini), 1849. Entered by Ital. troops, 1870. Cap. of It., 1871. Concordat with Vatican, 1929; part of city sep. from Italy as "Vatican City."

**Römer**, Olaf (1644-1710), Dan. astron.; disc. finite velocity of light; 1st applied cycloidal curve in formation of teeth of wheels.

**Römer**, 14th-cent. town-hall in Frankfurt am Main, where the Ger. Kings were elected.

**Romford**, urb. dist., Essex, Eng.; breweries, ironworks; pop., 35,900.

**Romilly**, Sir Saml. (1757-1818), Brit.

lawyer and philanthropist; entered Gray's Inn, 1778; solic.-gen., 1806; from 1807 devoted his life to reform of criminal law, but his plans not realized until after his death; committed suicide after death of his wife, 1818; *Autobiography* pubd. 1840.

**Romney**, George (1734-1802), Eng. historical and portrait painter; *Wood-Nymph*; var. portraits of Lady Hamilton.



Romney

**Romney New**, tn. and seaside resort, Kent, one of the Cinque Ports, 5 m. N. of Dungeness; pop., 1,800.

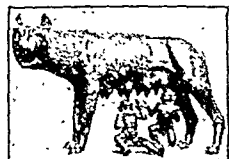
**Römo**, most N. of N. Frisian Is.; 32 sq.m.; sand dunes; pop., 1,200. Danish since 1920.

**Romsey**, munic. bor. and mkt. tn., Hants; pop., 4,900; Norman abbey ch. on site Saxon nunnery; *Broadlands*, birthplace Lord Palmerston.

**Romulus**, legend. fndr. and first Kg. of Rome, with his twin brother Remus, suckled by a wolf. **R.**

**Augustulus**, last Emp. of Rome, Oct., 475, 15 Sept., 476, deposed by Odoacer.

**Roncesvalles**, vill., Navarre, Sp., in a vall. of Pyrenees, famous for the defeat of Charlemagne's rearguard and death of Roland in 778 at the pass (*Brèche de Roland*). Told in *Chanson de Roland* (or *Chanson de Roncesvalles*). See **ROLAND**.



The Roman Wolf with Romulus and Remus

**Ronda**, tn., prov. Malaga, Sp.; pop., 30,500; bullfights; manuf. cloth and small arms.

**Ronde**, upright, angular script.

**Rondeau** (Fr.), dance music; short poem, characterised by close-knit rhymes and refrain; defined in 17th cent. as of 13 lines of 3 unequal strophes, 1st words of 1st line servg. as burden, recurrng. after 8th and 13th lines.

**Rondel**, Fr. verse of 13 octosyll. or decasyll. lines on 2 rhymes. **Rondelet**, poem of 5 lines and 2 rhymes.

**Rondo**, (mus.) comp. in wh. the main theme returns periodically in the same key, with other themes, described as episodes, betw. the repetitions.

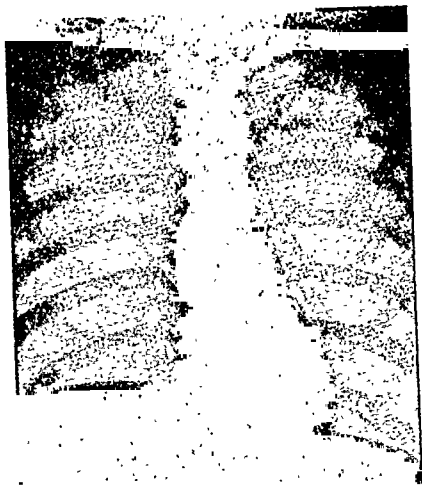
**Rönne**, cap. of isl. and dist. of Bornholm (q.v.), Denmark; pop., 10,534.

**Ronsard**, Pierre de (1524-85), Fr. poet; member of the *Pleiade* (q.v.).

**Röntgen**, Wilhelm Konrad (1845-1923), Ger. physicist, Nobel Prize, 1901. Discvd.

**R. rays** (*X-rays*), short-wave electro-

magnetic rays, similar to light (1895); generated in X-ray tubes variously constructed by impact of *cathode-rays* (*q.v.*) on metal (tungsten). Penetrate solids more easily than light: the shorter the wave-length, the more penetrating, "harder," the X-rays. Used



Röntgen Photograph of Human Thorax

medically for examining the human body, clear shadow pictures of bones, internal organs (*see* BISMUTH MEAL, etc.); rendered visible by a fluorescent screen; act like light on photo-films or plates, injure and kill living cells; healthy human body cells resist action longer than cancer and other malignant cells; hence used for curing these diseases (*radiotherapy*). Too much exposure causes malignant skin disease; protection by lead plates. Diffracted in passing thr. crystals (Laue, 1912), or on reflection from their surface (Bragg); crystal structure, etc., revealed by them.

**Rood** (O. Eng. rod, stick), 1) the cross on wh. Christ was crucified; representation of the same in a ch., usually placed on beam or gallery (*R. beam* or *R. loft*) separating choir from nave. **R. screen**, open-work screen, usu. ornamented, dividing off choir in Gothic churches, and surmounted by rood. 2) Brit. and U.S. sq. meas.,  $\frac{1}{4}$  ac. (40 sq. rods).

**Roof, 1)** (bldg.) whole structure covering a building agst. the weather; consists of framework of beams, purlins, posts, and rafters, surmounted by rainproof material (*e.g.*, slates

or tiles); shapes: (a) span, (b) mansard, (c) hipped, (d) saw-tooth (factories, etc., steeper sides face N. and are glazed). 2) (Mining) R. of a seam; layer above the deposit of coal, etc. Ant.: *standing-wall*, *underwall*, *sill*. **R.-tree**, (bldg.) horizontal ridge-beam of house roof, orig. a rough-hewn tree.



Flat Roofing-tile

**Rook**, species of Europ. bird of crow fam., bluish-black, early breeder, often nests in towns; Siberian var. has reddish tints in plumage.

**Roosevelt, Franklin D.** (1882- ), Amer. lawyer and politician.; Governor of N.Y., 1928; 32nd. Pres. of U.S.A., 1933. **R., Theodore** (1858-1919), Amer. statesman, 26th Pres., 1901-09; Nobel Peace Prize, 1906. **R. Dam**, Salt Riv., Arizona, U.S.A., 280 ft. high; storage cap., 533,515 mill. galls. (1911). **R. Field**, aerodrome, Long Isl., New York, U.S.A.



Franklin D. Roosevelt

**Root, 1)** (bot.) downward growing part of a plant, by means of wh. it absorbs nourishment from the soil. 2) (Math.) Value of variable which satisfies an equation of the form  $a + bx + cx^2 + \dots + lx^n = 0$ . Number  $l$  is the *square root* of the number  $a$  if  $b \times b = a$  written  $b = \sqrt{a}$  or  $\sqrt{a}$ ;  $a$  is called the radicand, 2 exponent. Corresponding to this are cubic root, fourth root, etc. **R.-crops** (agric.) plants cultivated for food value of their roots, *e.g.*, potato, turnip, carrot; usu. grown in rotation with grain. **R. noduli** *see* NITRIFYING BACTERIA. **R.stock**, a rhizome (*q.v.*).

**Rope**, thick, strong twist of fibres of flax, hemp, jute, etc.; also of metallic wire. Fibres are laid parallel and twisted to form yarn; yarns twisted together form strand, three or more strands twisted together make rope. Hemp used chfly. for tarred rope, preferably manila, or abaca. Sisal, jute, and cotton are also used (last-named on yachts, as most comfortable to handle), and for rope-drive in transmission of power. Formerly manufl. by hand on *rope-walk*, so called because worker, carrying yarn round waist, walked away from spinning wheel turned by hand. Now made by machinery. Steel-wire rope extensively used; often galvanized to prevent rust. **R.-drive**, transmission of power or movement from one driving pulley to one or more other pulleys, by means of a cable. Ropes of hemp, cotton, or wire run in grooves; in case of long stretches of cable, tension pulleys or leading pulleys are employed. **R.way**, system of overhead transportation on wh. material is carried in buckets on cable supported by series of towers. In **mono-**



Forms of Roof

a) Span; b) Mansard; c) Hipped; d) Saw-tooth.

**cable r.**, buckets are fixed on single cable and travel with it; in **bi-cable r.**, one (stationary) rope supports buckets, the other transmits motive power.

**Rops**, Félicien (1833-98), Belg. artist; illust. de Coster's *Till Eulenspiegel*, etc.

**Roquefort cheese**, cheese made from sheep's milk, orig. at R., vill. of S. France; green, very strong-tasting.

**Rorke's Drift**, place, Natal, on Tugela Riv.; scene of heroic and successful defence by Brit. force of 139 men agst. c. 3,000 Zulus, 1879.

**Rosa**, Salvator (1615-73), Ital. painter, poet, musician; *Battlepiece*.

**Rosalynde**, prose romance by Lodge, 1590; source of Shakespeare's *As You Like It*.

**Rosamund**, the Fair: see CLIFFORD, ROSAMUND.

**Rosaniline**: see FUCHSINE.

**Rosario**, 2nd largest tn. of Argentina, prov. Santa Fé, on Riv. Paraná; pop., 470,000; commerc. centre; exports: hides, wool, grain.

**Rosary**, 1) a form of prayer in which, while some mystery in the life of Christ is used as subject of meditation, a number of Paters, Aves, and Glorias are recited on beads. 2) The string of beads used for this purpose and, for analogous purpose, by Hindus and Buddhists. **R. Sunday**, 1st Sund. of October, spec. devoted to Our Lady of the Rosary.

**Roscellinus** (c. 1050-1100), Fr. philos.; fndd. Nominalism (q.v.).

**Roscius Gallus**, Quintus (c. 126-62 B.C.), Rom. comic actor; friend and instructor of Cicero, who defended him in suit brought by C. Fannius Chaerea; presented with gold ring, badge of the equestrian order, by dictator, Sulla.

**Roscoe**, Sir Hy. Enfield (1833-1915), Eng. chemist; prof. of chemistry, Owens Coll., Manchester, 1857-87; vice-chanc. of London Univ., 1896-1902; M.P., 1885-95; research in vanadium and its compounds; interested in spectrum analysis; *Treatise on Chemistry*, 1834-92; *New View of Dalton's Atomic Theory* (with Dr. A. Harden), 1896.

**Roscommon**, 1) Inland co., Munster, I.F.S.; area, 951 sq.m.; pop., 53,600; surface undulating or level; rivs. Shannon (several loughs), Suck; agric., grazing on "Plain of Boyle"; iron, coal, marble. 2) Co. tn.; mediaev. castle; pop., 1,800.

**Rose**, prickly shrub, either erect or climbing, with pinnate leaves and white, yellow, pink, or red flowers. The fruit (hip), which contains hairy seed, is red. The common hedge dog R. (*Rosa canina*) is widely distribtd. **Sweet brier** (*R. rubiginosa*) has a particularly sweet-smelling leaf. There are countless cultivated varieties, mostly derived

from *R. chinensis* and *R. damascena*. Many of these, though very handsome, are odourless. **Attar of Rs.** (q.v.), or Oil of Rose, is obtained by distilling the fresh flowers of *R. damascena*, cultivated very largely for this purpose in Bulgaria and elsewhere. The petals of the Provence rose, *R. gallica*, are used in medicine as a mild astringent and as a colouring agent. **R. apple**, *Caryophyllus jambos*, E. Indian myrtaceous tree with edible berry. **R.-beetle**, **rose chafer**, the *Celonia aurata*, a chafer common in Gt. Brit., metallic green with golden copper underneath; larvae live in decaying vegetable matter. **R. of Jericho**: see RESURRECTION PLANT. **R. of Sharon**, (bot.) 1) species of St. John's wort (q.v.), *Hypericum calycinum*, S.E. Europ. creeping plant with large flowers; 2) name given to certain species of rock-rose. See also SHARON. **R.-window**, (archit.) circular window with spoke-like frame resembling a rose; found in Rom. and early Gothic churches.

**Rosebery**, Archibald Philip Primrose, 5th E. of (1847-1929), Brit. statesm. and man of letters; For. Sec., 1886, '92; Pr. Min., 1894-95; leader of Liberal Imperialists. *Pitt; Peel; Napoleon, the Last Phase*.

**Rosegger**, Peter (1843-1918), Austrian writer: *Schriften des Waldschulmeisters*.

**Rosemary**, *Rosmarinus officinalis*, menthaceous shrub growing in S. Eur. and Asia Minor; used in perfumery and cooking and as a tonic. Spirit of R. was known in 15th cent. and later as *Aqua Hungarica* or *Queen of Hungary's Water*, after a certain qn. of that country who was said to have been cured of disease at an advanced age by its use.

**Rosenkavalier, Der**, opera by R. Strauss (q.v.), 1911.

**Roseola**, (med.) term applied to any rose-coloured rash of the skin, esp. to German measles.

**Roses**, Wars of the (1451-85), struggle betw. Hses. of York and Lancaster, rival Plantagenet lines, for Eng. throne. So called from their respective badges, a white rose and a red. Ended with def. and death at Bosworth of Yorkist Richard III, by Henry Tudor (Henry VII). See GREAT BRITAIN, HISTORY OF.

**Rose's metal**, (phys.) an alloy containing 25% each of lead and tin and 50% bismuth; melts at 94°C.

**Rosetta**, scapt., Lower Egy., on *Rosetta mouth* of Riv. Nile; pop., 23,000. **R. stone**, basalt stele discovered in 1799 near R., inscribed with a decree of Ptolemy V in hiero-



Rosebery



Rosemary

glyphics, demotic and Greek; furnished key wh. enabled Champollion to decipher hieroglyphics (1831); since 1802 in British possession, and now in Brit. Museum. Greatest extent: 3 ft. 9 in. high, 2 ft. 4½ in. wide, 11 in. thick.

**Rosette**, (archit.) any rose-shaped ornament; also, a jewel with smooth surface and 2 rows of facets cut into triangles that join in a point at the top.

**Rosewood**, finely grained dark red wood obtnd. from certain tropical trees; used for cabinet work.

**Rosicrucians**, theosophical occult societies, esp. in the 17th and 18th cents.; said to have been fndd. in Ger. by Rosenkreuz, 15th century.

**Rosin**: see RESIN.

**Roskilde**, port on Riv. Fiord, 20 m. W. Copenhagen, Denmark; pop., 13,540; fisheries; till 1445 royal residence (kings' tombs in cathedral). **Treaty of R.**, betw. Denmark and Sweden, 1658.

**Roslin**, vill., Midlothian, 7 m. S. of Edinburgh; noted chapel (1446); ruined 14th-cent. castle. R. gives title to E. of Rosslyn.

**Ross, Sir John**, Brit. Adml. and Arctic explorer (1777-1856), located magnetic N. Pole. His nephew **Sir Jas. Clark R.** (1800-62) adml. and Polar explorer; led antarctic exped., 1839-43. **R., Sir Ronald** (1857-1932), Eng. pathologist; extensive research into causes and cure of malaria; Nobel Prize for Med., 1902; director-in-chf., Ross Inst. and Hosp. for Trop. Diseases, Putney, London.

**Rossall School**, Eng. public sch. for boys; fndd., at Fleetwood, Lancs, 1844.

**Ross and Cromarty**, two Scot. counties, united 1801, stretching across N. Scot. from Moray Firth to the Minch; include Lewis (Outer Hebrides); area, 3,078 sq.m.; pop., 62,800; surface mountainous (*Mam Sodhail*, 3,862 ft.); many lakes (Loch Maree largest) and rivs.; sheep-farming, grouse moors, distilleries, fisheries, some agric.; cap., *Dingwall*.

**Roszbach**, vill., Saxony, nr. Merseburg; pop., 1,500; lignite mines. Victory of Frederick the Great over French and Austrians (Seven Yrs. War), 1757.

**Ross Dependency**, Brit. possession, Antarctic, comprising S. Victoria Land, Ross Isl., and adjoining terr., lat. 75° S., betw.

long. 160° E. and 150° W.; admin. by New Zealand; whale fishing; unpopulated.

**Rosse**, Wm. Parsons, 3rd Earl of (1800-67), Irish astronomer and constructor of telescopes; M.P., 1821-34; Irish rep. peer, 1845; Pres., Brit. Assocn., 1843, of Royal Soc., 1849-54; Chancellor, Dublin Univ., 1862; erected large telescope (6 ft. aperture) at Parsonstown, Irel., 1845.

**Rosseter**, Philip (c. 1575-1623), Eng. composer and lute-player; pubd. instructional works.

**Rossetti**, 1) **Christina Georgina** (1830-94), Eng. poet: *Goblin Market*, 1862; *The Prince's Progress*, 1866. Her bro. 2) **Dante Gabriel** (1828-82), Eng. painter and poet; one of fndrs. of Pre-Raphaelite Brotherhood; *The Blessed Damsel*. 3) **Gabriel** (1783-1854), father of 1), 2) and 4), Ital. poet and patriot; Dante scholar; settled in London. 4) **William Michael** (1829-1919), bro. of 1) and 2), author and critic; edited *The Germ*; memoir and edition of Shelley, 1869; *D. G. Rossetti: His Family Letters*; etc., 1895; *Ruskin, Rossetti, Pre-Raphaelitism*, 1899.

**Rossini**, Gioachino (1792-1868), Ital. opera composer: *Barber of Seville*; *Stabat Mater*.

**Rosslare**, seapt., Co. Wexford, I.F.S., 6 m. S.E. Wexford, pop., 680; mail service to Fishguard.

**Ross Sea**, bay, S. Antarctic, betw. Kg. Edward VII Land and Victoria Land; point of departure for S. Pole expeditions; **R. Barrier**, floating ice betw. R. Sea and R. Ice Field.

**Rostand**, Edmond (1864-1918), Fr. dramat.; *Cyrano de Bergerac*, 1897, *L'Aiglon*, 1900, *Chantecler*, 1910, etc.

**Rostock**, tn., Mecklenburg-Schwerin, Ger., connected with Warnemünde by Riv. Warnow; pop., 82,400; univ. (fndd. 1419); shipb., chem. and machine factories; airport.

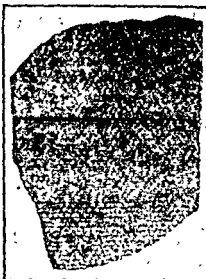
**Rostoptschin**, Feodor V. (1765-1826), Russ. gen. and statesm.; instigated the burning of Moscow, 1812, to force Napoleon's withdrawal.

**Rostov-on-Don**, cap. N. Caucasian Area, Russia, port on Sea of Azov, 31 m. from mouth of Riv. Don; pop., 323,550. Dyeing, tobacco, boot and shoe industry; largest agric. machine plant in Europe.

**Rostov Velikiy**, tn., prov. Yaroslavl, Russia; pop., 21,440. Fndd. 9th cent., noted for pink Kremlin and enamelled ikons.

**Rostrum**, in anc. Rome, orator's platform in forum; hence, pulpit, stage, for public speaker. In theatre, box-like units out of which raised platforms on stage are built up.

**Rosyth**, vill., on Firth of Forth, nr. N.



Rosetta Stone



Sir Ronald Ross



Rossini

Queensferry (Forth Bridge); naval base and dockyard in World War.

**Rot**, destruction of cellulose materials (veget. matter, textiles) by micro-organisms, mostly fungi. Both *wet-rot* and *dry-rot* are known, but wood kept either quite wet or quite dry does not rot. See WOOD, PRESERVATION OF.

**Rotary Club**, association of business men for mutual service; first R. fndd. in Chicago, 1905; became *R. International* in 1922, and branches are widespread in U.S.A. First Brit. Rotary in Dublin, 1911; now consider. no. throughout Gt. Brit., affiltd. to *R. International*. **R. converter**, machine for transforming direct current into alternating, or *vice versa*; a single armature, connected to commutators and slip rings, rotates in magnetic-field, taking in one kind of current and supplying another. **R. engine**, 1) engine driven by fluid pressure acting in expandable chambers, producing direct rotary motion. 2) Internal combustion engine, with cylinders arranged radially and rotating. **R.-photo-gravure**, photogravure in wh. a fine screen is used in preparing the tissue negative, giving a somewhat coarser result, but being capable of much more rapid output than pure photogravure. The inking and wiping of the plate (which is curved round a cylinder) and the printing are done mechanically on fast rotary machines. Extensively used for magazine and book illustrations and commercial work generally. **R. printing**: see PRINTING PROCESSES.

**Rotation**, (phys.) turning of a body, a surface or straight line round an axis, by wh. every point of rotating object describes a circle; R. of plane figures gives solids of revolution; e.g., a cone is formed by revolution of the hypotenuse of a rt.-angled triangle round one of the sides; a cylinder by revolution of a rectangle round one of its sides; a sphere by revolution of a semi-circle abt. the diam. See also PARABOLOID; HYPERBOLOID.

**Roter Turm Pass**, narrow pass (alt., 1,164 ft.) in the Transylvanian Alps, with rly. from Rumanian Transylvania into Little Walachia.

**Rothamsted**, estate nr. Harpenden, Herts, Eng., where is sit. the chf. agricultural experimental station of the Brit. Emp. See AGRIC. RESEARCH.

**Rothenstein**, William (1872- ), Eng. artist; exhibited at New English Art Club, 1893; prof. of civic art at Sheffield Univ., 1917; princ. of Royal Coll. of Art, 1920; *The Browning Readers*, 1900; *Aliens at Prayer*, 1904; *The Last Phase: on the Rhine*, 1919; autobiography, *Men and Memories*, 1932.

**Rotherham**, co. bor., W. Riding, Yorks; pop., 69,700; manuf. iron, hardware, glass, pottery.

**Rotherhithe**, district in S.E. London, in bor. of Bermondsey, in wh. are the Surrey and Commercial docks (1807). R. is connected with opp. side of Riv. Thames by R. Tunnel and Thames Tunnel (*q.v.*).

**Rothermere**, Harold Sidney Harmsworth, 1st visct. (1868- ), Brit. newspaper proprietor; bro. of Ld. Northcliffe (*q.v.*).

**Rothsay**, co. tn., Butesh., on Bute Isl.; royal burgh, seaside resort, pop., 9,300; Pr. of Wales is Duke of Rothsay.

**Rothschild**, name of family of Jewish bankers and financiers, derived from sign of a red shield over the money-lending establishment of Mayer Anselm Bauer (1743-1812), who fndd. the house; business developed internationally by his sons; Eng. house fndd. by **Nathan Mayer R.** (1777-1836), whose eldest son, **Nathan** (1840-1915), was created **Baron R.**, 1885.

**Rotifers**, microscopic aquatic animals with circular whirling fringe of *cilia*, round head, and anchoring organ at end of body.

**Rotor**, rotating part of an elec. machine. Ant.: **stator**. **R. ship**, seagoing vessel, intended to be propelled by wind acting on the "rotor," a large, hollow iron cylinder revolved at high speed by a motor; by action of the air current on the revolving cylinder, air on one side of cylinder is compressed, and rarefied on the other, creating power; invention (1922) of Anton Flettner (*q.v.*).

**Rotterdam**, port, S. Holland, on New Maas; pop., 583,000; canals; art academy, tech. school, naval college; shipb.; machinery, sugar, and tobacco factories; large overseas trade.

**Rotunda**, (archit.) round apartment, usu. of considerable size and pretensions.

**Roubaix**, tn., dépt. Nord, France; pop., 117,500; centre N. France textile indust.

**Roubilliac**, Louis François (1695-1762), Fr. sculptor, worked chfly. in London; stats. of Sir Isaac Newton (Cambridge), Shakespeare (Brit. Mus.), F.-M. Geo. Wade, and others (Westminster Abbey).

**Rouble**, Russ. monetary unit and silver coin, worth c. 2s. 1½ d. (\$5.15) at par.

**Roué** (Fr.), libertine; lit. one broken on the wheel, hence a dissolute character.

**Rouen**, cap. dépt. Seine-Inférieure, Fr., port on Riv. Seine; pop., 123,000; cathed. (abpric.); cotton and lace indust., shipb.;



Original house of Rothschild family, Frankfurt-on-Main.



Roubilliac

the Maid of Orleans burnt here, 1431; birthplace of T. and P. Corneille.

**Rouge**, (tech.) red iron (ferric) oxide in an extremely fine form, used for polishing (*jewelers' R.*), and also as a red pigment. **R. et Noir**, or *Trente et Quarante*, gambling game in wh. bets are made on total of either of 2 rows of cards (called black and red) most nearly approaching 30; also on colour of top card in winning row.

**Rouget de Lisle**, Joseph (1760-1836), Fr. poet and composer: *Marseillaise*.

**Rough**, (golf) all the course other than the "fairway" and "green." **R. balance**, (book-keeping) temporary closing of books and striking of a balance; minor inaccuracies to be corrected later; similar to *Trial Balance*.

**Roulers**, tn., prov. W. Flanders, Belgium; pop., 28,000; textile industry. Occupied by Germans during World War.

**Roulette**, gambling game in wh. a small ivory ball spins round a revolving disc with 36 numbered compartments of alternate black and red; bets are made on number and colour of compartment in wh. ball will finally lodge.

**Roumania**: see RUMANIA.

**Round**, a stage in a competition, etc. (Boxing) Period in a contest, usu. 2 or 3 mins., with 1 or  $\frac{1}{2}$  min. interval. (Golf) Playing of all holes in course once. **R.-about**, a turn-table with different kinds of seats (horses, chairs, etc.), for amusement at fairs, etc., also called "merry-go-round." **R.-a-traffic**, facilitation of the movement of traffic at road-crossings by means of directional lights or signs and a central area round wh. traffic must proceed in a leftward direction. **R. heads**, nickname given to Parliamentarians, who mostly wore their hair short, during Eng. Civil War (1642-47); Ant.: *Cavalier*. **R. Tower**: see BROCK. **R.-worm**, a nematode parasite in the intestine of children and adults.

**Roundel**, 1) (tech.) disk with centr. hole for a bolt, used in gun-carriages. 2) (Art) Plaque or paintg. in circular frame. 3) A country dance; see RONDEL. 4) (Her.) A circular charge.

**Rounders**, bat-and-ball game, in wh. runs are scored by running round 5 "bases"; a rudimentary form of baseball (*q.v.*).

**Roup**, catarrhal disease of poultry.

**Rousseau, Jean Jacques** (1712-78), Fr. philos., auth., and social reformer; devised new form of civilization (*Le Contrat Social*); amongst his ch. works: *Julie, ou La Nouvelle Héloïse*; *Confessions*. **R., Théodore** (1812-



Jean Jacques  
Rousseau

67), Fr. painter of Barbizon School (*q.v.*); represented in Tate Gallery.

**Roussillon**, dist. of dépt. Pyrénées Orientales, S. France, on Méditer.; anc. Fr. County, freqtly. in possn. of Spain but forming part of France since Treaty of the Pyrenees, 1659. Vineyards; chf. tn. and port, Perpignan.

**Routing tool**, router; modern tool used for working wood and metal; rapidly revolving small cutting wheel adaptable to work.

**Roux**, Pierre Paul Émile (1853- ), Fr. bacteriolog.; director Pasteur Instit. 1904-18; disc. diphtheria antitoxin with Behring; Nobel Prize (Med.), 1901.

**Roux**, preparation of butter and flour stirred together; used to thicken soups and gravies.

**Rove beetles**, insects of family *Staphylinidae*, comprising a number of small to medium-sized beetles with abbreviated wing-cases; includes the *Devil's Coach Horse* (*q.v.*).

**Rovereto**, tn. in S. Tyrol, It., on Riv. Adige; pop., 16,500; silk indust.; fruit trade.

**Rovigno**, seapt. in Istria, It., on Adriatic; pop., 11,000; inst. for marine research; sardine fishery and cannery.

**Rovigo**, cap. prov. of R. (685 sq.m.; pop., 287,250), on Adigetto Canal, N. Italy; pop., 38,500; academy of arts and science; leather manufacture.

**Rovuma riv.** (c. 500 m.), East Africa, rises on plateau (3,000 ft.) E. Nyasa; enters Ind. Ocean nr. Cape Delgado.

**Rowan**: see MOUNTAIN ASH.

**Rowing**, art or sport of propelling a boat by means of oars (*q.v.*).

**Rowlandson**, Thomas (1756-1827), Eng. caricatur.; *Tour of Dr. Syntax in Search of the Picturesque*, 1812.

**Rowley Regis**, urb. dist., Staffs, Eng., 6 m. W. Birmingham; manuf. and mining centre; pop., 41,200.

**Rowlock**, (naut.) device usu. consisting of 2 pins (*thole pins*) placed on the gunwale, or on out-riggers, serving as fulcrum for oar in rowing.

**Rowno** (Pol., *Równe*), fortifd. tn., prov. Volhynia, Poland, nr. Riv. Goryn; pop., 30,490; wood indust.; trade centre.

**Rowntree**, Joseph (1836-1925), Brit. industrialist, social reformer, and prominent Quaker; wrote on temperance and other social questions.

**Rowton Houses**, designed to provide cheap and comfortable lodgings for poor or destitute men. First R.H. built at Vauxhall by Lord Rowton (1838-1903), 1892. Later a company (R. Houses, Ltd.) was formed and a number of sim. bldgs. erected in London.

**Roxana**, Bactrian princess, wife of Alexander the Great; murdered 311 B.C.



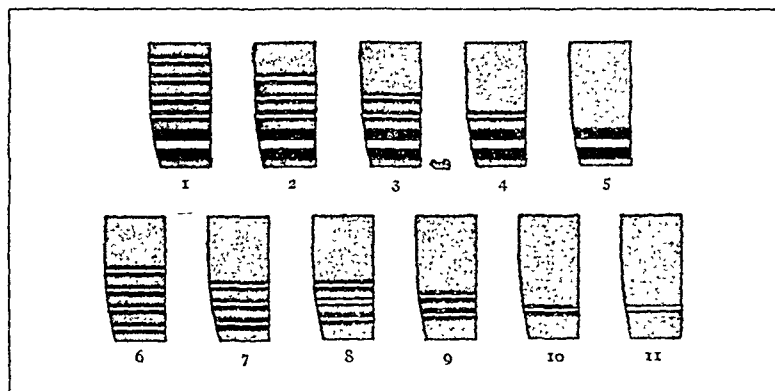
**Roxas, F. de:** see ROJAS.

**Roxburghshire**, inland border co., S.E. Scot.; area, 665 sq.m.; hilly in S. (Gildon Hills, 1,385 ft., in N.W.); drained by Teviot (Teviotdale), Tweed, and Liddel; farming, sheep-breeding. Includes Melrose, Jedburgh, and Kelso abbeys, and Abbotsford (Scott). Cap., *Jedburgh*.

**Royal Academy of Arts**, Brit. society fndd. 1768 for advancement of arts of painting, sculpture, and architecture; headquarters, Burlington House, London. The Academy consists of president (1st, Sir Joshua Reynolds), council, members and associates; **A. schools** establ. in 18th century. Annual *summer exhibition* of works of members, also open to non-members, whose exhibits are chosen or rejected by council; annual *winter exhibition* of works of art of spec. period, school, etc. **R. Air Force**, part of armed forces of U.K., fndd. 1918; contrld. by Air Council (*q.v.*); highest ranks: Marshal of the

of adjutant-general. Depot, Aldershot; record office, Woking. R.A.M.C. does not control the *Army Dental Corps* (record office, Woking). **R. Artillery** (Royal Regiment of Artillery) (R.A.; colloq., *Gunnery*), corps, Brit. army, in charge of artillery (*q.v.*); includes brigades, Roy. Horse Artillery (R.H.A.), and Field, Light, Mountain, Medium, Anti-Aircraft, and Heavy brigades, R.A. In World War divided into: 1) Roy. Horse and Roy. Field A. (R.H. and R.F.A.) and 2) Roy. Garrison A. (R.G.A.; included Anti-Aircraft). Headqrs. and Roy. Milit. Academy (trains for commissions in R.A. and R.E.), Woolwich.

**Royal assent**, essential and final stage in Brit. legis. converting a bill (*q.v.*) into an Act of Parliament. By convention; now never withheld. Usu. given in Kg.'s name by 3 spec. apptd. members of Hse. of Lords. **R. Botanic Gardens**, at Kew, SW. suburb of London, Eng., State-controlled institution,



SLEEVE BADGES—ROYAL AIR FORCE

- 1 Marshal of R.A.F. 2 Air Chief-Marshal 3 Air Marshal 4 Air Vice-Marshal 5 Air Commodore  
6 Group Captain 7 Wing Commander 8 Squadron Leader 9 Flight Lieutenant  
10 Flying Officer 11 Pilot Officer

R.A.F., Air Chief Marshal, Air Marshal, Air Vice-Marshal, Air Commodore. Strength (1932), 32,000; reserve, 9,933; squadrons (1932-33) 74 and 27 flights in Fleet Air Arm; 838 first-line aircraft, total 1,434.

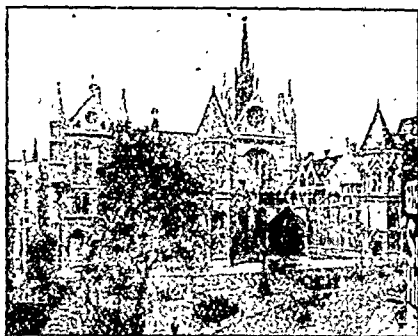
**Royal Army Medical Corps (R.A.M.C.)**, non-combatant corps (formed 1873: "royal" since 1898), Brit. army, entrusted with maintenance of health of army personnel: prevention of disease, cure of sickness, and evacuation and treatment of casualties. Responsible for med. examination, esp. of cadets and recruits; admin. of milit. hospitals, and (in conjunction with other corps) of ambulance (motors, trains, ships, etc.); supply of med. and surg. requirements; and training of specialized personnel (in conjunction with nursing services). Under control

consisting of gardens (288 acres), and lake palm houses, tropical houses, arboretum, library, etc.; also bird sanctuary; maintained chfy. for scientific purposes and contains over 25,000 plants. Opened to public, 1841.

**R. Commission**, body apptd. by Crown, usu. thr. Home Sec., to investigate some problem of public administration. **R. Courts of Justice**, *Law Courts*, N. side of Strand, London; blt. 1874-82 to designs of G. Street. Contains all superior courts (King's Bench, Chancery, Admiralty, etc.), formerly divided betw. Westminster Hall and Lincoln's Inn. Frontage of 514 ft. Central hall 138 ft. long, 48 ft. wide, 50 ft. high.

**Royal Engineers** (R.E.; colloq., *Sappers*), corps, Brit. army; duties include gen. engineering fortifctn., siege-craft (incl. sapping

and mining; important in trench-warfare), surveying, practical architecture (roads,



Royal Courts of Justice, London

bridges, govt. buildings, etc.), railway operating (in conjunction with R.A.S.C.), chem. warfare, air defence (searchlight), land-drainage, irrigation, water-supply, postal and printing services. Field signalling now gen. in charge of Royal Corps of Signals. Depot, record office, and School of Milit. Engineering (1812), Chatham. Engineers employed by Edward III, 1346; sep. from artillery, 1716; granted milit. rank, 1757; "royal" since 1787. Cadets for commissions in R.E. pass through Roy. Milit. Acad., Woolwich.

**Royal Exchange**, bldg. in cent. of City of London for use of merchants and bankers; orig. Exchange fndd. by Sir Thomas Gresham, 1566; rebuilt, 1669. Both these bldgs. destroyed by fire. Present E., on same site, opened 1844. Frescoes in arcade by Leighton, Abbey, Brangwyn, etc. **R. Fusiliers** (City of London Regiment), Brit. infantry regt., old 7th Foot; raised 1685 as one of the London train bands (*q.v.*); depot and record office, Hounslow; 47 battalions in World War.

**Royal Geographical Society**, scientific soc. fndd. in London, 1830; absorbed *African Assoc.* and *Palestine Assoc.*, 1834. Museum and map-room open to public. Publishes monthly *Journal* and *Proceedings*. **R. Hospital**, Chelsea, London, for aged and disabled soldiers; built by Wren; opened, 1694; c. 550 pensioners.

**Royal Nat. Life-boat Institution**, Brit. soc., fndd. 1824, for provision of life-boats on coasts of U. Kingdom. Annual sum of £250,000 now reqd. to maintain life-boat service; funds provided by voluntary contributions. **R. Naval Divn.**, **R. N. Reserve**: see NAVAL. **R. Scots** (The Royal Regiment), Brit. infantry regt., old 1st Foot; oldest Brit. regt.; raised 1633; depot, Milton Bridge, Midlothian; record office, Leith, 35 battalions in World War. **R. Society**, Brit. scientific body, fndd. c. 1660, under auspices of Charles II, for advancement of all

branches of science. Headquarters, since 1857, at Burlington House, London. Members incl. most eminent Brit. scientists of their time; election of candidates limited to 15 annually, with limited number of foreign members. Publications: *Year Book*, *Proceedings of R. S.*, *Philosophical Transactions*. **R. Standard**, personal banner of the Kg. of Gt. Brit., shd. properly be flown only in presence of the Kg. or his viceroys or governors; bears the royal arms, which are: quarterly, England in the first and fourth quarters, Scotland in the second, and Ireland in the third. From 1340 to 1801, the roy. arms incldd. those of France, and from 1714 to 1837, those of Hanover. **R. Victoria Hall**: see OLD VIC.

**Royalists**, supporters of monarchy; esp. in Eng. during Civil War and in Fr. during Revolution.

**Royden**, Agnes Maude (1876– ), Brit. sociolog.; 1st woman preacher in regular place of worship (City Temple).

**Rozhdestvenski**, Petrovich, Russ. naval leader in the Russ.-Jap. War; killed 1905 at *Tsushima*.

**RP.**, abbr. reply paid.

**r.p.m.**, abbr. revolutions per minute.

**R.S.F.P.R.**: see RUSSIA.

**R.S.V.P.**, abbr. *Répondez, s'il vous plaît* (Fr.), please reply.

**R.T.S.**, abbr. Religious Tract Society.

**Ru**, chem. symbol of ruthenium (*q.v.*).

**Ruanda**, region on E. boundary of Belg. Congo, N.W. of former Ger. E. Afr.; mtn. range (c. 5,000 ft.); healthy climate; densely pop.; ceded, with Urundi (*q.v.*), to Belg. as mandatory, 1919; rich in cattle; cap., *Kigali*.

**Rub 'al Khali**, desert, S.E. Arabia; first crossed in March, 1931, by B.S. Thomas. The Qara Mtns., on S. fringe, are over 6,500 ft. high.

**Rubber**, 1) (tech.) compound of carbon and hydrogen in proportion  $C_5 H_8$ ; found as minute globules in milky liquid, latex (*q.v.*); occurs in many tropical trees; best source, *Hevea brasiliensis* (*q.v.*); now grown in plantations (Malaya, Dutch East Indies, Ceylon, etc.). Latex coagulated by chemicals, rubber collected and dried by fire (*sheet R.*) or by air (*crêpe R.*). Latex also exported to Europe and America, preserved by trace of ammonia; used to coat objects with rubber by spraying, to deposit rubber on moulds by electrosynthesis (*q.v.*), to make spongy rubber by whip-



Tapping tree for rubber

ping it to a froth, which is coagulated in a mould. Pure rubber is not often used, as it is weak, becomes stiff with cold and liquid with heat. Combined with sulphur (*vulcanizing*) it is elastic, and resists cold, heat, solvents, and mechanical strain. *Uses*: pneumatic tyres, shoes, waterproof garments, pipes and hose, and numerous technical apparatuses where abrasion or chemical action must be resisted. 2) (Sports) Best of 3 games won by a side in whist, bridge, etc.; to win the R., to win the decisive game. Term also used in bowls (*g.r.*), in plural as *rubbers*.

**Rubble**, (bldg.) old material (broken brick, stone, and mortar) used for filling.

**Rubella**: see GERMAN MEASLES.

**Rubens**, Sir Peter Paul (1577-1640), Flem. painter and diplomat; knighted by Charles I of Eng., 1630. *Relig.*: *Descent from the Cross*, *Last Judgment*. *Hist.*: *Marie de' Medici*. *Portraits* (his wives): *Isabella Brant* and *Helena Fourment*.

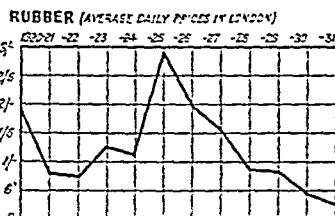
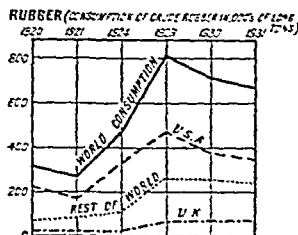
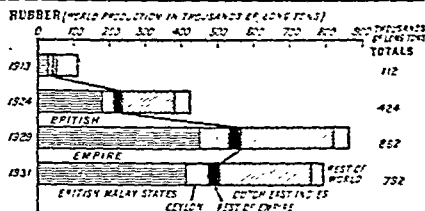
**Rubicon**, riv. betw. It. and anc. Cisalpine Gaul (now Fiumicino), flowing into Adriatic S. of Rimini; in 49 B.C. Caesar started civil war by crossing the Rubicon.

**Rubidium**, (chem.) element, sym. Rb; at.wt. 85.44; sp.gr. 1.52, m.p. 39°; somewhat rare element found in Stassfurt deposits; decomposes water, taking fire in the air; in other respects resembles sodium.

**Rubinstein**, Anton (1829-94), Russ. pianist and composer.

**Rubric**, 1) heading of chapter, paragraph, etc., in MSS.; illuminated, later printed, in red; 2) line, section, passage in written or printed document, distinguished by red colouring or other device; esp. liturgical direction in prayer book, etc.

**Ruby**, 1) hard, transparent, deep red precious stone, a variety of corundum (*q.r.*); also sometimes a variety of spinel (*q.r.*); best rubies found in Burma, Siam, Ceylon. *Brazil R.*, red topaz; *Bohemian* and *Cape R.*, garnets. 2) (Print.) A small size of type betw. pearl and nonpareil and equivalent to 5½ points (see POINT SYSTEM). In America this size known in the old nomenclature as



World prodn. and consumption correspond with trend of progress in motorcar and cycle industry, peak being reached in 1929, when prodn. nearly 8 times 1913 figure. Brit. Malay States and Dutch E. Ind. account for about 85% of total prodn., whilst U.S.A., being chief motorcar producer, consumes bulk of available supplies. Prices fluctuate according to whether rate of incr. of prodn. is expected to be greater or less than that of motorcars. Boom of 1925 largely due to inelasticity of Stevenson Restriction Scheme, incr. demand not being accompanied by sufficiently incr. supply.



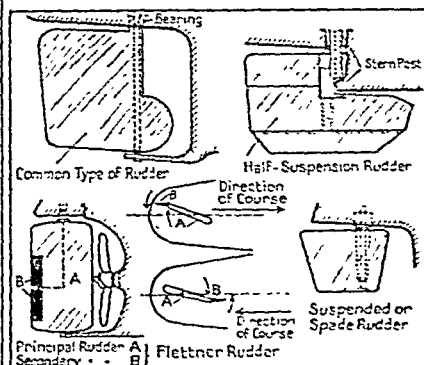
Rubens, Self-portrait

**agate**. **R.-glass**, various kinds of red glass; coloured with metals (gold, copper, silver) in extremely fine state of division. See GLASS. **R.-wasps**, small wasps of bright metallic colour; parasites in nests of other Hymenoptera; found in sub-tropical regions.

**Ruche**, pleated trimming for dresses.

**Rudd**, cyprinoid fresh-water fish resembling the roach.

**Rudder**, plate of wood or metal placed vertically on hinges at stern of boat, ship,



Forms of Rudder

or aircraft, and capable of being moved from side to side to direct the course; operated in small boats by a tiller, or bar fixed to head of R., worked by hand; in larger ships by steering-wheel or control from the bridge.

**R. bar**, (aeronaut.) control lever on floor of cockpit (*q.v.*) in an aeroplane; operated by pilot's feet, controls elevator (*q.v.*).

**Rüdesheim**, tn. in Hesse-Nassau (Rhine Prov.), Ger., on Riv. Rhine; pop., 4,200; vineyards (Rüdesheimer); wine cellars.

**Rudimentary organs**, (physiol.) atrophied organs that have become functionless, e.g., appendix, pineal gland.

**Rudolph**, (1552-1612), Rom. Emp., 1597; Kg. of Hungary, 1572; Kg. of Bohemia, 1575; Kg. R. II of Germans, 1575; interested in struggle in Netherlands; defended empire agst. Turks; forwarded counter-reformation; struggle with younger bro., Matthias.

**Rudolph**, name of 3 kgs. of Germany: 1) **R.**, Duke of Swabia (d. 1080), crowned Kg. of Ger., 1077; fought agst. Hy. IV. 2) **R. I** (1218-91); elected Kg. of Ger., 1273; fndd. power of Habsburg dynasty by defeat of Ottocar II, Kg. of Bohemia. 3) **R. II**: see RUDOLPH, Roman Emperor.

**Rudolph of Habsburg** (1858-89), Crown Pr. of Austria; son of Emp. Francis Joseph of Austria; m. Stéphanie, dau. of Kg. of Belgians; committed suicide.



**Rue**, *Ruta graveolens*, ar-Emperor Rudolph II omatic shrub with greenish-yellow flowers. Used in folk-med. as anti-spasmodic. At one time known as *herb of grace* (rue=repentance). The bruised fresh leaves have an objectionable smell.

**Ruff**, 1) broad circular frilled collar worn in 16th cent. by both sexes. *Ruffle*, lace or cambric frill falling over the hand or attached to front of shirt. 2) Small charadriiforme bird, noted for the remarkable feathered shield or ruff that adorns male during nuptial season; female (called *reeve*), smaller, with no ruff. Polygamous; in mating season males engage in endless mimic tilting bouts with their long, slender bills, and much posturing with frills fully spread.

**Ruffe** (pope), a European fresh-water fish, *Acerina cernua*, belonging to the perch family.

**Rufiji**, riv., Tanganyika, formed by confluence of Ruaha, Luwegu, and Ulanga; below Pangani Falls nav. to its delta on Ind. Ocean; scene of much fighting in E. Afr. campaign (World War).

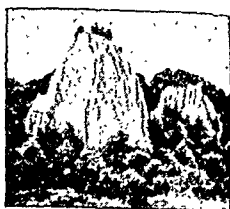
**Rugby**, mun. bor., Warwicksh., Eng.; rly. junction; elec. eng. works; pop., 23,800; public school, fndd. by Lawrence Sheriff, 1567; became famous under headmastership of Thos. Arnold, 1827-42. **R. Union**: see FOOTBALL.

**Rugeley**, urb. dist., Staffs; pop., 5,300; coal and iron.

**Rügen**, largest isl. of Ger., in Baltic Sea, Pomeranian coast; 370 sq.m.; pop., 50,000;

sea-baths; in E. steep cliffs (chalk); peninsulas: Wittow, Jasmund, Mönchgut; cap., Bergen.

**Ruhleben**, race-course nr. Berlin; used as internment camp for Brit. civilians in Ger. at outbreak of World War.



Königsstuhl (400 ft.), Rügen

**Ruhmkorff**,

Heinrich Daniel (1805-77), Ger. scienc. instrum. maker; inv. *R. Induction Coil*, 1851.

**Ruhr**, rt. trib. of the Rhine flowing (146 m.) from the Winterberg Plateau thr. Arnsberg, Witten, Mülheim, etc., to the Rhine at Ruhrort; navgbl. fr. Witten (44 m.).

**Ruhr District**, region betw. rivs. Ruhr and Lippe, Ger.; densely pop. (16% of whole pop. of Ger. on 6% of Ger. land); coal and iron; tns.: Essen (pop., 643,000), Duisburg-Ruhrort with Hamborn (pop., 421,000), Bochum (pop., 318,000), Dortmund (pop., 534,000), Gelsenkirchen-Buer (pop., 345,000), Oberhausen (pop., 191,000); 1929 municipal re-arrangement: forming of settlements into large communities; suspension rlys., elec. tramways, water supply buildings to connect individual districts in growing giant tn. from Hamm to Duisburg. **Occupation of the Ruhr** (11 Jan., 1923), by the Fr. and Belg. armies until the end of Aug., 1925.

**Ruislip Northwood**, urb. dist., Middx.; pop., 16,100; resid. N.W. outer suburb of London.

**Rule, Britannia**, Eng. nat. song; from *Masque of Alfred*, text by James Thomson, music by Thomas Arne, 1740.

**Rule of Three** (*regula de tribus*), method of math. calculation to find a quantity which has the same proportion to a second as a third quantity to a fourth; given three of the quantities, we can find the fourth.

**Rum**, isl., Inner Hebrides, Inverness-sh., Scot., S. of Skye; 41 sq.m.; pop., under 200.

**Rum**, 1) alcoholic drink of cane juice and molasses (Jamaica, Cuba). 2) (= Rome) Vague term used by Mohammedans for Europe and Europeans generally.

**Rumania** (*Ro*, *Roumania*), kgdm. S.E. Eur., bounded N. by Ukraine S.S.R., Poland, and Czechoslovakia; W. by Hungary and Jugoslavia; S. by Bulgaria; and E. by Black Sea. Area, 114,300 sq.m.; pop., 18,300,000. The Carpathians (reaching 7,875 ft.) extend S. into the centre of the country and are continued by the Transylvanian Alps, wh. sweep round to the W. and S.W. The mountains thus form a wedge, dividing the country into two. Outside the wedge are Walachia and Moldavia, constituting Old



Rumania; beyond are the Dobrudja, Bessarabia, and Bukovina. Within the wedge is territory, largely plateau, comprising Transylvania, Maramures, Crisana, and the Banat. Of the rivs., the Danube separates Walachia from the Dobrudja and from Bulgaria, and the Banat (in part) from Yugoslavia; its trib., the Pruth, separates Bessarabia from Moldavia; other Danube tribs. include the Siret (Sereth), Salomitza, Oltu. The Dniester is the frontier betw. Bessarabia and the Ukraine. Production: maize, wheat, barley, oats, rye, sugar-beet, fruit, sheep, cattle, pigs, horses; forests, 28,000 sq.m.; fisheries; petroleum, salt, iron and copper ores, lignite, natural gas; flour-milling, brewing, distilling. Rlys., 6,020 miles. Chf. tns.: Bucharest (cap.), Chisinau (Kishinev), Cernauti (Czernowitz), Iasi (Jassy), Galatz, Cluj.

Principalities of Moldavia and Walachia united, 1861; first ruler, Prince Cuza, 1861-66, succeeded by Pr. Charles of Hohenzollern, Carol I (1881-1914). During Russo-Turkish War, 1878, R. made secret treaty with Russia; independence recognized by Treaty of Berlin, when she received N. Dobrudja and ceded Bessarabia to Russia. Kgd., 1881. Joined Allies in World War, 1916; occupied by Centr. Powers, 1917-18. Territory largely increased after World War. Michael I kg., 1927-30; displaced 1930 by his father, Carol II.

**Rumanian:** see LANGUAGE SURVEY, Romance Languages.

**Rumelia**, Turkish name for former possessions in the Balkans from Constantinople to Albania and from Macedonia to N. and centr. Greece. More particularly the S.E. part of the Balkan Penins. (Thrace). **Eastern R.**, S. portion of Bulgaria, lying S. of the Balkans. Made an autonomous prov. under Turkish suzerainty, 1878; united with Bulgaria, 1885.

**Rumi, Jafal ed-Din** (1207-73), Pers. poet and mystic; fndd. Mathnawi Dervishes; *Divan*; *Masnawi*.

**Ruminants**, ungulate animals having a complex stomach adapted to chewing the cud.

**Rummy**, card game for any number of players, in wh. the object is to collect "sequences" or threes of a kind.

**Rump Parliament**, residue of Long Parliament (q.v.) after expulsion of Presbyt. members in 1648 (see PRIDE'S PURGE); also Ger. Nat. Assembly of 1849.

**Run**, (finan.) rush by depositors to withdraw deposits from a bank owing to anxiety

as to bank's ability to pay; caused by special conditions or rumour that bank is insolvent.

**Runciman**, 1) **Walter**, Baron R. of Shoreston (1847- ), Brit. shipowner, chmn. and director of many shipping organizations; pres. Chamber of Shipping of U.K., 1910-11; created bn., 1933. His son, **Walter** (1870- ), Brit. politician and man of business; M.P., 1899-1900, 1902-18, and from 1920 pres. Board of Walter Runciman Trade, 1914-16 and 1931; pres. Ch. of Shipping of U.K., 1926-27.

**Runcorn**, munic. bor. and riv. port, Cheshire, on Riv. Mersey and Manchester Ship and Bridgewater canals; pop., 18,150; chemical works; transporter bridge (first in Eng., 1902) to Widnes.

**Runes**, oldest form of Teut. writg., alph.

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ᚤ	ᚥ	ᚦ	ᚧ	ᚨ	ᚩ	ᚪ	ᚫ
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Runic Alphabet

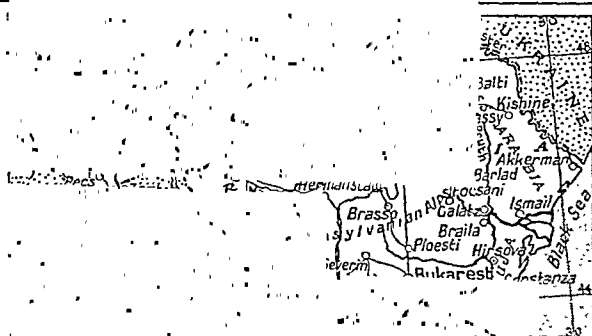
of 24 letters, used until 7th cent.; orig. incised on rods as magic symbols.

**Runge, Friedr. Ferd.** (1795-1867), Ger. chem.; disc. aniline and other dyes. **R., Philip Otto** (1777-1810), Ger. painter: *Parents of the Artist*.

**Runlet:** see KILDERKIN.

**Runner**, 1) servant who ran in front of carriages in 18th cent. 2) Long narrow carpet for stairs or passages. 3) (Tech.) Revolving part (rotor) of dynamo engine or motor. 4) (Bot.) Narrow sprig or branch rooting at nodes, e.g., strawberry runner.

**Running**, sport of racing on foot on a track or across country. *Recog. distances:* (Sprints): 100, 220, and 440 yds. or 100,



200, and 400 mtrs.; *middle distance*: 880 yds. or 800 mtrs.; *long distance*: 1 and 3 m.; inter-univ. sports: 1, 4, and 10 m.; A.A.A. Champs.: 1, 2, and 5 m.; U.S.A.: 1,500 and 3,000 mtrs.; Olymp. Games, *Marathon*: 26m.; or 42 kilom. Cross-country: usu. 10 m. (U.S.A.  $6\frac{1}{4}$  m.). See **HURDLE RACE**; **RELAY RACE**. **R. hot**, (tech.) excessive heating of rotating or sliding machinery; gen. due to insuff. lubrication; may lead to "seizing" and cause serious damage. **R. shoe**, light, heel-less shoe, provided with spikes.

**Runnymede**, level meadow nr. Egham, Surrey, on Riv. Thames, where Kg. John signed Magna Carta (q.v.).

**Runt**, smallest, weakest animal of a litter; stunted animal or person.

**Runway**, in aerodromes, landing and taking-off ground for aeroplanes; illuminated at night.

**Rupee**, 1) Indian monetary unit, and silver coin, equiv. to 16 annas (q.v.), worth c. 1s. 4d. (S.32) at par. 2) Pers. silver coin, worth c. 1s. 6 $\frac{1}{2}$ d. (S.37) at par.

**Rupert**, Pr. of Palatinate (1619-82), nephew of Chas. I and noted cavalry leader in his struggle with Parliamentarians; bur., Henry VII Chapel, Westm. Abbey.

**Rupert's drop**, (phys.) tadpole-shaped bulb of glass which has cooled quickly, and hence is in state of great internal strain; flies to pieces when tail is broken off.

**Rupert's Land**, former name of dist., Canada, now included in N.W. Territories and Manitoba; named after Pr. Rupert, first Gov. of Hudson's Bay Co.; survives as name of diocese of Abp. and Primate of Canada.

**Ruprecht** (1869- ), Crown Pr. of Bavaria, F.M.; com. VI Army (Bavarian troops), 1914; N. armies on W. Front, 1917.

**Rupture**: see **HERNIA**.

**Rural dean**: see **DEAN**.

**Rural district**, area of Eng. loc. gov. intermediate betw. urban dist. and parish. **R. d. councils** have powers and duties sim. to those of urban dist. councils, but less extensive.

**Rurik**, leader of Swed. Varangians (q.v.), fndd. empire in Russ., A.D. 862.

**Ruschuk**, cap. dept. R., Bulgaria (c. 1,900 sq.m.; pop., 341,650), chf. Bulgar port, on Riv. Danube; pop., 45,790; exports grain and tobacco.

**Ruse de guerre** (Fr.), a stratagem.

**Rush**, (bot.) *Juncus*, member of the rush tribe; lily-like grassy plants growing in moist places and on edges of ponds. The soft rush, *J. effusus*, is used to make mats and formerly the wicks of candles (*r.-lights*). The *bulrush* is not a true rush, but belongs to the sedge family.



Rush

**Rus in urbe** (Lat.), "country in the town"; a garden or green place within a town.

**Ruskin**, John (1819-1900), Eng. art critic and social reformer; *Modern Painters*, *The Stones of Venice*.



Ruskin

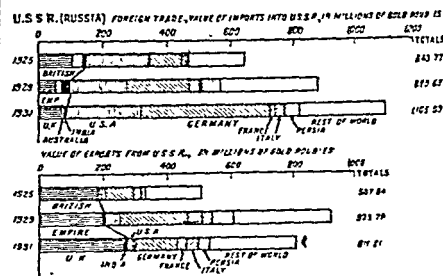
**Russell, Bertrand Russell**, 3rd E. (1872- ), Brit. philos. and mathematic.; *Principles of Social Reconstruction*. **R., Geo. Wm.** (1867- ), Irish author; known as "A. E."; joined Irish Agricult. Organistn. Soc., 1897; ed. of *The Irish Homestead*, 1904-23; *The Irish Statesman*, 1923; pubd. *The Renascence of Youth*, 1911; *The Rural Community*, 1913; *Voices of the Stones* (poems), 1925. **R., Wm. Clarke** (1812-1900), Eng. novelist, esp. successful in his sea-tales: *The Wreck of the Grosvenor*, *The Death Ship*, *Marooned*. **R. of Killowen, Charles Russell**, 1st bn. (1832-1900), Brit. jurist and politician.; Lord Chief Justice, and Baron R. of K., 1894.

**R., Wm. Russell**, Lord (1839-83), Eng. statesm.; 3rd son of 5th Earl of Bedford (1st duke); active member of "country party," 1873; opposed Danby and Duke of York; Privy Councillor, 1879-80; supported Exclusion Bill; charged with complicity in Rye House plot; condemned; beheaded.



Bertrand Russell

**Russia**, former name of Emp. in N. Eur. and Asia, now represented by UNION OF SOCIALIST SOVIET REPUBLICS, with loss of secession States (Finland, Latvia, Estonia, Lithuania, Poland, and Bessarabia); c. 8,242,900 sq.m.; pop., c. 163,014,000. The U.S.S.R. is bounded W. by Finland, Baltic Sea, Estonia, Latvia, Lithuania, Poland, Rumania; S. by



Black Sea, Turkey, Persia, Caspian Sea, Afghanistan, China, Mongolia, Manchuria; E. by seas of Japan and Okhotsk and Bering

Sea; N. by the Arctic Ocean. Large undulating plains in Eur., tundras near Arctic, "black earth"—exceptionally fertile—regions between Riv. Dniester and Urals, steppes around Caspian. Mtn. ranges in Eur. include Yaila, Caucasus, Urals; in Asia, Sailughem, Yablonoi, Stanovoi, Sikhota, Alin, Verkhoyansk. Many import. navigl. rivs.: Volga, Dnieper, Dvina, Onega, Don, Dniester in Eur.; Ob, Lena, Yenisei, Irtysh, Amur in Asia. Canals give sea outlet to several rivers, which are ice-bound 6 mths. yearly in N., 3 in centr. Russia, and 2 in the S. Large lakes: Onega, Ladoga, Baikal, Sea of Azov (qq.r.). Rich mineral deposits in both continents. Naphtha (2,882 million tons, 37.5% of world's resources), manganese, iron,

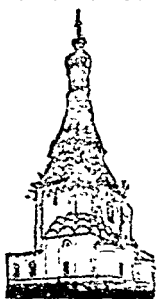
copper, lead, zinc, gold, platinum, precious and semi-precious stones, marble and salt. Chief agric. products: maize, wheat, barley, sugar-beet, flax, tobacco. Timber exp. on large scale: fir, pine, oak, elm. Increasing attention to engineerg., electricity, and agric. machinery in several centres. Climate of large zone in N. and N.E. is arctic; in S. and S.E. summers are short and hot, winters very severe; in Yakutsk min. temp. recorded in winter,  $\sim 95^{\circ}$  F. The U.S.S.R. comprises the Russian Socialist Federated Soviet Repub. (R.S.F.S.R.), the Transcaucasian S.F.S.R. and the Ukrainian, Uzbek, White Russian, Turkmen, and Tadzhik S.S.R. The R.S.F.S.R. consists of: 1) The Autonomous Repubs. of Bashkir, Buriat-Mongol, Chirvash, Crimea, Dagestan, German Volga, Karelia, Kazak, Kirghiz, Tatar, Yakutsk; 2) six auton. areas; 3) five areas; and 4) many provinces. Transcaucasian S.F.S.R. consists of the Armenian, Georgian, and Azerbaijan repubs., with their independent auton. districts.

PEOPLES: Great Russians, Little Russians, and Jews are found in Europe, with Tatars in the Crimea and Karelians and Samoyedes



Dens. 18 p.sqm  
Chf. Exports.  
(1931) in mill. t.  
Wheat, 2.5;  
Rye, 1.1;  
Oats, 0.39.  
Products  
(1931) in mill. t.  
Coal, 58.6;  
Pig-Iron 4.9,  
Petroleum,  
161.9 mill. brls.  
For trade (1931)  
Imports—  
£85 mill.;  
Exports—  
£62.7 mill.

in N. and N.E., Germ., Tatars, Finns, Kal-mucks, and Kirghiz near Volga, Bashkirs in Urals, Armenians, Turko-Tatars, and Georgians in Caucasus; in Asia, Uzbeks, Tadzhiks, Mongols, Buriats, Yakuts, Tungusians, and Ostyaks (largely nomadic) are scattered over wide area; their occup. is mainly reindeer breedg., fishg., and trapping. Chf. tns. (qq.r.), Moscow (cap.), Leningrad, Kiev, Baku, Odessa, Kharkov, Rostov-on-Don (largest agric. mach. plant in Eur.), Tiflis, Dnepropetrovsk, Saratov, Nijni Novgorod, Kazan, Astrakhan, Samara, Krasnodar, Omsk, Tula, Stalingrad, Minsk, Orenburg, Novosibirsk, Voronezh, Yaroslavl, Vladivostok, Tver, Samarkand (all with pop. of over 100,000). Only 7% of inhab. live in the 24 large towns, 80% of total being engaged in agric. Constitution of July, 1918, later amended, abolished private property in land; mines, forests, waters, factories, rlys., live-



Russian Church

stock, estates, became State-owned but may be leased to individuals or trusts. There are 77 univs., 43,000 schools, 29,606 libraries, 1,200 theatres, over 4,100 cinemas.

**Soviet ECON. POLICY** is an attempt to substitute system of socialistic collectivism for capitalism and individualism, an import. stage being the Five-Year Plan (1929-33) "Pyatiletka." This aimed at increasg. output in every dept. of activity, creation of new towns, factories, rolling stock, locomotives, etc. A secd. plan (1933-37) now in operation. In 1931 expen. and revenue were estimated at 21,774 mil. roubles; exports 811,210 thous. roubles, imports 1,105,934 thous. roubles. Relig. propag. forbidden. Jews have been given land in Crimea, where, by 1931, 310,000 were engaged in agriculture. Govt. of union is in hands of Presidium, Centr. Exec. Ctee. (400) and Union Council of People's Commissars (12). Former elected by All-Union Congress of Sov. and is the supreme authority, and when Cong. is not sitting, acts as chf. Sov. legis., admin., and judic. power.

**HISTORY:** Varangians invaded the country in 9th cent. under Rurik, defeatg. Slavonic tribes, and in 862 fndd. kgdm. at Novgorod; House of Rurik ruled until 1598. Vladimir I (980-1015) introd. Christianity. R. over-run and temp. subjugated by Mongols in 12th cent., being freed by Ivan III, 1480. Ivan IV (*The Terrible*, 1533-84) assumed title of Tsar, 1547. Accession of Romanoffs, 1613. Consid. progress under Peter the Great (*q.v.*), Baltic Coast acquired and R. became Eur. Power; Peter's daughter Elizabeth (1741-61) annexed Finland; Catherine II (1762-96), Courland and parts of Poland, securg. access to Black Sea aft. defeatg. the Turks. R. fought with Allies agst. Fr., 1807; invasion by Napoleon, 1812 (burning of Moscow and destruction of Grande Armée during retreat). R. took most of Poland at Congress of Vienna, 1815; Alexander I projects Holy Alliance (*q.v.*) (joined by Ger. and Aus.), 1815. Attempts to consol. position on Black Sea led to Crimean War (1853-56) and Russo-Turk. War (1877-78); emancip. of serfs, 1861; Alaska ceded to U.S.A., 1867. Unsucc. attempt, followg. completn. of Trans-Siberian Rly., to open gate to Pacific by occupatn. of Manchuria, resulted in disastrous war with Jap. (1904-05), part of Sakhalin being surrendered. Relat. with Aus. and Ger. cooled and approach made to France. Revolution, 1905, resulted in Constitution being granted; revolution crushed 1906, year of first Duma (*q.v.*). Peasant communes broken up by Stolypin; autocracy effectively restored by 1908. Entente with Eng. and Jap. arranged, R. showing strong opposition to Austria over Balkan question; closer co-

operat. with France. R. entered World War (1914), signing sep. peace with Centr. Powers, Brest-Litovsk, 1918. Revoln. broke out March, 1917, Tsar abdicd., March 15 (end of Romanoff Dynasty (*q.v.*)). Provis. democr. govt., later headed by Kerensky, took office. Soviet Repub. under Lenin and Trotsky set up, Nov. 7th. Civil War (1917-22) followed throughout country, White Guards (under Koltchak, Denikin, Yudenitch), Czech, Brit., Amer., Jap., and Fr. troops taking part. Bolshevik Govt. recognised *de jure*, 1924. New Econ. Policy inaugur., 1921, and U.S.S.R. with constituent States created, 1922-29. Russo-Brit. trade agreemt. ended Apr., 1933.

**Russian**, general name for Slav. races in Russ.; incl. Great Russians (*q.v.*, 67%), Little Russians (see UKRAINIA; RUTHENES, 26%) and White Russians (*q.v.*, 7%); see also LANGUAGE SURVEY, *Slavonic Languages*. **R. alphabet**, variatn. of Cyrillic alphabet (*q.v.*), assimilated to Lat.; intro. in 17th cent.; contains more letters than W. Europ. alphs.; three letters discarded by Bolsh. **R. Church**, largest section of the *Gr. Orth. Ch.* (*q.v.*), wh. spread to Russia from Constantinople in 9th cent.; orig. governed by Patriarch of Moscow, but by Peter the Great, 1721, subjected to a "Holy Synod" of bps. and State officials apptd. by the Tsar; patriarchate restored in 1917, since when it has been broken up by the Revolution into numerous groups, mainly distingd. by their attitude towards principles of existing Russ. government. **R. Lapland:** see KOLA PENINSULA. **R. leather**, good quality ox- or horse-hide, treated with birch-tar oil; has characteristic smell. **R. Turkestan:** see TURKESTAN.

**Russiaks:** see RUTHENES.

**Russo-Japanese War**, 1904-05; struggle for predominance in Korea and Manchuria, resulting in def. of Russ. after Jap. victories on land (fall of Port Arthur and Mukden) and sea (Tsushima). Peace signed at Portsmouth, N.H., U.S.A.

**Russo-Turkish War**, 1877-78, resulted in victory of Russ.; peace signed at San Stefano, giving independence to Serbia, Montenegro, and Bulgaria.

**Rust**, 1) chem. formation of ferric hydroxide on surface of iron; caused by mutual action of oxygen and moisture. Metal coverings, paints, greases, layers of oxide, used as protec. against R.; see CORROSION. 2) R. in plants, caused by the R.-fungus, parasitic fungus (*Uredinaceae*) very destructive to plants, esp. to grain.

**Rustication**, (bldg.) form of masonry stones that are squared and have their visible edges chamfered but the faces rough; so left in Renaissance buildings for decorative effect.



Wheat Affected by Rust



**Rut**, sexual desire of animals; occurs annually in some males (esp. deer) and periodically in females.

**Ruth** (O.T.), Moabitess, dau.-in-law of Naomi. Story related in **Book of Ruth**; date uncertain, but present form late.

**Ruthenes**,  
**Russniaks**,  
Little Russians  
(estd. at c.  
22,400,000) in-  
habtg. former  
Austro-Hung.  
Emp. and  
S. Russia.



Ruth Gleaning in the Fields: after Holbein

**Ruthenia** (Carpathian Ruthenia), Czechoslovakia; 4,840 sq.m.; pop., 606,570; Gr. Orth. Ruthenians. Cap., Užhorod (Ungvar).

**Ruthenian**: see LANGUAGE SURVEY, *Russian Languages*.

**Ruthenium**, (chem.) element, sym. Ru; at. wt. 101.7; very heavy precious metal; sp. gr. 12.26; occurs with platinum, but has an even higher m.p., exceeding 1950°.

**Rutherford, Sir Ernest O.M.**, 1st Bn. R.; (1871- ), Brit. chem. and physicist; researches esp. in radio-activity and the atom (*q.v.*); Nobel Prize (Chem.), 1908; peerage, 1931. **R., Mark**, pseud. of Wm. Hale White (1829-1913), Eng. novelist; publ. *The Autobiography of Mark Rutherford*, 1881; *The Revolution in Tanner's Lane*, 1887.



Lord Rutherford

**Rutherglen**, royal burgh, N.W. Lanarksh., on the Clyde, adjoining Glasgow; pop., 25,200; cotton and paper mills, dye-works, coal mines, shipbuilding.

**Ruth's Steam Accumulator**, vessel in wh. steam is stored under high pressure, to be utilized when heavy load is thrown upon steam plant. See STEAM ACCUMULATOR.

**Rutile**, a rare mineral, reddish-brown titanium dioxide; has been used for colouring porcelain yellow; sym., TiO<sub>2</sub>.

**Rutland**, Earls and Dukes of, titles in peerage of Eng.: **Edward Plantagenet**, 1st E. (1373-1415), held title until he succ. his father as Duke of York, 1402; title later held by his nephew, **Richard of York**, whose dau., Anne, marr. Sir Thomas St. Leger, and their dau. marr. George Manners, 12th Bn. de Ros (d. 1513); their s. **Thomas Manners** (d. 1543) cr. E. of R., 1525, and granted Belvoir Castle and other estates; his 2nd s., **Sir John**, obtained Haddon Hall, Derbyshire, by marr. with Dorothy, dau. of Sir George Vernon ("King of the Peak"); his elder s. **Henry**, 2nd E. (1516-63), adm. of the fleet under

Qn. Mary; his s. **Edward**, 3rd E. (1548-87), left no sons; his bro., 4th E. (d. 1588), succ. by his s. **Roger** (1576-1612), who marr. dau. of Sir Philip Sidney; **Francis**, 6th E. (1578-1632), no male issue; **John**, 8th E. (1604-79), was e.s. of Sir George M. of Haddon, descendant of Sir John, 2nd s. of 1st E.; his s. **John** (1638-1711) sheltered Princess (aftwds. Qn.) Anne at Belvoir, 1688; cr. Marq. of Granby and Duke of R., 1703; his g.s. **John**, 3rd duke (1696-1779); his s., **John**, commd. English forces in Seven Years' War, and d. 1770; his s. **Charles**, 4th duke (1754-87), assisted Pitt the younger into Hse. of Com.; Lord-Lieut. of Ireland, 1784; advocated Union; **John Henry**, 5th duke (1778-1857), inspired the Duke in Disraeli's novel *Coningsby*; **John James**, 7th duke (1818-1906), well known as "Young England" reformer while still Ld. John Manners; **John Henry**, 9th duke (1886- ), s. of 8th and Violet, Duchess of R., the artist.

**Rutlandshire**, **Rutland**, midland co., Eng., smallest geogr. co.; area, 152 sq.m.; pop., 17,400; surface undulating and wooded; agric., cattle-trade; co. tn., *Oakham*.

**Rütli**, forest glade in Canton of Uri, on L. Lucerne, Switzerland; original cantons supposed to have taken oath of freedom here, in 1307, agst. Habsburgs.

**Rutupiae**: see RICHBOROUGH.

**Ruwenzori**, mtn. range in equatorial Africa, betw. lakes Albert and Edward; *Mt. Margherita*, 16,850 feet.

**Ruy Blas**, 1) drama by V. Hugo (*q.v.*) 1838; 2) opera by Marchetti, 1869.

**Ruy Diaz**: see CDR.

**Ruy Lopez**, famous Span. chess-player, analyst, and writer (R. L. de Segura, fl. 1550-80); his name given to a pop. opening (P-K4, P-K4; Kt-KB3, Kt-QB3; B-Kt 5).

**Ruysbroek**, Jan van (1293-1381), Dut. priest and mystic.

**Ruysdael**, 2 Dutch landscape painters of School of Haarlem: 1) **Jakob van** (c. 1628-82); *Bleaching Ground*, *Watermills*, *Shore at Scheveningen*. 2) His uncle, **Salomon van** (c. 1600-70); *Fishing in the River*, etc.

**Ruyter**, Michel de (1607-76), Dut. adm.; attacked and burnt Brit. fleet in Thames and Medway, 1667.

**R.W.S.**, abbr. Royal Watercolour Society.

**Rydal Water**, lake, Westmorland, Eng., Lake Dist.,  $\frac{1}{2}$  m. by  $\frac{1}{2}$  m.; *Rydal Mount*, home of Wordsworth, 1817-50.

**Ryde**, seapt. tn. and watering-place, Isle of Wight,  $\frac{4}{5}$  m. S.W. Portsmouth, across Spithead; pop., 10,500.

**Rye**, tn., E. Sussex, an "Ancient Town" (addn. to Cinque Ports, *q.v.*) and formerly an important port, now 2 m. from the sea; pop., 3,900.

**Rye**, cereal cultivated in N. Eur.; grain used as a flour and for whisky making.

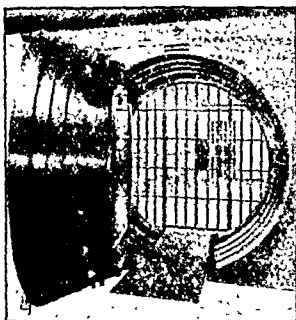
in 1925, theatre was bought and rebuilt public subscriptn., for purpose of producing plays, ras, etc., similar as at d Vic x); re-named 1930. **Sadowa**, little of, disive vic-y of the Russians



Sadler's Wells Theatre

er the Austrians, July 3, 1866; named after a vill. nr. Hradec Kralové (Königgrätz); o called B. of Königgrätz.

**Safe**, fire-proof cupboard protected by ick metal plates and layers of slag (to event opening by blowpipe cutting); usu. ovided with double walls enclosing a non-nductor of heat (e.g., kieselguhr) to pre-



Safe with Steel Door 1 Metre Thick

vent contents being damaged by fire. Further security provided by intricate locks (time or letter locks, etc.) and elec. burglar alarms. Large safes are called strong rooms.

**S. custody**, the placing of securities or valuables in the keeping of a banker for safety; in U.S.A., *safe deposit*.

**Safeguarding of industries duties**: see CUSTOMS DUTIES.

**Safety devices**, 1) *S. curtain*, fire-proof curtain between stage and audience wh. must, by law, be lowered once during every performance. 2) In traf-fic, esp. system of automat. red-yellow-green lights, signifying *stop-caution-go*, installed at chief crossings in London and other big Engl. cities, sometimes with addl. arrow signs (colloq. "Eva" system) to indicate if left turn or "fil-tering" is allowed; 3) at sea, chief life-saving devices are buoys and swimming jackets, see *Illus.* and *BREECHES BUOY*. **Safety lamp**, miner's lamp, tall cylindrical closed lamp permitting air to enter to keep flame alive, but preventing flame coming in

contact with "damp" or other inflammable gas; esp. *Davy S. L.* invented by Sir Humphry Davy, 1815, who declined to patent it or take any profits from it.

**Safety valve**, weighted or spring V. on vessels containing fluids (water, steam) under pressure. Opens automat. when pressure exceeds a set safe limit, and releases fluid until pressure falls.

**Saffian**, morocco leather, usu. made of goat-skin, tanned with sumac and brightly coloured.

**Safflower**, *Carthamus tinctorius*, thistle-like plant with orange-coloured flowers; cultivated in the E., to furnish a red dye.

**Saffron**, dried, brownish-yellow stigmas of *S. Crocus* (*Crocus sativus*); used as yellow dye and as flavouring material in cooking and pharmacy. Similarly, *Indian S.*, powdered rootstock of an E. Ind. shrub, *turmeric*.

**Saffron Walden**, munic. bor. and mkt. tn., Essex; pop., 5,950; ruined 12th-cent. castle; museum; school of Soc. of Friends (1881); saffron cultivated till c. 1770; 2 m. S.W. is Audley End (q.v.).

**Safranin**, artificial dye-stuff (aniline pink), used for cotton-printing, and for rendering photographic plates less sensitive to daylight.

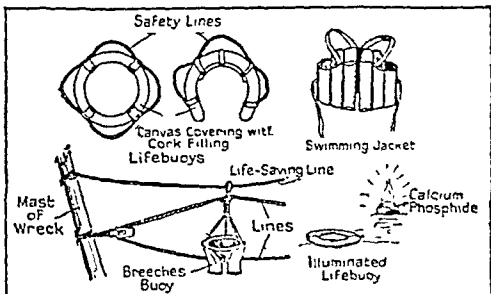
**Saga**, Med. Icel. or Norw. prose tale, esp. oral hist. of Icel. family or Norw. kg.; 1st collected in 13th century.

**Sage**, *Salvia officinalis*, garden herb used as a flavouring; has purple flowers. Wild sage or clary, *S. verbenaca*, has purple flowers and grows c. 2 ft. high. Used in folk med. for stomach troubles and as an eye-lotion.



Sage

**Saginaw**, tn., Michigan, U.S.A., on Saginaw Riv.; pop., 80,700; commerc. centre;



Marine Life-saving Apparatus

coal, oil, sugar-beet, grain; carriage and wagon works.

**Sagittaria**, (bot.) genus of aquatic herbs akin to the alisma (q.v.), with arrow-shaped leaves.

Rye is subject to a fungus disease (see **ERGOT**) and consumption of infected grain by under-nourished peasantry has in past caused disease known as ergotism, now rare. *Black Bread* is made from rye.

**Ryegrass**, *Lolium italicum*, cultivated as fodder. Another variety, *L. temulentum*, or *Darnel*, has poisonous seeds.

**Rye House Plot, The** (1683), Whig conspiracy in favour of the Duke of Monmouth, and to assassinate Charles II and Duke of York; Lord Russell, Sidney, and others executed. The conspirators met at Rye House, Hertfordshire.

**Rykov**, Alexei Ivanovitch (1880- ), Russ. politic.; succ. Lenin as Pres. of Council of People's Commissars of Soviet Russia.



Ear of  
Rye

**Ryks Museum** (National Mus.), picture gallery of Dutch and Flemish art, built in Amsterdam, 1876-85; paintings by Rembrandt.

**Rylands**, John (1801-88), Brit. industrialist; *John Rylands Memorial Library*, Manchester, fndd. by his widow, 1899.

**Rynkyn Islands**, group, Asia, betw. E. China Sea and Pacific Ocean; extends from Kyushu towards Formosa; part of Jap. Empire.

**R.Y.S.**, abbr. Royal Yacht Squadron.

**Ryswick (Rijswijk)**, **Peace of**, treaty signed, 1697, at Ryswick, a vill. 2 m. S. of The Hague, betw. France and England, Spain, the Netherlands, and the Empire. Ended War of the Grand Alliance.

**S**, (chem.) symbol of sulphur.

**S.**, abbr., 1) south; 2) shilling; 3) saint.

**Saale**, two Ger. rvs.: 1) *Thuringian* or *Saxon S.*, trib. (275 m.) of Riv. Elbe; rises Fichtelgebirge; passes Halle; joins Elbe above Barby. 2) *Franconian S.*, trib. (70 m.) of Riv. Main; passes Kissingen; joins Main at Gemünden.

**Saar**, **Sarre**, trib. (134 m.) of Riv. Moselle; rises in the Vosges; joins Moselle at Konz. **S. Canal** (39 m.), from Saargemünd to Rhine-Marne Canal.

**Saarbrücken**, cap. of Saar Territ. (*q.v.*), on Riv. Saar; pop., 126,000; centre of Saar coalfields; ironworks, chemicals.

**Saargburg**: see SARREBOURG.

**Saaremaa**, **Oesel**, Estonian island in the Baltic, at entrance of Gulf of Riga; 1,000 sq.m.; pop., 50,000; chf. tn., Arensburg.

**Saar Territory**, dist., Ger., S. portion of Rhine Prov. and W. salient of Bavarian Palatinate; includes Saar coalfields; 737 sq.m.; pop., 805,000; coal and iron; glass; chemicals; cap., *Saarbrücken*. Under Treaty of Versailles, terr. administered by international commission of League of Nations; its destiny (union with France, return to Ger., or perpetuation of League admin.) to be decided by plebiscite in Jan., 1935.

**Sabadilla**, (bot.) *Schoenocaulon officinale*, Mexican plant of lily family; seeds contain veratrine, very poisonous substance, formerly used as an ointment to allay pain in facial neuralgia, also as a lotion to destroy vermin in hair.

**Sabal**, genus of palm, native to S. Amer.; includes *Dwarf Palmetto* of Texas and *Saw* or *Scrub Palmetto* of Florida and S. Carolina.

**Sabaoth** (Hebr., "hosts"), only in phrase, "Lord God of Sabaoth."

**Sabatier**, Paul (1854- ), Fr. chemist; esp. organic chemistry; Nobel Prize (Chem.), 1912.

**Sabbatai Sebi** (1626-76), Jew. mystic, claiming to be the Messiah; embraced Islam; fndd. sect of Sabbataeans.

**Sabbatarians**, members of certain Christian sects who keep Sabbath on Saturday instead of Sunday: *7th Day Baptists* and *Adventists*, *New Israelites* (in England), *Subbotniki* (in Russia); used derogatorily of those who insist upon regarding Sunday as a day of gloom.

**Sabbath**, (Heb.) 1) the 7th day of the

week, ordained in the Decalogue as a day of rest; observed by Jews all over the world, and until the 3rd cent. by Christians. 2) The Christian Sunday. **S.-day's journey** (Bibl.), distance, 2,000 cubits (*c.* 5 fur.) wh. a Jew was allowed to walk on the Sabbath.

**Sabine Mtns.**, limestone range forming W. continuation of the Abruzzi, E. of Rome; Monte Viglio, 7,100 feet. **S. Riv.**, Louisiana and Texas, U.S.A., empties into Gulf of Mexico; 400 miles.

**Sabines**, anc. race of centr. Italy (N.E. of Rome), absorbed by Romans, *c.* 290-270 B.C. (legendary *Rape of the Sabine Women*).

**Sabinianus**, Pope (604-606), succsr. of Gregory the Great.

**Sable**, species of marten (*Mustela zibellina*), found in Siberia and Kamchatka;

greatly prized for its beautiful deep brown fur; closely allied species in N. Amer. (*M. americana*). **S.-antelope**, one of the most beautiful of S. African antelopes, with magnificent recurved horns sweeping backwards from the head. *Gemsbok* or *oryx*, an allied genus, has long, slender, or slightly curved horns; found in



Sable

Africa, S. of Sahara, and in Syria and Persian Gulf.

**Sabotage**, wilful damage to machinery, tools, etc., by workmen as a protest against conditions of work.

**Sabre**, a curved sword, the cutting edge of wh. is sharp; the back sometimes sharpened halfway up the blade.



Sabre Fencing

**S.-toothed tiger**: see MACHAERODUS.

**Saccharates**, compounds of cane-sugar with bases; *e.g.*, calcium saccharate,  $C_{12}H_{22}O_{11} \cdot CaO \cdot 2H_2O$ ; used as an antacid.

**Saccharimeter**, form of polarimeter (*q.v.*) for measuring amt. of sugar in liquids (*e.g.*, urine).

**Saccharine**, glucide,  $C_6H_4 \cdot SO_2 \cdot CO \cdot NH$ ; anhydride of ortho-sulphamidobenzoic acid; artific. sweetening agent, 330-550 times sweeter than sugar, accdg. to quality.

**Saccharose**: see SUGAR.

**Sacheverell**, Henry (1674-1724), Eng. clergyman and Tory politician; chaplain of St. Saviour's, Southwark, 1705; prosecuted at instigation of Godolphin for criticizing Whig ministry in sermons, 1709; suspended for 3 yrs.; re-instated as rector of St. Andrew's, Holborn, 1713.

**Sachs**, Hans (1494-1576), Ger. poet, shoemaker, and meistersinger of Nuremberg; supported Reformation; *Fastnachts-spiele*, *Parabeln*.



Hans Sachs

**Sack**, 1) large, narrow bag of coarse textile (e.g., jute); used for holding heavy commodities, such as coal, potatoes, etc. 2) Brit. dry meas. of varying capacity; sack of potatoes 3 bushels, of flour 5 bushels, of wool  $3\frac{1}{4}$  cwt., of coal 1 cwt., of meal 280 lb. 3) Dry white wine from Canary Is.; in 17th cent. applied generally to all pale Sthm. wines (Sp.: dry).

**Sacrament**, "an outward and visible sign of an inward and spiritual grace" (Ch. of E. Catechism); Ch. of E. recognizes 2 (Baptism and the Lord's Supper) as "ordained by Christ Himself as generally necessary to salvation"; R.C. and Gk. Orth. chs. recognize 5 others (Confirmation, Holy Orders, Matrimony, Penance, Extreme Unction). **Sacramentals**, R.C. ceremonies, acts, observances, resembling sacraments, instituted not by Christ but by the Church; e.g., consecration of a building, exorcism, use of holy water or sign of the cross. **Sacramental elements**, the bread and wine employed in Holy Communion; see TRANS-SUBSTANTIATION. **Sacramentarian**, 1) name given to Zwingli and his followers (16th cent.), who held that the sacramental elements were only symbols of Christ's Body and Blood and that the Eucharist was merely commemorative; 2) one with specific views on the efficacy of the Sacraments.

**Sacramento**, 1) cap., California, U.S.A.; pop., 70,000; two catheds.; rly. junction and workshops; flour; minerals; meat-packing; fruit-canning; pottery; on 2) S. riv., chf. waterway of California; rises in Sierra Nevada and flows (400 m.) into San Francisco Bay.

**Sacrarium**, the sanctuary, or part of chancel within the altar rails in a Christian church.

**Sacred Heart**, the physical Heart of Jesus

considered as united with His Divinity, a special object of devotion in R.C.Ch., esp. in modern times, largely owing to work of St. Margaret Mary Alacoque (d. 1690); day: Friday after Octave of Corpus Christi, i.e., 3rd Fri. aft. Trinity. **Society of S.H.**, relig. order of teaching nuns, fndd., 1800, by St. Madeleine Sophie Barat.

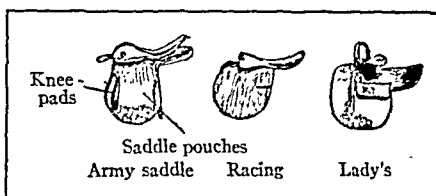
**Sacrifice**, relig. act; gen. actual or symbolical gift to a divinity (*S. of atonement*); pop., the giving of something to another at material or moral cost to oneself.

**Sacrilege** (Lat.), profanation of, or insult offered to, sacred places or things. In law, the breaking into and stealing from a place of worship, generally now treated as burglary or larceny.

**Sacristan**, (eccles.) officer of a ch. who has charge of the sacristy; also a sexton (*q.v.*). **Sacristy**, part of a ch. where the ch. books, vestments, etc., are kept.

**Sacrum**, (anat.) triangular bone formed of coalesced vertebrae; forms the lower end of spinal column and back wall of pelvis. To S. is attached the *coccyx*, the remnant of tail in man.

**Saddle**, rider's seat, usually leather, fastened on back of horse, etc.; seat of bicycle,



Forms of Saddle

etc. **S. of mutton**, joint consistg. of vertebrae betw. shoulder and loins with the ribs on either side.

**Sadducees** (Hebr.), polit. and religious party among the Jews (fndd. c. 120 B.C.) closely identified with the Temple services and priestly privileges and opposed by the Pharisees (*q.v.*); sceptics as regards everlasting life and the existence of angels. The party disappeared when the Temple was destroyed, A.D. 70.

**Sa'di** (c. 1184-1291), great Pers. didactic poet and popular writer; *Bustan*, 1257; *Gulistan*, 1258.

**Sadiron**, heavy, solid flat-iron.

**Sadism**, sexual perversion, addicts to wh. obtain gratification by committing acts of cruelty; named after the novelist, Marquis de Sade (1740-1814).

**Sadler's Wells**, Eng. theatre in bor. of Finsbury, N. London; in 17th cent. site of a mineral well and place of entertainment; at theatre, built in 18th cent., the famous clown Grimaldi (1779-1837) appeared, and Samuel Phelps produced Shakespeare's plays (1844-

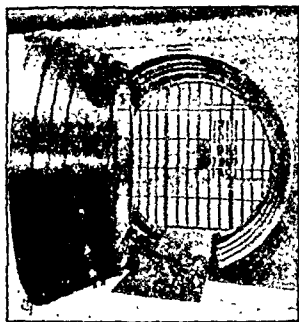
64); in 1925, theatre was bought and rebuilt by public subscriptn., for purpose of producing plays, operas, etc., on similar lines as at Old Vic (q.v.); re-opened 1930.



Sadler's Wells Theatre

**Sadowa, Battle of**, decisive victory of the Prussians over the Austrians, July 3, 1866; named after S., a vill. nr. Hradec Kralové (Königgrätz); also called *B. of Königgrätz*.

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Safe with Steel Door 1 Metre Thick

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**S. custody**, the placing of securities or valuables in the keeping of a banker for safety; in U.S.A., *safe deposit*.

**Safeguarding of Industries duties**: see CUSTOMS DUTIES.

**Safety devices**, 1) *S. curtain*, fire-proof curtain between stage and audience wh. must, by law, be lowered once during every performance. 2) In traffic, esp. system of automat. red-yellow-green lights, signifying *stop-caution-go*, installed at chief crossings in London and other big Engl. cities, sometimes with addl. arrow signs (colloq. "Eva" system) to indicate if left turn or "filtering" is allowed; 3) at sea, chief life-saving devices are buoys and swimming jackets, see *Illus.* and BREECHES BUOY. **Safety lamp**, miner's lamp, tall cylindrical closed lamp permitting air to enter to keep flame alive, but preventing flame coming in

contact with "damp" or other inflammable gas; esp. *Davy* S. L. invented by Sir Humphry Davy, 1815, who declined to patent it or take any profits from it.

**Safety valve**, weighted or spring V. on vessels containing fluids (water, steam) under pressure. Opens automat. when pressure exceeds a set safe limit, and releases fluid until pressure falls.

**Saffian**, morocco leather, usu. made of goat-skin, tanned with sumac and brightly coloured.

**Safflower**, *Carthamus tinctorius*, thistle-like plant with orange-coloured flowers; cultivated in the E., to furnish a red dye.

**Saffron**, dried, brownish-yellow stigmas of *S. Crocus* (*Crocus sativus*); used as yellow dye and as flavouring material in cooking and pharmacy. Similarly, *Indian S.*, powdered rootstock of an E. Ind. shrub, *turmeric*.

**Saffron Walden**, munic. bor. and mkt. tn., Essex; pop., 5,950; ruined 12th-cent. castle; museum; school of Soc. of Friends (1881); saffron cultivated till c. 1770; 2 m. S.W. is Audley End (q.v.).

**Safranin**, artificial dye-stuff (aniline pink), used for cotton-printing, and for rendering photographic plates less sensitive to daylight.

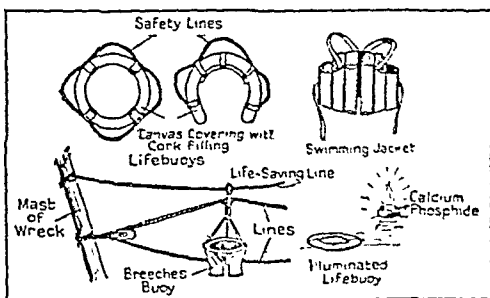
**Saga**, Med. Icel. or Norw. prose tale, esp. oral hist. of Icel. family or Norw. kg.; 1st collected in 13th century.

**Sage**, *Salvia officinalis*, garden herb used as a flavouring; has purple flowers. Wild sage or clary, *S. verbenaca*, has purple flowers and grows c. 2 ft. high. Used in folk med. for stomach troubles and as an eye-lotion.



Sage

**Saginaw**, tn., Michigan, U.S.A., on Saginaw Riv.; pop., 80,700; commerc. centre;



Marine Life-saving Apparatus

coal, oil, sugar-beet, grain; carriage and wagon works.

**Sagittaria**, (bot.) genus of aquatic herbs akin to the alisma (q.v.), with arrow-shaped leaves.

**Sagittarius**, "The Archer," zodiacal constell.  $\uparrow$  9th of signs of zodiac (q.v.); see PL., ASTRONOMY, S.C.H., B.

**Sago**, granulated starch-flour made from inner portion of trunks of E. Indian **S. palm**, also of a palm fern (*Cycas*); sim. to *tapioca*.

**Sagunto** (anc. *Saguntum*), tn., Sp., prov. of Valencia, on the Palancia; pop., 7,600; rolling mills. Its conquest by Hannibal (219 B.C.) caused Second Punic War.

**Sahara**, desert, N. Africa, largest in world; mainly in Fr. sphere; extends from *Atlas Mts.* to Sudan; c. 3,500,000 sq.m.; breadth 800-1,400 m.; interior a plateau covered with sand-dunes (mean alt., 1,000 ft.); highest point in *Tibesti Mts.* (c. 9,800 feet). Climate very dry (some areas rainless); vegetation scarce except in the few oases (date-palms).

Inhabited by Arabs in the E. (Libyan Desert), by nomadic Tuaregs in the interior, by Moors in the W. Trans-Saharan rlys. projected from N. to S. (by France) and across Libyan Desert to L. Chad (by Italy).

**Sahib** (Hind. and Arab.), "master"; title given in India to Europeans and natives of high position.

**Saida** (anc. *Sidon*), Medit. port in Syria; pop., 13,780.

**Saiga**, antelope of steppes of S.E. Russia and Siberia; male has short lyrate horns.

**Saigon**, cap. of Cochinchina, Fr. Indo-China, on estuary of Riv. Saigon; pop., 140,000 (9,000 Fr.); commercial port; trading centre.

**Sail**, (naut.) adjustable sheet of canvas or other substance fastened to mast or spars of ships, to catch the wind; also used to propel sleighs. **S.-cloth**, strong linen material, used for boats' sails, tents, etc.

**Sailing-ship**: see BARQUE; BRIG; CUTTER; SCHOONER; SLOOP; YACHT, etc.

**Sainfoin**, *Onobrychis sativa*, member of the pea and bean family; grows c. 2 ft. high; spike of crimson flowers; cultivated as fodder.

**Saint**, abbr., S., St.; pl., SS.; 1) one who has been canonized (see CANONIZATION). 2) Apostle, ancient bp. or father of Christian Ch. 3) Any person of great purity and sanctity of life.

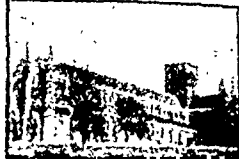
**St. Abb's Head**, headland (310 ft.), E. Berwicksh., Scot., named after 7th-cent. nunnery of St. Ebba.

**St. Acheul**: see ACHEULEAN CULTURE.

**St. Albans**, Dukes of, titles in peerage of England: **Charles Beauclerk** (1670-1726), s. of Charles II and Nell Gwyn, cr. Bn. Hedington and E. of Burford, 1676, and Duke of St. A., 1684; m. Diana, dau. of Aubrey de Vere, last E. of Oxford; succ. by his s., **Charles** (1696-1751); his s. **George**,

3rd duke (1730-86), was succ. by 2nd cousin, **George** (1758-87), d. unmarried; succ. by cousin, **Aubrey Beauclerk**, 5th duke (1740-1802); **William**, 8th duke (1766-1825), was s. of 5th duke; his s. **William**, 9th duke (1801-49), m. Harriot Mellon, the actress, widow of the banker, Thomas Coutts; his g.s., **Charles V. A. A. de Vere**, 11th duke (1870- ), is hereditary Grand Falconer of England.

**St. Albans**, city in Herts, 17 m. N. W. of London; pop., 28,600; famous abbey ch. (cathed. since 1877); manuf. silk, straw hats; breweries. City built close to site of Rom. *Verulamium*. Two battles during Wars of the Roses, the first (1455) a Yorkist, the second (1461) a Lancastrian, victory.



St. Albans Abbey

**St. Aldwyn**, Mich. Edw. Hicks-Beach, 1st Earl (1837-1916), Eng. Con. statesm.; Chf. Sec. for Ireland, 1874-78, 1886-87; Colonial Sec., 1878-80; Chanc. of Exchq., 1885-86, 1895-1902; pres. of Bd. of Trade, 1888-92; chmn. of Royal Commission on Ritualistic Practices in the Church; cr. visct., 1906; earl, 1915.

**St. Andrew**, Order of, highest Russ. order of knighthood; fndd. by Peter the Great, 1698. Abol. since Revolution.

**St. Andrews**, royal burgh, Fifesh., Scot.; cas., cathed., univ. (1411); fisheries; famous golf-links; pop., 8,300.

**St. Asaph**, village-city, Flint, N. Wales; pop., 1,830; 13th-cent. cath., see of bpric. from c. 1150, and of Abp. of Wales since 1920.

**Saint Augustine**, tn., N.E. Florida, U.S.A., on Atlantic coast; pop., 12,100; port of entry; cathed.; arsenal.

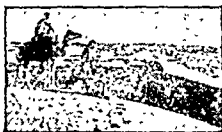
**St. Austell**, urb. dist. and mkt. tn., Cornwall; pop., 8,300; china-clay.

**St. Bartholomew's Hospital**, Smithfield, London, Eng.; popularly called "Bart's," fndd. by Rahere (1123) as a cell of St. B.'s Priory; aft. Dissolution refndd. by Henry VIII and granted (1547) to the City Corporation; Chapel **St. B. the Less**, part of orig. building.

**St. Benedict of Aviz**, Order of, oldest Portuguese order of knighthood; fndd., 1162.

**St. Benet's Hall**, Oxford Univ.; private hall for Benedictine students, fndd. as house of studies, 1897; form. known as Hunter-Blair's Hall (1898-1908) and Parker's Hall (1908-18).

**St. Bernard**, 1) two Alpine passes: **Great St. B.**, in Swiss Canton of Valais, on Ital. frontier; connects the Rhone vall. (Martigny) with that of Dora Baltea (Aosta); 52 m. long, altit., 8,111 ft.; at summit is



Sahara

**St. B. Monastery** (fndd. 962), a hospice of Augustinian Canons; St. B. dogs bred.

**Little St. B.** (7,179 ft.; 20 m. long), connects vall. of Dora Baltea with that of Isère (in Savoie, France).

2) Large heavily built dogs, rough- or smooth-coated, named after monastery in the Alps, where they are trained to rescue travellers lost in the snow.

**St. Boniface**, Fr.-Can. tn., Manitoba,



St. Bernard Dog



Monastery of St. Bernard

on Red Riv., opp. Winnipeg; pop., 14,200; see of R.C. archbishopric.

**St. Brieuc**, cap. dépt. Côtes-du-Nord, Fr.; pop., 26,050; cathedral.

**St. Catharine's College**, Cambridge, fndd., 1473, by Dr. Robert Woodlark (Wode-larke), Chanc. of the Univ. Familiarly known as "Cat's."

**St. Catherine's Point**, S. extremity, Isle of Wight, Eng.; lighthouse.

**St. Christopher**, isl., W. Indies; see ST. KITTS.

**St. Clair, Lake**, betw. and connected with lakes Erie and Huron, on frontier separating Canada from Michigan, U.S.A., 460 sq.miles.

**St. Cloud**, tn., dépt. Seine-et-Oise, France, 2 m. W. of Paris; pop., 13,600; park; Sèvres porcelain factory; race-course.

**St. Croix**, riv. (100 m.) on frontier of Canada and U.S.A.; flows from L. St. Croix (384 ft. abv. sea-lvl.) to the Atlantic.

**St. Cyr-l'Ecole**, tn., Seine-et-Oise, Fr., 3 m. W. Versailles; pop., 4,950; milit. school (1868) for cavalry and infantry officers.

**St. Davids**, village-city, Pembroke-sh., S.Wales; pop., 1,700; 12th-cent. cathed.; 14th-cent. bp.'s palace.



St. Davids Cathedral

**St. Denis**, tn., dépt. Seine, France, on Riv. Seine, 4 m. N. of Paris; pop., 80,000; abbey (fndd. 630) with tombs of kgs.; metal works; fruit- and vegetable-growing.

**St. Dié**, tn., dépt. Vosges, N.E. Fr.; cathed.; ironworks. A book published here in 1507 was the first to suggest the name of America for the continent of the New World.

**St. Dunstan's**, institution fndd. by Sir Arthur Pearson (1915) for care and training of members of Brit. fighting forces blinded as a result of World War. Now registd. as a charity under Blind Persons Act (1920); see REGENT'S PARK.

**St. Edmund Hall**, Oxford Univ., only survivor of the anc. academical halls, fndd. c. 1220; acquired by Queen's Coll., 1553-59.

**St. Elmo's Fire** (from St. Elmo, patron saint of sailors), glimmering discharge of electricity to earth from atmosphere, seen at head of masts at sea, eaves of roofs, etc.; also called *corposant*.

**St. Eloi**, vill., W. Flanders, Belgium, 3 m. S.E. of Ypres; nr. Hill 60 (q.v.); scene of fighting in World War.

**St. Émilion**, parish, near Bordeaux, Fr., producing famous red wine.

**St. Esprit (Holy Ghost)**, Order of the, oldest order of knighthood in monarchical France; fndd. 1579; abol. at the Revolution.

**St. Estèphe**, parish, near Bordeaux, Fr., producing famous red wine.

**St. Étienne**, cap., dépt. Loire, Fr., on Riv. Furens; pop., 193,800; coal-mining; firearms, machinery.

**St. Gall**, **St. Gallen**, canton, N.E. Switzerland, bounded N. by L. of Constance and E. by Riv. Rhine; surrounds canton of Appenzell; 777 sq.m.; pop., 302,000; surface mountainous; cattle-breeding; textiles; cap., *St. Gall*, on the Steinach; pop., 75,000; univ.; famous library (Nibelung MS.). Fndd. as a monastery, 790; centre of European learning in 9th-11th century.

**Saint-Gaudens**, Augustus (1848-1907), Amer. sculptor; statue of Abraham Lincoln.

**St. George's Channel**, sea betw. Wales and Ire., connectg. Irish Sea and Atlantic; length c. 100 m.; av. breadth 55 m.; in E. is Cardigan Bay.

**St. Germain-en-Laye**, tn., dépt. Seine-et-Oise, on the Seine, Fr., 12 m. N.W. of Paris, sit. on the edge of a forest; château (now a museum); pop., 22,000. James II died here in 1701. *Treaties of St. G.*: 1) betw. France and Brandenburg, 1679; 2) betw. the Allies and Austria, 10 Sept., 1919, by wh. the territories of Italy, Serbia (Jugoslavia), Rumania, and Poland were extended, and the new State of Czechoslovakia created, at the expense of Austria (q.v.).

**St. Gotthard**, range of the Swiss Alps with the head-waters of the Rhine, Rhone, Reuss, and Ticino; divided by *St. G. Pass*



(6,940 ft.); on the W. is the *Pizzo Rotondo* (10,500 ft.), on the E. the *P. Centrale* (9,850 ft.). *St. G. Road* crosses pass from vall. of the Reuss to that of the Ticino; hospice on the summit. **St. G. Rly. Tunnel**, on line from Lucerne to Milan, betw. Göschenen and Airolo; 9.3 m. long; summit-lvl., 3,280 feet.

**St. Helena**, Brit. isl., S. Atlantic, 1,200 m. from African coast; volcanic mtns. (2,700 ft.); 47 sq.m.; pop., 3,800 (mixed race); cap., Jamestown. Napoleon I exiled here, 1815-21, and died at Longwood, in interior.

**St. Helens**, 1) co. bor., Lancs, Eng., 10 m. N.E. of Liverpool; pop., 106,800; centre of glass industry (esp. plate-glass); manuf. also copper, pottery, chemicals; iron foundries. 2) Watering-place, Isle of Wight, 10 m. E. of Newport; pop., 5,000.

**St. Helier**, 1) cap. and port, Jersey, Channel Isls.; pop., 26,000. 2) L.C.C. housing estate, S. London, betw. Sutton and Mitcham.

**St. Hilda's College**, Oxford Univ.; women's college, fndd. as a hall, 1893, by Dorothea Beale; incorporated as college, 1926.

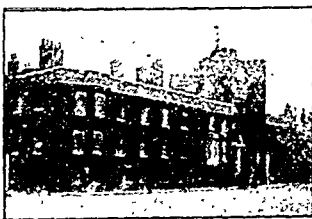
**St. Hubert, Order of**, former Bavarian order of knighthood, fndd., 1444.

**St. Hugh's College**, Oxford Univ.; women's college, fndd., 1886, as a hall by Elizabeth Wordsworth; incorp. as college, 1911 and 1926.

**St. Ives**, 1) munic. bor. and seaside resort, Cornwall, Eng.; pilchard fisheries; pop., 6,700. 2) Co. bor., Hunts, Eng., on Riv. Ouse; pop., 2,700.

**St. James of Compostella, Order of**,

Span. milit. order; fndd., 1170. **St. J.'s Palace**, London, Eng., dating in part from 1535, with Chapel Royal, formerly royal resid., now



St. James's Palace

Court Offices, guard-room of King's Guard, quarters of Yeomen of Guard, etc. Royal levees held here.

**St. John**, 1) riv. (500 m.), N. America; rises Maine, U.S.A.; enters New Brunswick, Canada, before Grand Falls; flows past cap., Fredericton, into Bay of Fundy; navigable to (80 m.) Fredericton. 2) Port and largest tn., New Brunswick, Canada, at mouth St. John Riv.; pop., 46,640; fisheries; exports timber, cereals; ice-free harbour.

**St. John Ambulance Association**, an English voluntary organization for rendering first aid in case of accidents, etc.; fndd., 1878, in connection with the Order of St.

John of Jerusalem (*q.v.*); set example for establishment of similar organizations throughout England.

**St. John Lateran**: see LATERAN.

**St. John of Jerusalem, Order of**: 1) see HOSPITALLERS. 2) Order of knighthood (instituted 1888) for good service to 1); comprises Bailiffs and Dames Grand Cross, Knight and Dames of Justice and of Grace, Commanders, Officers, Serving Brothers and Sisters; medal (life-saving) with black ribbon.

**St. John's**, 1) cap., Newfoundland; pop. (incl. suburbs), 58,800; two catheds.; fisheries, shipb., engineering works. 2) Cap. Antigua; pop., 7,000. 3) Tn., Quebec Canada; pop., 7,700; lumber, cereals.

**St. John's Church and Gate**, Clerkenwell, London, Eng.; in Mid. Ages former part of Priory of Knights Hospitalers of St. John. Museum, library, and priory of (revived) order (St. J. Ambulance Assoc.) in Gate-house.

**St. John's College**, Cambridge, fndd. 1511, by Lady Margaret Beaufort (mother of Henry VII). Among its alumni were Lord Palmerston and Wordsworth. College Boat Club named Lady Margaret.

**St. John's College**, Oxford, fndd., 1555, by Sir Thomas White, Ald. of London. Abp. Laud was a fellow, 1593, and President 1611-21.

**St. John's Wood**, residential dist. in bor. of Marylebone, N.W. London; formerly wooded district, property of Knights of St. John. Includes Lord's Cricket Ground (*q.v.*).

**St. John's wort**, (bot.) name given to any variety of *Hypericum*, but esp. *H. perforatum*, c. 18 in. high; grows in woods; yellow flowers; leaves marked with pellucid dots.

**St. Julien**, Fr. parish, near Bordeaux; producing well known red wine.

**Saint-Just**, Antoine (1767-94), Fr. revolutionary; partisan of Robespierre and executed with him.

**St. Kilda**, small isl. (3 m. by 2 m.), Outer Hebrides, Scot., in Atlantic, 40 m. W. of N. Uist. Uninhabtd. since 1930.

**St. Kitts, St. Christopher**, one of the Brit. Leeward Isls.; 65 sq.m.; pop., 22,400; oldest Brit. W. Ind. colony; forms one presidency with Nevis and Anguilla; total area 150 sq.m.; pop., 35,400; centre of isl. moutainous (3,710 ft.); sugar cultivated; cap. Basseterre (pop., 7,700).

**St. Lawrence River**, riv. (750 m.), Canada, navigable waterway forming outlet for the Great Lakes (ocean-going boats can ascend to Montreal, except in winter); expands into lakes (incl. the "Thousand Islands"); rapids avoided by canals; flows into *Gulf of St. L.* (90 m. broad).

**St. Leger, The** (horse-racing), race for 3-year-olds (1 m. 6 fur. 132 yds.), fndd. by Col. St. Leger in 1776; run at Doncaster in September.

**St. Leonards-on-Sea:** see HASTINGS.

**Saint-Lô**, cap. dépt. Manche, Fr.; pop., 10,720; textiles, ribbon, etc.

**St. Louis**, tn., Missouri, U.S.A., on Mississippi Riv.; pop., 850,000; abpric.; two univs.: Washington (1853), St. L. (1818); indus. steel, boots; grain, cotton; meat-packing. Fndd. by French, 1764, and named after Louis IX.

**St. Louis-San Francisco Railway**, U.S.A., operates in Missouri, Kansas, Oklahoma, Arkansas, Tennessee, Texas, Mississippi, Alabama, and Florida; 5,269 miles.

**St. Lucia**, largest of Windward Isls. (g.r.); 233 sq.m.; pop., 58,500; interior mountainous (3,140 ft.); sugar, cocon, lime-juice, rum; cap., *Port Castries*. Alternately Fr. and Brit. in 17th-18th cent.; Brit. since 1814.

**St. Malo**, seapt., dépt. Ille-et-Vilaine, Fr., on N. coast of Brittany; sit. on an island at mouth Riv. Rance, connected to mainland by a causeway; pop., 13,150; docks, shipb., fishing, sea-bathing.

**St. Mark's**, ch. in Venice, It.; constituted cathed., 1807. On site of chapel attached to Ducal Palace, blt. 828 as shrine for relics of St. Mark (burned down 976). Present ch. erected 1043-1111; Byzantine style, designed, on lines of former Ch. of Holy Apostles, Constantinople, in form of Gr. cross, surmounted by centr. dome (diam. 42 ft.) and with cupola over each arm. Over centr. porch are 4 *Bronze Horses* brght. from Constantinople, 1204 (temp. removed to Rome during World War). Interior vaulting decorated with mosaics on gold ground, walls and columns of precious marbles. High altar frontal (*Pala d'Oro*), completed in 12th cent., one of finest examples of Byzantine art, with figures of Christ, angels, etc., in enamel and gold, and decorations in pearls and precious stones. **Campanile of St. Mark** (see also CAMPANILE), completed c. 1150; 323 ft.; width at base 42 ft. Collapsed, owing to subsidence, 1904; rebuilding completed, 1912.

**St. Martin's Summer**, name given in Eng. to periods of summer-like weather occurring in autumn; in U.S.A. known as *Indian Summer*.

**St. Marylebone**, met. bor., N.W. Centr. London, Eng., N. of Riv. Thames; pop., 97,600; Regent's Park.

**St. Maurice and St. Lazarus, Order of**, Ital. order of knighthood, fndd., 1432.

**St. Michael and St. George, Order of** (Brit.), fndd. 1818, for natives of Ionian Islands and Malta; enlarged, 1868, '77, 1902, to include those who have held high office in

overseas empire or distinguished themselves in foreign affairs; 3 classes: knights grand cross, knights commanders, companions; ribbon: blue, red, blue.

**St. Michael's Mount**, granite rock (267 ft.) in Mounts Bay, S. coast Cornwall, Eng., with castle; causeway ( $\frac{1}{2}$  m.) to mainland at low tide. Cf. MONT ST-MICHEL.

**St. Mihiel**, tn., in dépt. of Meuse, Fr.; pop., 9,600. **St. M. Salient** (with Fort Camp-des-Romains) estab. by the Germans in 1914, reduced by the Americans in 1918.

**St. Moritz**, mtn. health resort and winter sports centre, Upper Engadine, Grisons, Switzerland, on small L. of St. M., 6,000 ft. abv. sea-lvl.; pop., 3,000; min. springs.

**St. Nazaire**, seapt., Fr., dépt. Loire-Inférieure, at mouth of the Riv. Loire; pop., 39,400; docks; sea-bathing.

**St. Neots**, urb. dist. and mkt. tn., Hunts, on Riv. Ouse; pop., 4,300; named after 10th-cent. monastery; paper-mills, breweries.

**St. Omer**, tn., dépt. of Pas-de-Calais, Fr., on Riv. Aa; pop., 19,800; Brit. G.H.Q., Oct., 1914, to March, 1916.

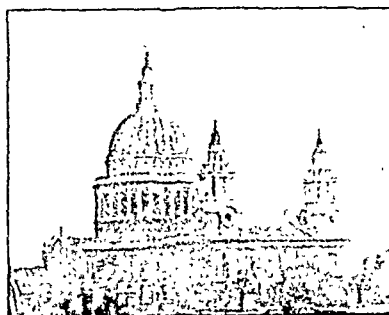
**St. Pancras**, met. bor., N. Centr. London, Eng., N. of Riv. Thames; pop., 198,000. **St. P. Station**, London term. of Midland sectn. of L.M.S. railway.

**St. Patrick, Order of**, Brit. order of knighthood, insttd. by George III (1783), revised 1905; members consist of the kg. and 22 knights. Insignia: star (silver) of eight points; mantle and hood of sky-blue satin; collar, gold and enamel; badge (gold) with Cross of St. Patrick; ribbon sky-blue.

**St. P.'s Purgatory:** see DERG, LOUGH.

**St. Paul**, cap., Minnesota, U.S.A., on Mississippi Riv.; pop., 271,000; R.C. abpric.; agric. coll.; furs, lumber, meat-packing, flour mills.

**St. Paul's Cathedral**, largest ch. in Brit. Isles, with exceptn. of Liverpool Cathedral.



St. Paul's Cathedral

Built (1675-1710) from designs of Wren on site of older ch. destroyed in Great Fire. Plan of bldg. is based on that of St. Peter's, Rome; external length, 575 ft.; width across

transepts, 250 ft.; height to top of Cross, 365 ft.; height of towers, 221 ft.; diameter of dome, 102 ft. *Great Paul*, largest bell in Eng. (1882), hangs in S.W. tower. Interior contains many 18th- and 19th-cent. monuments, notably those to Sir Joshua Reynolds (Flaxman), Wellington (Alfred Stevens), Gen. Gordon, Lord Leighton, and Kitchener Memorial Chapel. In 1925 supports of dome were found to be unsafe and extensive repairs were undertaken; completed 1930. **St. P's. School**, Eng. public sch. for boys; fndd., 1509, by John Colet, Dean of St. Paul's; now situated at Hammersmith, London.

**St. Peter Port**, cap. Guernsey, Channel Is.; pop., 16,000.

**St. Peter's**, Rome, metropolitan ch. of the Holy See, situated within the Vatican City (*q.v.*). Orig. basilica built by Constantine in 324, over tomb of St. Peter, who was traditionally martyred on Vatican Hill, A.D. 67. Burial-place of popes, emperors, and kings. New basilica built, 1506-1626, by Bramante and Michelangelo, with piazza of 284 columns by Bernini. Largest ch. in the world. Relics include the Veil of St. Veronica.

**St. Petersburg**: 1) see LENINGRAD. 2) Tn. and port, Florida, U.S.A., on Gulf of Mexico; pop., 40,450; summer and winter resort; fisheries, fruit.

**St. Peter's Hall**, Oxford Univ.; fndd., 1029, by the Evangelical Churchmen's Ordination Council as memorial to F. J. Chavasse, Bp. of Liverpool.

**St. Pierre**, Bernardin de (1737-1814), Fr. author; *Paul et Virginie*, 1789.

**St. Pierre and Miquelon**, Fr. colony, N. Amer., comprising two isl. groups off S. coast Newfoundland; *St. Pierre*, 10 sq.m.; pop., 3,050; *Great and Little Miquelon*, 83 sq.m.; pop., 550; cod-fishing.

**St. Quentin**, tn., dépt. Aisne, Fr., on Riv. Somme; pop., 50,000; collegiate church; manuf. cottons, woollens. Battles of St. Q., 1) Spaniards defeated French under Montmorency, 1557; 2) Germans under von Goben defeated French under Faidherbe, 1871; 3) opening phase of final Ger. offensive in World War, 21-31 March, 1918.

**St. Raphael**, tn. and fishing port, Fr. Riviera, dépt. Var; pop., 5,000; adjoins Fréjus. Napoleon disembarked here fr. Egy., 1799, and embarked for Elba, 1814.

**Saint-Saëns**, Charles Camille (1835-1921), Fr. pianist and composer; *Danse Macabre*; operas: *Samson et Dalila*, etc.

**Saintsbury**, Geo. Edw. (1845-1933), Eng. man of letters and historian of literature; prof. of rhetoric, Edinburgh, 1895-1915; pubd. *Short Hist. of Eng. Lit.*, 1898, 3rd ed. 1903; *Hist. of Criticism*, 3 vols., 1900-04; *Hist. of Eng. Prosody*, 3 vols., 1906-10;

*Hist. of Fr. Novel*, 2 vols., 1917-19; *Notes on a Cellar Book*, 1920, and large number of literary text-books, etc.

**Saint-Simon**, Claude Henri, Ct. de (1760-1825), Fr. philos.; fndd. socialism in France: *The New Christianity*. **S.-S., Louis de Ruvroy**, Duc de (1675-1755), Fr. courtier, and auth. of *Memoirs*.

**St. Sophia**, metropolitan ch., Constantinople; built by Justinian; mosque since 1453; interior (preceded by narthex) a rectangle divided by columns into nave and two aisles; dome, 185 ft.; walls adorned with mosaics (covered with whitewash).

**St. Stephen**, Order of, Hung. order of knighthood; fndd., 1764; at present in abeyance.

**St. Stephen's Hall**, on site of St. Stephen's Chapel, destroyed by fire, 1834; chapel was orig. attached to Palace of Westminster, and after destruction by fire of main portion of latter was used from 1547 for meetings of Hse. of Commons.

**St. Thomas**, one of U.S. Virgin Is. (*q.v.*); 33 sq.m.; cap., and port, St. T., pop., 7,100. See also SÃO THOMÉ.

**St. Vincent**, John Jervis, Earl of (1735-1823), Eng. sailor; rear-adm., 1793; adm., 1795; c.-in-c. of fleet off Corsica, 1795; commdr. of Channel fleet, 1800; 1st Ld. of Admty., 1801; retired at collapse of Pitt ministry; Adml. of the Fleet, 1806-07.

**St. Vincent**, Brit. volcanic isl., one of the Windward Is. (*q.v.*); exports sugar and rum; area (incl. dependencies), 150 sq.m.; pop., 50,000; cap., *Kingstown* (pop., 4,000).

**St. Vincent, Cape, Battle of**, Brit. victory off Cape St. V., S. Portugal, over Spaniards, led by Sir John Jervis (who took his title from the battle), 14 Feb., 1797.

**St. Vitus's Dance** (chorea), nervous disease characterized by a convulsive twitching of the muscles; may follow acute rheumatic fever in children.

**Sainte-Beuve**, Chas. Augustin (1804-69), Fr. critic; *Causeries du lundi*, *Portraits littéraires*.

**Sainte-Chapelle**, in court of Palais de Justice, Paris, one of the finest examples of Gothic archit. extant; built c. 1248 by St. Louis (Louis IX) as a shrine for the relics of the true Cross and Crown of Thorns [now at Notre Dame, (*q.v.*)] purchased by him from Emp. Baldwin. After Fr. Revol. used to store records of law crts.; restored under Louis Philippe, c. 1837.

**Sais**, anc. Egypt. city, on Rosetta branch of the Nile; brick ruins.

**Sakai**, port, Hondo, Japan; suburb of Osaka, pop., 125,000.

**Saké**, Jap. wine distilled from rice.

**Sakhalin** (Jap., *Karafuto*), isl. off E. Coast Siberia, in Sea of Okhotsk; N. part (c. 15,830 sq.m.; pop., 36,000; cap., *Alexan-*

*drach.*) belongs to Russia; S. (c. 13,500 sq.m.; pop., 297,300; cap., *Kushunketon*) to Japan. Coal, iron, gold, petroleum. Chin. until 1857, S. became Russian penal settlement; divided betw. Russ. and Jap., 1905. N. part occupied by Jap., 1917-25.

**Saki**, monkey of tropical S. Amer. with long, bushy tail and thick beard; arboreal in habit.

**Sakkara, Saqqara**, anc. vill., Lower Egy., in the Nile vall., 12 m. above Cairo, nr. the anc. Memphis; Apis Mausoleum; Step Pyramid.

**Sakuntala**, Indian mytho-pastoral play by Kālidāsa (q.v.).

**Sala**, Geo. Aug. (1828-95), Eng. journalist; contrib. to *Household Words* and *All the Year Round*; sent to Russia by Dickens, 1856; foreign correspondent to *Daily Telegraph* (Amer. Civil War, Franco-Pruss. War, etc.); author of novels, travel books; *Life and Adventures*, 1895; etc.

**Salaam** (Arab.: "peace"), mode of greeting in the East, esp. among Moslems.

**Salad**, dish of raw veg. (lettuce, endive, etc.), usu. seasoned with oil, vinegar, salt, mustard, spices, etc.; sometimes with addtn. of eggs; S. also made with meat, potatoes, cucumber, tomatoes, fruit, etc.

**Saladin**, Yusuf ibn Ayub (1137-93), Sultan of Egypt and Syria; deftd. Christian army at Tiberias, 1187; conq. Jerusalem, 1187, Acre, and Ascalon; deftd. by Richard Cœur de Lion, 1191 (3rd Crusade).

**Salamanca**, cap. of prov. of S. (4,800 sq.m.; pop., 335,300), W. Spain, on the Tormes; pop., 37,700; univ. (1230); cathed.; Plaza Mayor (square); riv. bridge partly Roman; rly. centre. **Battle of S.**, victory of Allies under Wellington over the French, July 22, 1812.

**Salamander**, small, tailed amphibian, common in Centr. and S. Europe, Algeria, Syria. Black body with bright yellow markings on head, back, and limbs; rather sluggish, spending much time on land, but resorting to water in spring to breed. Young usually born alive, but occasionally eggs are laid from which young immediately emerge.



Salamander

**Salambria**: see PENEUS.

**Salami**, Ital. sausage made chfly. of pork, garlic, and spices.

**Salamis**, Gr. isl. in Gulf of Aegina; 36 sq.m.; pop., 12,000. **Battle of S.**, decisive naval victory of the allied Greeks over the Persians, 480 B.C., due to strategy of Themistocles (q.v.).

**Sal ammoniac**, ammonium chloride (NH<sub>4</sub>Cl); compound formed from ammonia and hydrochloric acid; occurs as white

powder or crystals; used in Leclanché (wet) batteries.

**Salandra**, Antonio (1853- ), Ital. statesm.; Pr. Min., 1914-16; procl. It. neutral. in spite of Triple Alliance, 1914; brought It. in with Allies, 1915; supported Fascist movement; created senator, 1928.

**Salary**, orig. ration of salt given to Rom. soldiers and officials; now remuneration, usu. paid at intervals of not less than a month and for mental rather than manual labour.

**Sal Atticum** (Lat.), Attic salt; wit.

**Salé**, transaction in wh. seller transfers to purchaser goods, or a right, agst. an agreed pymt. (sale price); *Contract of S.* is made when seller and purchaser have agreed upon object of sale and its price. *S. on approval*, not completed until goods have been selected. *S. by Sample*, of goods selected from a pattern on understanding that those ordered will be equiv. in quality. In case of defects purchaser usu. has the right to return goods, or to require a reduction of price or compensation for damage. See also **INSTALLMENT BUSINESS**. **Sales note**, document dealing with contents and terms of a business argmt.; must be delivered by broker to each party.

**Salern**, 1) (O.T.) city of Melchizedek (q.v.); presumably Jerusalem. 2) City, Mass., U.S.A., on Mass. Bay, first settled 1626; coasting trade; cotton, leather goods, machinery, etc.; b.-place Hawthorne; pop., 43,300. 3) Cap., Oregon, U.S.A., on Willamette Riv.; pop., 18,000; iron foundries. 4) Distr. of Madras, India, c. 6,010 sq.m.; pop., 2,115,000; hilly (Shivaroy Hills), well watered; rice, coffee, oil-seeds, etc.; and 5) its cap. (pop., 102,200); agric. centre; carpets, weaving, cutlery.

**Salap**, dried tuberous roots of var. orchids, used for sim. purposes as arrowroot, highly nutritious; contains bassorin (q.v.).

**Salerno**, 1) prov., Campania, S.W. Italy, on Gulf of S.; 1,910 sq.m.; pop., 658,000. 2) Cap. of prov.; seapt.; pop., 63,500; cathed.. see of Abp.; silks, cottons; iron and copper foundries.

**Salford**, city in Lancs, Eng., on Riv. Irwell, contiguous to but not amalgamated with Manchester; pop., 223,400; cotton mills and chem. factories.

**Salicin**, bitter principle of bark of willow-tree, used in medic. as gastric stimulant and for same purposes as salicylic acid (q.v.).

**Salic Law**, a law of the Salic Franks, codified under Clovis, c. A.D. 500; the authority (though the interpretation is doubtful) for the exclusion of women from royal or territorial succession.

**Salicylic acid**, *o*-hydroxybenzoic acid. C<sub>6</sub>H<sub>4</sub>(OH)COOH, may be obtd. from oils of wintergreen or sweet birch and synth. by action of carbon dioxide on sodium phenate;

white crystals slightly soluble in water, m.p.  $1590^{\circ}$ ; used in dyestuff indus.; as a preservative (not permitted for foods); in corn paints and as parasiticide. Compounds of S.a: (e.g., *aspirin* [q.v.], sodium salicylate, methyl salicylate) used in med. for rheumatism and for reducing fevers.

**Salient**, projecting; that which points outwards; (fig.): conspicuous, outstanding; (milit.): projecting angle in line of fortifications, trenches, etc.

**Salisbury**, Robt. A. T. Gascoyne-Cecil, 3rd Marquis of (1830-1903), Brit. statesm.; Pr. Min., 1885, '86, '95; concl. Tripartite Agreem., 1887, with Austria and It. agst. Russia.



Lord Salisbury

**Salisbury**, 1) Cap. of Wilts, Eng., on Riv. Avon; pop., 26,500; famous early Eng. cathed. (highest spire in Eng.; 404 feet). S. successor of *Old Sarum*.

**Salisbury Plain**, undulating plain, Wilts, c. 20 m. by 10; contains *Stonehenge* (q.v.); many mil. and R.A.F. camps.



Salisbury Cathedral

2) Cap. of S. Rhodesia, S. Africa, on Mashonaland plateau (5,000 ft.); pop., 28,000 (9,700 whites); goldfields.

**Saliva**, (physiol.) digestive fluid secreted by salivary glands, serves to soften food during mastication; contains a digestive ferment known as *ptyalin*, wh. converts starch into a sugar called dextrin.

**Sallenders**: see MALLENDERS.

**Sallust**, Gaius S. Crispus (87-35 B.C.), Rom. histor.; *Catilina*, *War against Jugurtha*.

**Salmi**, ragout of roasted game or poultry.

**Salmon**, largest species of the genus *Salmo*; may reach 80 lbs. in weight. Found on coasts of all northern parts of Atlantic and in the rivers of those countries as far south as the Loire on the European side, and the Hudson on the American.

In autumn, the S. ascends rivers to spawn on beds of fine gravel, in the shallows, returning to the sea at close of breeding season. One of the most delicate flavoured of edible fish and commercially important.



Salmon

**Salome**, 1) (N.T.) dau. of Herodias; reqd. from Herod Antipas head of John Baptist as reward for dancing before him. 2) Wife of Zebedee, mother of Apostles, James and John; sister of Mary, mother of Jesus. 2) Opera by R. Strauss (q.v.), 1905; based on Oscar Wilde's drama *Salome*, 1893.

**Salon** (Fr.), an apartment for the reception of company, esp. for social and political

circles (e.g., Mme. Récamier's S., c. 1810); also the annual art exhibitions in Paris.

**Salonika, Saloniki** (anc. *Thessalonica*), 1) Gr. dept., Macedonia; 3,528 sq.m.; pop., 540,000. 2) Cap. of dept. and of Gr. Macedonia, at head of

Gulf of S.; pop., 240,000. Hellenistic, Roman (triumphal arches), and Byzantine antiquities (Ch. of St. Sophia); Orthod. abpric.; chf. Aegean port (safe harb., with Jugoslav reservn. since 1923); rly. junc.; airport; indust. and trading



Salome

centre. Largely rebuilt after fire of 1017. Founded by Cassander, 315 B.C.; visited by St. Paul, c. A.D. 50 (Epistles to Thessalonians); massacre of 7,000 citizens by order of Theodosius, A.D. 390; taken by Saracens, 904; by Sicilian Normans, 1185; by Turks (from Venice), 1430; by Greeks, 1912. Base of Allied armies in Salonika Expeditionary Force (1915-18), which brought about overthrow of Bulgaria in Sept., 1918.

**Salop**: see SHROPSHIRE.

**Salpingitis**, (med.) inflammation of Fallopian tubes (q.v.); commonly due to infection by the gonococcus (q.v.).

**Salsette**, isl. (242 sq.m.), Bombay, India, N. resid. suburb of Bombay city (causeway and rly. bridges); Buddhist caves.

**Salt**, combination of an electro-positive element or radicle, called the base, with an electro-negative element or radicle, called the acid, to form a neutral compound; e.g., sodium (Na+) with chlorine (Cl-) to form

*common salt* (table S., rock S.). *Basic* Ss. are compounds of neutral S. with hydrate of same metal; *acid* S. compounds of neutral S. with corresponding acid. *Common S.* is



Salt-working on Shores of Ibiza, Balearic Islands.

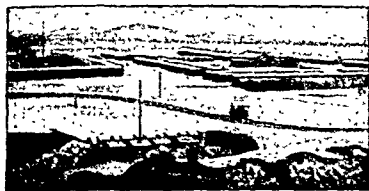
found in solid form as mineral, and is contained in sea; derived from both sources by purification and crystallisation. **S. Lakes**, lakes with no outlet, whose water has become brackish through evaporation; e.g., the Dead Sea, with salinity about 7 times that of sea-water. **S. lick**, out-crop of rock-salt visited by animals who like to lick it; lump of rock-salt for horses and cattle to lick. **S. springs**, mineral springs of therapeutic value containing salt; e.g., those at Wiesbaden, Salzungen, Droitwich.

**Saltash**, munic. bor., S.E. Cornwall, sep. from Plymouth by estuary of Tamar (rly. bridge by Brunel, 1859); pop., 3,600.

**Salt Lake City**, cap., Utah, U.S.A., on Jordan Riv., nr. Great Salt Lake; pop., 140,000; hdqrs. of Mormons; R.C. cathed.; glass and iron works; hot springs.

**Salton Sea**, intermittent lake in California, U.S.A., formed by overflow from Colorado Riv.; attains area up to c. 8,000 sq.m.

**Saltpetre (or nitre)**, potassium nitrate; found as a surface deposit in hot climates; also manufactured from Chile saltpetre



Saltpetre Works, Chile

(*q.v.*); an oxidizing agent used in metallurgy, in manufacture of gunpowder and glass, for pickling and salting meat, etc., and as an artificial manure.

**Salts**, chem. compounds derived from acids (*q.v.*) by substitution of a metal, or radical having properties of metal (e.g., ammonium), for hydrogen.

**Neutral S.** are those with hydrogen completely substituted; **acid S.** (only possible from acids contg. 2 or more atoms of H) have H partly substituted, often distinguished by prefix bi-; e.g., bicarbonate of sodium is acid sodium carbonate,  $\text{NaHCO}_3$ . Salts when soluble in water form **ions** (*see IONIC THEORY*); this is fundamental, and insoluble compounds are only called salts if analogous to known soluble compounds. S. have characteristic crystalline forms, often including *water of crystallisation*; thus common washing soda is  $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ , but crystals of  $\text{Na}_2\text{CO}_3 \cdot 7\text{H}_2\text{O}$ ,  $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$ , and  $\text{Na}_2\text{CO}_3$  also exist, and washing soda loses water on exposure to dry air, crumbling to white powder (*efflorescence*). Other S. attract water from air and become liquid (*deliquescence*). Many double salts exist, e.g., alum. **S. of lemon**, acid potassium oxalate,  $\text{KHC}_2\text{O}_4$ . Very poisonous.

**Saltwort**, (bot.) any variety of *Salsola*, esp. *S. Kali*; grows on sea-shore; rich in alkali salt and at one time used for manuf. of soda ash.

**Saluki**, dog of greyhound type, orig. bred in Arab., Pers., and Afghanistan.

**Salute**, a greeting; in the navy and army

a compliment paid, esp. on the appearance of disting. persons, etc., by firing guns, dipping colours, presenting arms, etc.

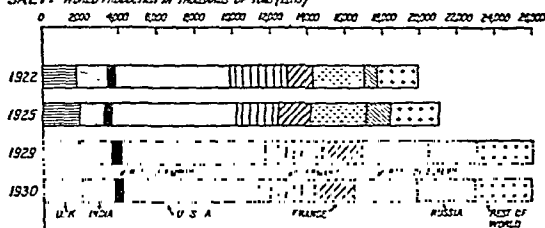
**Salvador, El Salvador**, repub., Centr. Amer.; bounded W. by Guatemala, N. and E. by Honduras, and S. by Pacific Ocean; 13,173 sq.m.; densely inhabited; pop., 1,600,000 (300,000 Indians, few whites, many half-breeds); mountainous volcanic country (to 7,825 ft.); exports coffee, sugar, so-called Peruvian balsam, indigo, rubber, gold and silver ore; cap. and chf. trading centre, *San Salvador* (pop., 95,700); ports: La Unión, La Libertad, Acajutla. Span. colony, 1525-1821.



**Salvage**, service rendered by those who recover property from loss at sea; they possess a lien on property recovered for their reward. **S. corps**, bodies apptd. and maintained by tariff insur. cos. in London, Liverpool, and Glasgow for the purpose of salvaging property damaged by, or in risk of, fire. **London S.C.**, establd. by Act of 1865, is composed mainly of ex-naval men.

**Salvarsan**, arsenical compound discovered by Paul Ehrlich and Hata, diaminodihydroxyarsenobenzene hydrochloride, used for treatment of syphilis and trypanosomiasis (*q.v.*), called "606"; now mainly used in form of *neosalvarsan* ("914.")

SALT. WORLD PRODUCTION IN THOUSANDS OF TONS (LONG)



Total world production actually higher than given, as salt is produced in nearly all countries

**Salvation Army**, Protestant relig. body devoted to conversion of, and social work among, poor, and characterized by use of military titles, uniforms, etc. Fndd., 1878, by "General" Booth (*see BOOTH, WM.*) in London, Eng.; now world-wide in operation.

**Salvatorians**, *Society of the Divine Saviour*, S.D.S.; R.C. Missionary Society, fndd. in 1881, operating chfly. in Assam.

**Salve** (Lat.), be well; a greeting similar to "good luck!," often translated "hail!"

**Salvo**, simultaneous discharge of guns, often by way of a salute; hence, combined simultaneous shout of applause from a crowd.

**Salviati**, Antonio (1816-90), Ital. artist; revived Venetian glass industry at Murano.

**Salvini**, Tommaso (1829-1915), Ital. tragic actor of world-wide reputation.

**Salvo jure** (Lat.), the right being pre-

served; the law being respected. **S. pudore**, without offence to modesty or decent feeling.

**Sal volatile**, solution of ammonium carbonate  $(\text{NH}_4)_2\text{CO}_3$ ; used in med. as a restorative.

**Salween**, riv. (1,550 m.), Indo-China, rising in Tibet and flowing through Yun-nan and Burma into Gulf of Martaban.

**Salzburg**, 1) prov., Austria; 2,761 sq.m.; pop., 224,000; mountainous; lakes; riv. falls; pasture, cattle-breeding, fruit-growing; salt mines at Hallein; marble in the Untersberg; mineral springs at Gastein; metal, glass, marble, timber. 2) Cap. of prov., situate on Riv. Salzach, betw. the Kapuzinerberg and the Mönchsberg; pop., 38,000; abpric.; 17th-cent. cathed.; house of Mozart (born here in 1756). Anct. Roman colony; bishopric, c. 700; abpric., 816; abps. made imperial princes, 1225; Jews expelled, 1498; Protestants, 1731; abpric. secularized, 1802. Terr. Austrian, 1805-09, and since 1814. **S. Alps**, limestone range in prov. of S., Austria (basin of the Salzach); *Watzmann*, 8,900 ft.; *Dachstein*, 9,830 feet.

**Salzkammergut**, alpine region, Upper Austria and Styria, watered by Riv. Traun; many lakes (Traun, Hallstät, Atter, St. Wolfgang, Mond); salt mines at Hallstät, Ischl, and Ebensee; chf. tns.: Gmunden, Ischl.

**Samara**, 1) cap. prov. S., in S.E. Russia (c. 39,700 sq.m.; pop., 2,820,000), on Riv. Volga and mouth of Riv. Samara (350 m. long); pop., 176,000; harbour, corn trade, fertile territory. 2) Trib. (193 m.) of Riv. Dnieper, into wh. it flows at Dnepropetrovsk.

**Samarang**, cap. of Dut. Residency of S., on N. coast of Java; unhealthy climate; pop., 180,000 (12,000 Europ., 25,000 Chin.); trading port.

**Samaria**, prov. and city in Palestine; city built by Omri (q.v.) 5 m. N.W. Shechem; taken by Assyrians (722 B.C.); prov., named from city, 1st identical with Northern Kgd., later (N.T.) district betw. Galilee and Judaea.

**Samaritan**, Judaistic sect descended from a remnant of the anc. Israelites left by the Assyrians when they took Samaria in 722 B.C. (II Kings, xviii, 9), differing considerably in ritual from the main body of Jews. About 150 members survive in their chief centre, Nablous, Palestine.

**Samarium**, (chem.) symb. Sm; at.wt. 150.43; rare chem. element of cerium group.

**Samarkand**, **Maracanda**, 1) cap. of Uzbek, S.S.R., Asia; pop., 105,000; citadels, mosques, and monuments of time of Timur. Conquered by Alex. the Great, 329 B.C.; Jenghiz Khan, A.D. 1221. Chinese in 18th cent., then Bukharian; Russian, 1868. 2) S Area, c. 120,000 sq.m.; pop., c. 1,200,000; mtns., river basin of Zarafshan.

**Sambar**, deer of S.E. Asia, dark brown,

wiry-haired, with large antlers; smaller allied forms ind. in E. Indian Islands.

**Sambre**, trib. (110 m.) of the Meuse, which it enters at Namur; 93 m. canalized. In area of severe fighting during opening and closing stages of World War. **Sambre Canal** (42 m.) connects the Oise with the Meuse.

**Samnites**, centr. Ital. people, prob. allied to Sabines (q.v.); lang. Oscan; cong. in S. Wars by Rome in 343-290 B.C.; annihilated by Sulla, 80 B.C.

**Samoa**, or **Samoa Is.**, group, S. Pacific, 400 m. E.N.E. Fiji Isl.; comprise W. *Samos* (formerly Ger. Samoa, now admin. by N. Zealand under mandate) and *American Samoa*; W. Samoa includes Savaii, Upolu, Manono, and five other isls. (1,100 sq.m.; pop., 40,200, mainly Polynesians); cap. and chief port, *Apia*, in Upolu; Amer. Samoa, Tutuila and six smaller isls. (56 sq.m.; pop., 9,200); cap., *Pago Pago* (port and U.S. naval station); surface

mountainous (4,300 ft. on *Savaii*); land fertile, vegetation trop.; exports coconuts, copra, bananas. R. L. Stevenson is buried in Upolu.

**Samos**, Gr. isl., Aegean Sea, one of S. Sporades, off W. coast of Asia Minor; 287 sq.m.; pop., 70,500; surface mountainous; fertile valls.; oil, wine, tobacco. B.-place of Pythagoras. Most prosperous period under Polycrates (532-522 B.C.). Ceded by Turkey to Greece, 1913.

**Samothrace**, Gr. isl., N. Aegean Sea, off coast of Thrace; c. 69 sq.m.; mountainous (5,250 ft.); pop., 4,500; sponge-fisheries. Excavations in 1874 ("Victory of Samothrace," now in Paris).

**Samovar**, Russian metal teacurn with inner tube thr. wh. hot air circulates.

**Samoyede**, shaggy white Siberian sledge-dog.

**Samoyedes**, Mongol. race, numbering c. 19,000, inhabit. Arctic coast of Siberia; they have Mongol. type of physiognomy; mainly hunters and fishers.

**Sampan**, light boat of Chinese and Far Eastern rivers and coastal waters, rowed with a scull from the stern; usu. provided with matting sail and an awning.

**Samphire**, small herb ind. on rocks and cliffs, of salt taste, used for pickles. **Marsh S.**, glasswort (q.v.).

**Sampler**, specimen of needlework or embroidery, usu. square of canvas showing



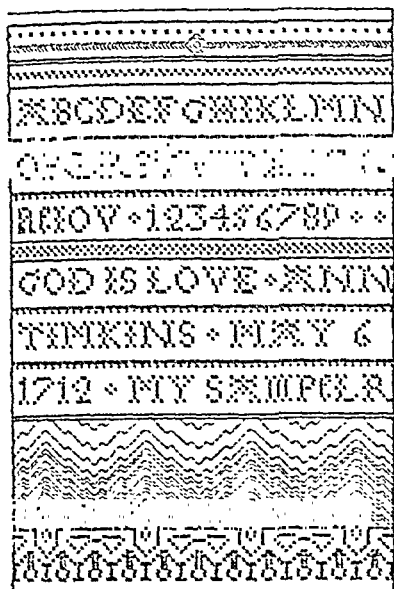
Samoa, Native House



Samovar

letters of alph., numerals, figures of animals, etc., a text and the worker's name. Part of girls' education from 17th to early 19th century.

**Sampling**, taking a small quantity from a large quantity of material (e.g., coal, mineral



Sampler

ore, chemical) in such a way that it shall have the same average composition as the bulk. **S. machines** automatically collect sample of flowing material (solid or liquid) at intervals; resulting bulk is then gradually reduced until sample small enough for use (analysis, etc.) is obtained.

**Samson** (O.T.), one of judges of Israel, of fabulous strength; freed nation from Philistines; betrayed by his wife Delilah, who robbed him of strength by cutting his hair; captd. and blinded by Philistines. Upon renewal of his strength, pulled down pillars of Temple of Dagon, burying himself and many of his enemies (Judges xvi). **S. et Dalila**, opera by Saint-Saëns (q.v.), 1877.

**Samsonov**, Alexander V (1859-1914), Russ. gen. com. II Army, 1914; committed suicide after defeat at Tannenberg.

**Samuel** (O.T.), Heb. judge and prophet; son of Elkanah and Hannah; brought up by High Priest Eli. Anointed Saul 1st Kg. of Israel. **Books of S.** (two) concerned with history of Saul and David; known in Vulgate (q.v.) as I and II Kings.

**Samuel**, Sir Herbert L. (1870- ), Brit. (Lib.) politician; M.P., 1902; Chanc. of Duchy of Lancaster, 1909-10, 1915-16;

Postmaster General, 1910-14, 1915-16; pres. of Local Govt. Board, 1914-15; Home Sec., 1916, 1931-32; High Commissioner for Palestine, 1920-25; chairman coal commission, 1925.

**Samurai**, former Jap. warrior-nobility; was disting. for loyalty and strict code of honour.

**San**, abbr. *santo* (Span. and Ital.), saint.

**Sanā**, walled city, S. Arabia, cap. of indept. state of Yemen; 7,200 ft. abv. sea-lvl.; pop., 25,000.

**San Antonio**, largest tn., Texas, U.S.A., at confluence of San Antonio and San Pedro rivs.; pop., 221,550; R.C. and Prot. Episc. bprcs.; winter resort; rly.-junctn.; iron and steel works; oil, cattle, leather, wool, cotton.

**San Bernardino**, Alpine pass (6,770 ft.), canton of Grisons, from Hinter-Rhein to Bellinzona.

**San Cristobal**, one of the Brit. Solomon Is. (q.v.); 1,180 sq. miles.

**Sanctuary**, any specially sacred place; in a ch., the altar and its immediate neighbourhood. **Right of s.**, former privilege enjoyed by convicted felons of claiming exemption from arrest or punishment by taking refuge in a S. or its precincts, whence arose name *Broad Sanctuary* given to street adjoining Westminster Abbey.

**Sancho Panza**, companion of Don Quixote (q.v.).

**Sanction**, legal use of force, e.g., fine or imprisonment, to secure obedience, or, in internat. law, for securing execu. of a treaty.

**Sanctum sanctorum** (Lat.), holy of holies.

**Sanctus** (Lat.), holy; hymn in Eucharistic service beginning with words "Holy, holy, holy," also called *Tersanctus* or *Trisagion*: by reason of the threefold repetition.

**Sand**, George (1804-76), pseudon. of Lucile Aurore Dupin, Baronne Dudevant; Fr. novel: *Consuelo*, *Indiana*.

**Sand**, silicic anhydride,  $\text{SiO}_2$ ; minute fragments of stone produced by the grinding of pebbles agst. one another. **S.-blast**, apparatus for forcibly projecting sand by means of compressed air; used for removing "fur" from boilers or scale from sheet-metal, for cleaning cast articles and for frosting glass and metal; patterned effects are obtnd. by covering parts not to be frosted with paint, paper, etc. **S.-eel**, *Ammedyle*, fish with elongated body, native to N. Sea and Baltic coasts; buries itself in the sand at low water. **S.-fly**, minute, black, biting fly; larvae live in damp soil. **S.-grouse**, sub-order of Old World birds, allied to pigeons, with ochre-coloured body, long wings, and feathered feet. **S.-hopper**, shrimp-like crustacean, gen. marine but occas. found on land, with small eyes and laterally flat body. **S.-pillar**, **sand-spout**, column of sand up to c.



5,000 ft. high, caused by whirlwind or tornado, esp. in Sahara. **S.-sedge**, *Carex arenaria*, rush-like plant growing on the seashore. **S.-slinging**, (tech.) blowing moulding-sand by compressed air into box round pattern for casting, in place of tamping by hand.

**Sandal** (Gr.), shoe consisting of a sole fastened to the foot by straps or thongs.

**Sandalwood**, small tree indig. to E. Indies, and cultivated there for its aromatic wood, wh. on distillation yields an oil. The S. oil used in med. and perfumery is obtnd. from *Santalum album*. A somewhat sim. oil is obtnd. from an Australian tree. True S. is used to make boxes and caskets, the oil in the wood keeping insects away.

**Sandarac**, resin obtnd. from a N.W. African conifer, *Callitris quadrivalvis*, used in dentistry and to coat pills.



Sander

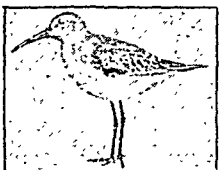
**Sander**, largest of the pike-perches (*Lucioperca*) of E. Europe, W. Asia, and N. Amer.; fresh-water fish reaching length of 4 ft.; highly valued for table.

**Sanderling**, shore bird of plover fam., breeding in neighbourhood of Arctic Ocean; broad beak and black legs.

**San Diego**, port, California, U.S.A., nr. Mexican frontier, on Gulf of S. D.; pop., 148,000; naval and wireless station; sea bathing.

**Sandown**, urb. dist. and seaside resort, S.E. coast Isle of Wight; pop., 6,200. **S. Park**, Eng. race-course in Surrey, 16 m. S.W. of London, adjoining Esher. Flat race-meetings: April, June, July, Aug., Oct.; Steeplechases, Feb., March, Oct., December.

**Sandpiper**, small wading bird of the order *Charadriiformes*; slender legs and bill, brown, speckled plumage, white on abdomen. Found over whole of Europe in summer, migrating in winter to Africa and India. Many species, mostly breeding in Arctic regions, migrating south for winter.



Sandpiper

**Sandringham**, vill., Norfolk, Eng.; **Sandringham House**, country residence of Kg. George V; bought by Edward VII, 1861; 7,000 ac. incldg. park of 200 acres.

**Sandsstone**, sand held together by natural cementing substances, which determine its various kinds; e.g., marl, lime, clay, slate, kaolin, and mica sand. **New red s.** is a Triassic (q.v.), and **old red s.** a Devonian (q.v.) formation.

**Sandwich**, seaside resort, Kent, on Riv. Stour, one of the Cinque Ports (now 2 m.

from the sea); golf course; pop., 3,300. **Richborough Castle** (q.v.) 1½ m. North.

**Sandwich Islands**: see HAWAII.

**Sandy Hook**, penins., New Jersey, U.S.A., at mouth N.Y. Harb.; point to and from which trans-atlantic voyages are timed.

**San Fernando**, tn., Cadiz, Sp., on isl. of San F.; pop., 30,000; naval port.

**San Francisco** ("Frisco"), tn., California, U.S.A., on the Pacific; pop., 626,000;



San Francisco, Aerial View

abpric.; Berkeley univ. (1868); chf. commerc. tn. of W. States; exports grain, wine, and metals; sugar factories, iron works, and shipb.; fndd. by Franciscans, 1776; suffered violent earthquake, 1906.

**San Gabriel Dam**, California, U.S.A., 435 ft. high; storage cap., 78,204 mill. galls.; power-generating, flood-control, water-supply.

**Sangallo**, fam. of Ital. archits.: 1) **Antonio**, the Elder (1445-1543), and 2) **A.**, the Younger (1485-1546), began Palazzo Farnese, Rome; extensions of Vatican. 3) **Giuliano** (1445-1516), mil. engin.; assisted in bldg. St. Peter's.

**Sangre de Cristo Range**, part of Rocky Mtn. system (q.v.), in Colorado, U.S.A.; beautiful scenery; *Mts. Blanca*, 14,360 ft., and *Old Baldy*, 14,125 feet.

**Sanhedrin** (Gr.), Jewish High Court in Jerusalem, which sat in the temple to function after A.D. 70, having authority over religious and secular matters. It consisted of 71 members.

**Sanitary engineering**, practice dealing with hygienic requirements of buildings, water-supply, sewage disposal, etc.

**Sanjak** (Turk.), administrative subdivision of a prov. or vilayet, e.g., S. of Novibazar (q.v.).

**San José**, 1) tn., California, U.S.A., pop., 57,650; health resort; state teachers' coll. (1862), Univ. of Santa Clara (1851); Lick Observatory; lumber, fruit-canning, wine, woollen goods. 2) Cap., repub. of Costa Rica; pop., 53,600; cathed., univ., museum; trade in coffee.

**San Juan**, 1) cap. of Puerto Rico; pop., 115,000; cathed.; castles; good harbour; exports: coffee, sugar, tobacco. 2) Cap. of prov. San J., Argentina, on San J. riv. (100 m.; trib. of Colorado Riv.), at foot of the

Andes; pop., 20,000. **S. J. Arbitration**, betw. Gt. Brit. and U.S.A., on question of ownership of S.J., an island lying in middle of channel betw. Vancouver and mainland. Arbitrator, German Emperor, decided in favour of U.S.A., 1872. **S. J. Mountains**, part of Rocky Mtn. system (*q.v.*) in Colorado, U.S.A.; rugged scenery.

**Sankey**, Ira David (1840-1908), Amer. evangelist; composer of popular religious music; chfily. known for his association with D. L. Moody (*q.v.*).

**San Luis Potosí**, inland State, Mexico; 24,400 sq.m.; pop., 559,200; rich gold, silver, and copper deposits; cap., *San L.P.*; pop., 70,000; abpric.; cattle trade; smelting works.

**San Marino**, repub., N.E. It., under Ital. protection; 23 sq.m.; pop., 13,400; salt and tobacco San Marino monopoly; exports wine, cattle, and building stone; cap., *San M.*; pop., 2,000.

**Sannyasi**: a Brahman ascetic.

**Sanocrysin** (med.): see GOLD INJECTION.

**San Remo**, health resort, Ital. Riviera, dept. of Porto Maurizio, on Gulf of Genoa; pop., 25,000.

**San Salvador**, cap., Salvador, Centr. Amer., at foot of volcano of same name (6,400 ft.); pop., 96,000; univ., cathed.; rly. to port of Ajacutla, on Pacific.

**San Sebastian**, cap. prov. of Guipúzcoa, Sp., on Bay of Biscay; pop., 78,100; harbour; fisheries; sea-bathing.

**Sans-culottes** (Fr.), without breeches; the proletariat of the Fr. Revolution of 1789, who wore trousers instead of the knee breeches worn by the aristocracy. **Sans-culottides**, Sept. 17th-21st in Fr. Repub. Calendar (*q.v.*). **S. gêne** (Fr.), unconstrained, free-and-easy. **S. peur et sans reproche** (Fr.), without fear and without reproach; proverbial attribute of the Chevalier Bayard (*q.v.*).

**Sanskrit**, anc. lit. lang. of India (*cf.* *Prakrit*, conversational lang.); lang. of scholars by 3rd cent. B.C.; forms most important means of comparison of Indo-European languages. See LANGUAGE SURVEY, *Indian Languages*.

**Sansovino**, Ital. sculptors and archts.: 1) **Andrea** (1460-1529). 2) **Jacopo** (1486-1570); *Library of St. Mark's* and the *Mint*, Venice.

**Sans serif**: see SERIF.

**Sans Souci** (Fr., care-free), pleasure palace and park nr. Potsdam, built 1745-47, by Knobelsdorff; favourite resort of Frederick the Great, who died there.

**San Stefano**, Treaty of, March, 1878, signed at San S., small port on Sea of Marmora, Turkey. Independence of Serbia, Rumania, and Montenegro recognized; new

State of Bulgaria created; large territorial concessions to Russia. Terms modified by Congress of Berlin (July, 1878).

**Sant**, James (1820-1916), Brit. painter; studied under Jn. Varley and Sir Aug. Calcott; princ. painter-in-ordinary to Qn. Victoria; R.A., 1869; *Miss Martineau's Garden*; *The Soul's Awakening*, etc.

**Santa Claus**: see NICHOLAS, ST.

**Santa Cruz**, 1) dist., Argentina (S. Patagonia); cattle-raising; mining (coal, salt); 109,100 sq.m.; pop., 18,000. 2) Dept., Bolivia; 145,000 sq.m.; pop., 346,600; pasture, sugar, coffee, rice. 3) Cap. of 2); pop., 30,300. 4) Seaside resort, California, U.S.A.; pop., 11,000. 5) Or **S. C. de Tenerife**, cap., Canary Isls., on E. coast Tenerife; fortified harbour; pop., 58,200. 6) Or **S. C. de la Palma**, cap., Palma (Canary Isls.); pop., 7,600. 7) Tn., Luzon, Philippine Isls.; pop., 14,000. **S. C. Islands**, group W. Pacific, included in protectorate of Brit. Solomon Isls.; volcanic, well wooded and watered; 360 sq.m.; pop., 7,700; cap., *Santa Cruz*.

**Santa Fé**, prov., Argentina, watered by the Paraná; c. 50,900 sq.m.; pop., 1,252,000; stock-raising; wheat; cap., *Santa Fé*, on Riv. Salado; pop., 122,000; univ.; cathed.; port.

**Santa Fe**, cap. New Mexico, U.S.A.; pop., 11,000; univ.; gold- and silver-mining.

**Santander**, cap. prov. of S. (2,100 sq.m.; pop., 359,700), N. Spain, on Bay of Biscay; pop., 86,200; harbour, shipyards; iron foundries; sea-bathing; mineral springs.

**Santayana**, George (1863- ), Amer. philos. and poet: *Sonnets and Other Poems*, 1894; *The Sense of Beauty*, 1896; *The Life of Reason*, 1901-08.

**Santiago de Chile**, cap. of Chile, on the Mapocho; pop., 696,200; cathed.; univ.; fine public buildings, squares, and avenues; damaged by earthquake, 1922. **S. de Compostella**, city, N.W. Spain, in prov. of Corunna; pop., 26,000; abpric.; univ.; cathed. (trad. burial-place of St. James the Apostle); mediaeval place of pilgrimage.

**S. de Cuba**, seapt., Cuba, on S. coast; pop., 143,000; cathed.; exports tobacco, coffee, sugar. **S. del Estero**, tn., Argentina, cap. prov. same name (55,400 sq.m.; pop., 389,900; forests and salt swamps), on Rio Dulce; pop., 23,500.

**Santi Quaranta**, port, Albania, opp. Corfu; on mail route from Adriatic to the Piraëus.

**Santley**, Sir Chas. (1834-1922), Eng. baritone singer; début as Adam in *The Creation*, 1857; sang in opera, oratorios, and on the concert-platform.

**Santo Domingo**, cap. of Dominican Repub. (*q.v.*), pop., 32,000; fndd. 1496 by Spaniards; cathed. (Span. Renaiss. archit.) contns. cenotaph of Columbus.

**Santonin**, active prin. of *Santonica*; dried, unexpanded flowerheads of var. species of *Artemisia*, small plant growing in Asia and Eur. and cultivated in Russia. Used as remedy to expel round- and thread-worms in man; has no action on tape-worms. See MALE FERN.

**Santorin**: see THERO.

**Santos**, seapt. tn., S. Brazil, in prov. of São Paulo, situate on an isl. in estuary of Santos Riv.; world's greatest coffee port; pop., 103,000.

**Santos-Dumont**, Alberto (1873-1932), Brazilian aeronaut; constructed dirigible airships (1898-1906).

**São Francisco, Rio**, riv. (1,860 m.), E. Brazil, S. Amer.; rises in plateau of Minas Geraes; many rapids; flows into the Atlantic.

**S. Paulo**, State, S. Brazil; 112,300 sq.m.; pop., 6,400,000; agriculture; coffee-growing most important; also cotton, rice, tobacco, fruits; exports (from Santos, *q.v.*) 50% of world's coffee prod.; cap., *São Paulo*, modern public buildings; pop., 880,000. **S. Thomé, St. Thomas**, Portuguese isl. in Gulf of Guinea; 318 sq.m.; pop., 60,000 (mainly Negroes); mountainous; dense forests; exports cocoa; cap., Cidade de São Thomé.

**Saône**, riv., Fr., trib. (280 m.) of Riv. Rhone, which it joins at Lyons; rises in Faucilles Mountains. **S.-et-Loire**, dépt., Burgundy, Fr.; 3,330 sq.m.; pop., 549,300; coal, iron, cotton; cap., *Mâcon*.

**Sap**, 1) (bot.) juice or fluid circulating in tissues of plants; water charged with mineral salts is drawn up by the roots and rises to the extremities, where much of it evaporates; the residue, after combination with carbon from the air, descends through the plant as cell-forming material. 2) (Mil.) Covered or subterranean trench made as a means of approach towards the enemy's position. **S.-wood**, the new outermost wood of a tree, still pervious to fluids.

**Saponification**, (chem.) orig. decomposition of an ester (*q.v.*) by alkali into alcohol and alkali salt of acid (e.g., olive oil, heated with caustic soda, yields glycerine and sodium oleate, a soap—hence term). Now used of decomposition of ester into alcohol and acid; superseded by *Hydrolysis* (*q.v.*).

**Saponin**, soap-like veg. substance, present in quillaia bark; froths with water and is used for foam baths and foam fire-appliances, also to produce "head" on beer, etc.

**Sapotaceae**, tropic. trees, with pulpy fruit, sometimes edible; some varieties yield gutta-percha and gums.

**Sapper**, (milit.) member of the Royal Engineers (*q.v.*), one of whose duties is the designing and construction of saps.

**Sapphic verse**, classical lyr. verse form, used by Sappho, adapted by Horace and Catullus: — — — — — — — — — — (three times); — — — — —.

**Sapphira** (N.T.), wife of Ananias (*q.v.*).

**Sapphire**, translucent precious stone of varying shades of intense blue; a variety of corundum (*q.v.*).

**Sappho**, Gr. poetess; lived in Lesbos c. 600 B.C.

**Sapporo, Satsuparo**, cap. of Yezo, Japan; pop., 180,000.

**Saprophytes**, veg. organisms wh. live on dead and decaying organic matter, esp. bacteria and the higher fungi.

**Saraband**, slow Span. dance in 3-time, pop. in 16th-17th centuries.

**Saracens**, name given to Mohammedans, esp. Arabs, in Mid. Ages.

**Saragossa, Zaragoza**, 1) inland prov., Aragon, N. Spain, crossed by the Ebro; 6,700 sq.m.; pop., 526,400. 2) Cap. of prov., on the Ebro; pop., 159,300; two catheds.; univ. (1474). Defended by Palafox agst. Fr. forces in siege of 1808-09, at wh. the "Maid of Saragossa" (Maria Agustin) distinguished herself by her bravery.

**Sarah**, 1) (O.T.) wife of Abraham, mother of Isaac. 2) (Apocr.) Dau. of Raguel; had 7 husbands all killed on bridal night by demon Asmodeus; through agency of angel Raphael (*q.v.*) enabled to marry Tobias (B. of Tobit).

**Sarajevo**, cap. of Bosnia, Yugoslavia, in vall. of the Miljacka; pop., 66,000 (one-third Mohammedans); cathed.; manuf. tobacco and carpets. Assassination of Archduke Francis Ferdinand here on 28 June, 1914, precipitated the World War.

**Saranac Lake**, vill., New York State, U.S.A.; in *Adirondack Mtns.*; 1,650 ft. above sea-lvl.; pop., 8,000; health and pleasure resort; sanatorium for tuberculosis.

**Sarasate**, Pablo de (1844-1908), Span. violinist and composer: *Gipsy Melodies*.

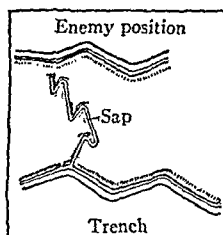
**Saratoga Springs**, health resort, New York State, U.S.A., N. of Albany; pop., 15,000; numerous mineral springs.

**Saratov**, chf. tn. of prov. S. (c. 30,600 sq.m.; pop., 2,912,673), on Riv. Volga in S.E. Russia; harbour; pop., 216,000; univ. Site inhabited in remote times.

**Sarawak**, independent State, N.W. coast of Borneo, under Brit. protection; 50,000 sq.m.; pop., 600,000 (Malay and Chinese); interior mountainous (10,000 ft.); chf. exports: rubber, petroleum, sago, pepper, coal. Cap., *Kuching* (free port); pop., 27,000.



Sappho, Greek Vase Painting

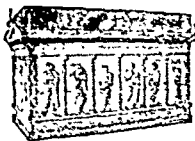


Military Sap

**Sarcenet, Sarsnet**, fine, thin, soft silk matl. used for ribbons, linings, etc.

**Sarcoma**, malignant tumour; spreads to other parts of body by means of blood-vessels and lymphatics. See **CANCER**.

**Sarcophagus** (Gr., flesh-eating), richly ornamented stone coffin; orig., the stone used by Greeks for coffins, wh. was supposed to consume the corpse.



Sarcophagus

**Sard**, semi-precious, very hard stone, orange or orange-red in colour, a variety of chalcedony (*q.v.*); used for intaglios.

**Sardanapalus**, legendary last Kg. of Assyria; probably Assur-bani-pal, c. 650 B.C. (his library of more than 22,000 clay tablets exists).

**Sardine**: see **PILCHARD**.

**Sardinia**, Ital. isl. in Mediterranean, separated from Corsica by Strait of Bonifacio; 9,300 sq.m.; pop., 864,200; surface mountainous (to 6,017 ft.), with marshy valls; pasture (sheep, goats, pigs, cattle) in the uplands; cultivation of wheat, barley, oats, hay, wine, olive oil; mines of zinc, lead, lignite in S.W.; cap., *Cagliari*, on S. coast. Kgdm. of S. formed from S., Savoy, Piedmont, Genoa, Aosta, Montferrat, Nice, 1720. Savoy and Nice restored to France, 1796; kgdm. re-established to include Genoa, 1814; under Victor Emmanuel II, 1849-78, united with kgdm. of Italy.

**Sardis**, **Sardes**, anc. city, Asia Minor, cap. of the kgs. of Lydia (incl. Croesus, *q.v.*). Captured by the Persians in 6th cent. B.C., and by the Athenians and Ionians 498 B.C. Important city under the Eastern Rom. Empire. One of the seven churches of Asia addressed by St. John in Revelation (i, 4). Destroyed by Timur, A.D. 1402.

**Sardonic laughter**, forced, bitter laughter (from Sardinian herb, whose taste draws mouth in the semblance of a smile); also spasmodic laughter of tetanus.

**Sardonyx**, semi-precious stone consisting of alternate layers of red sard or carnelian and white chalcedony; used for cameos.

**Sardou**, Victorien (1831-1908), Fr. dramat.; *Cyprienne*, *Madame Sans-Gêne*.

**Sargasso Sea**, part of N. Atlantic betw. 20° and 40° N. lat. and 35° and 75° W. long.; so-called on account of quantity of floating *Sargassum bacciferum*, a seaweed, found in its waters.

**Sargent**, John Singer (1856-1925), Anglo-Amer. portrait painter; R.A., 1897; *Carnation*, *Lily*, *Lily*, *Rose* and Wertheimer portrait series in Tate Gallery; mural paintings, *History of Religion*, Boston, U.S.A., etc.

**Sargon**, Kg. of Assyria (722-705 B.C.),

conq. Media and Babylon; consolidated empire and fndd. city of Khorsabad.

**Sark, Sercq**, one of the Channel Isls., dependency (6 m. E.) of Guernsey; divided into *Great S.* and *Little S.* (connected by Coupée isthmus); 2 sq.m.; pop., 575; harbour, Creux, on East.

**Sarmatia**, (anc. geogr.) the land betw. Germania and Riv. Volga. **Sarmatians**, nomadic race living betw. rivs. Vistula and Don.

**Saronic Gulf, G. of Saros**, bay in Aegean Sea, betw. Thrace and penins. of Gallipoli; 18½ m. wide at mouth; 37 m. long.

**Saros**, (astron.) cycle of 18 yrs., 11 days, in wh. eclipses recur; i.e., within wh. the sun returns 19 times and moon 242 times to same node (*q.v.*).

**Sarrail**, Maurice Paul (1856-1929), Fr. gen.; com. VI Army Corps, 1914 (B. of the Frontiers); c-in-c. Allied Armies in the East, 1916; H. Comm., Syria, 1925.

**Sarre**: see **SAAR**.

**Sarrebouurg, Saarburg**, tn., Lorraine, France, dépt. Moselle, on the Saar; pop., 10,000; bell-foundries.

**Sarsaparilla**, root of a Centr. Amer. climbing plant of lily family (*Smilax*). Several varieties are known. Cultivated in Jamaica (*Smilax ornata*) and used in pop. med. as a "blood purifier." In 16th cent. erroneously held to be specific for syphilis.

**Sarthe**, 1) dépt. N.W. Fr.; 2,410 sq.m.; pop., 384,619; agric., horses, cattle, poultry; coal, marble, and slate quarries; weaving; cap., Le Mans. 2) Riv. N.W. France (172 m.); rises dépt. Orne; joined by Riv. Loir, 5 m., and by Riv. Mayenne, 2 m., above Angers, to form Riv. Maine, 7 m., which flows into the Loire below Angers.

**Sarto**, Andrea del: see **ANDREA DEL SARTO**.

**Sartor Resartus** (Lat.), "the tailor re-tailored"; title of philosophical work by Thomas Carlyle (*q.v.*), 1833.

**Sarum**, old name of Salisbury (signature of bp.).

**Sask.**, abbr. prov. of Saskatchewan.

**Saskatchewan**, 1) riv., Canada; formed by union of N. and S. Saskatchewan (rising *Rocky Mts.*); flows through Cedar L. into L. Winnipeg. 2) Prov. centr. Canada, betw. Alberta (W.) and Manitoba (E.); 251,700 sq.m.; pop., 882,000; largest wheat-growing prov. in Canada; cattle, horses, sheep, pigs; extensive forests in N.; cap., Regina.

**Saskatoon**, tn., Saskatchewan, Canada, on Saskatchewan Riv.; pop., 43,025; univ.; agric. college; flour and saw mills.

**Sassafras**, *Sassafras variifolium*, lauraceous tree growing in U.S.A. The bark and root contain an oil used in perfumery, and in med. as a diuretic.

**Sassanids**, dynas. of Neo-Persian Empire (A.D. 226-640).

**Sassoon, Sir Jacob Elias** (1844-1916), 1st. bt. (1909), Jew. merch. and banker, Bombay; establd. Centr. Coll. of Science, Bombay; succ. by **Sir Edw. Elias S.** (1853-1924); succ. by **Sir Ellice Victor S.** (1881- ); memb. Legisl. Assembly, India (1922-23, 1926-29); member Royal Commn. on Indian Labour, 1929-31. **S., Sir Albert A. D.** (1818-96), 1st. bt. (1890), merch. and philanthrop.; constr. Sassoon Dock at Bombay, 1872-75; succ. by **Sir Edward Albert** (1856-1912) M.P. 1899-1912; succ. by his s., **Sir Philip** (1888- ), 3rd. bt. M.P. fr. 1912; during World War private sec. to Earl Haig; under-sec. for air, 1924-29, 1931.

**Sassoon, Siegfried Lorraine** (1886- ), Brit. poet and journalist; pubd. *The Old Huntsman*, 1917; *Memoirs of a Foxhunting Man*, 1928 (Hawthornden Prize); *Memoirs of an Infantry Officer*, 1930.

**Satan**, the Devil, the arch-enemy of mankind, personification of evil in Jewish and Christian religions. **Satanic School**, title given to Byron and his followers by Southey in preface to *Vision of Judgment* (1821). **Satanism**, worship of Satan in place of God, with parody of Christian ritual and celebration of "Black Mass"; service of principle of evil.

**Sateen**, cotton or wool fabric, with glossy surface, made to imitate satin (q.v.).

**Satellite**, 1) an attendant; member of important personage's train. 2) (Astron.) See MOONS.

**Sati**: see SUTTEE.

**Satiety**, state of being satisfied to repletion; the *S.-value* of food indicates length of time during wh. sense of S. will last after partaking of it, indep. of its nutritive value.

**Satin**, soft, rich, silk fabric with smooth, lustrous, glossy surface. **S.-bird**: see BOWER BIRD. **S.-wood**, *E. Indian tree*, *Chloroxylon swietenia*, with fine yellow-coloured timber used in cabinet-making; other trees with similar timber are also called satinwood and are used for the same purpose.

**Satrap**, gov. or viceroy of a prov. (**satrapy**) of anc. Persia.

**Satsuma**, a special kind of Japanese glazed, enamelled ware with yellow ground; so called from S., distr. of Kagoshima, on Kyushu Isl., Japan, where orig. made.

**Saturation**, (chem.) state of a solution in wh., at a given temp., it conts. largest poss. quant. of a gas, liquid, or solid in solution. **S. pressure**, pressure of vapour in an enclosed space containing some fluid, after evaporation of the fluid has reached its limit. **S. current** of an elec. magnet, deg. of strength in a current, such that an incrs. in strength will not induce an incrsd. amt. of magnetic power. **S. of a colour** is greater the less the admixture of white contained in it, pure colour free from white being called

saturated. **Supersaturation** of vapour or dissolved substance is state in wh. amount in given volume exceeds the amount present at saturation. Only possible in absence of liquid or solid respectively. **Supersaturated vapour** condenses to mist when ions (q.v.) are formed in it; also on dust, hence formation of clouds and rain. **Supersaturated solution** crystallizes out when particle of solid, or other substance of similar crystalline form, is thrown in.

**Saturday**, 7th day of week, named after Saturn, god of agriculture. Jewish day of rest.

**Saturn**, 1) (myth.) ancient Italic deity; identified with Gr. Cronos. 2) (Astron.) 2nd of the outer planets; see Table, Planets; 9 moons: Mimas, Enceladus, Tethys, Dione, Rhea, Titan, Hyperion, Iapetus, Phoebe (10th, Themis, doubtful). Series of rings of meteors in its equatorial plane c. 12.5 m. deep, outer diameter c. 173,000 m., separated by clear line of demarcation (*Cassini's division*). **Saturnalia**, ancient Rom. festival held in winter to commemorate the golden age under the god Saturn; time of carnival and licentious orgies, during part of wh. slaves and masters exchanged places.

**Satusparo**: see SAPORO.

**Satyriasis**, state of continuing and excessive sexual desire in males.

**Satyr drama**, epilogue to anc. tragedies; treated subject of preceding trilogy in burlesque manner.

**Satyrs**, (Gr. myth.) spirits of the woods and fields, followers of Dionysus; represented with horns, pointed ears, and tails. Correspond to Rom. Fauns (q.v.).

**Saudi Arabia**, **Saudi**, kgdm., Arabia; known as Hejaz and Nejd till Sept., 1932; includes Hejaz, Nejd, and Asir (qq.v.).

**Sauerkraut**, Ger. dish; white cabbage fermented with lactic acid.

**Saul**, 1) (O.T.) a Benjamite, son of Kish; 1st Kg. of Israel (c. 1030-1010 B.C.); killed in battle agst. Philistines at Gilboa. 2)

(N.T.) Name of Paul (q.v.) before his conversion. 3) Oratorio by Handel (q.v.), 1739; contains famous "Dead March."

**Sault Sainte Marie**, tn., Michigan, U.S.A., on St. Mary's Riv.; pop., 13,750;



Satyr, after Rubens



Anointing of Saul, after Holbein

summer resort, hunting, fishing; trade in coal, limestone, agric., and forest products.

**Saumur**, tn., dépt. Maine-et-Loire, Fr., on the Loire; pop., 16,500; prods., light white wine; manuf. linen, leather goods.

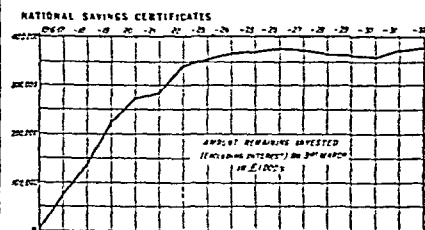
**Saurians**, extinct, lizard-like reptiles of the Triassic, Jurassic, and Cretaceous periods; gigantic animals (*cf.* BRONTO-SAURUS); both carnivorous and herbivorous types; denizens of land, water, and air. Also general name for all lizards.

**Sauté**, cooked veg. or meat and poultry, fried up.

**Sauternes**, vill., dépt. Gironde, Fr.; pop., 850; vineyards yielding a naturally sweet white wine; Sauternes, Haut (upper) Sauternes; most famous brand Château Yquem.

**Sauve qui peut!** (Fr.). Let him save himself who can! Every man for himself!

under agreed conditions, usually notice of a stated period; they are taken by *deposit banks* also *trustee savings banks*, *post-office savings banks* (*qq.v.*), *penny banks*, and U.S. Savings



Bulk of money subscribed during World War, but subscriptions increased in recent years. Interest accrued on certificates outstanding at 31 Mar., 1931, amtd. to nearly £125,000. In present depression with low interest rates, this method of saving has become more popular.

	Post Office	Trustee	Nat'l Sav. Cert.	Total
Deposits 1913	£187,200,000	£ 68,500,000	—	£255,700,000
1920	266,500,000	91,300,000	£314,900,000	672,700,000
1930	290,200,000	133,200,000	371,600,000	795,000,000
1931	289,441,000	190,088,000	378,875,000	858,404,000

Great Britain Deposits for Recent Years

**Sava** (c. 1152-1237), 1st Abp. of Serbia, fndd. Serb. National Church; s. of Stephen Nemanya, fndr. of Serb. kingdom.

**Savage**, Richd. (d. 1743), Eng. poet; claimed to be illegit. son of 4th Earl Rivers and Ctess. of Macclesfield; notorious for dissolute life; befriended by Pope; pubd. *The Bastard*, 1728; *The Wanderer*, 1729; etc.; collected works, prefaced by Johnson's *Life*, pubd., 1775.

**Savanna**, wide, level tract of grassland in sub-tropical and tropical Amer.; called on the Orinoco, *llano*, and in Brazil, *campo*.

**Savannah**, port, S.W. Georgia, U.S.A., on S. Riv. (450 m.; rises in *Alleghany Mtns.* and flows into Atlantic); pop., 100,000; winter resort; cotton, fertilizers, sugar; airport.

**Save**, **Sava**, **Sau**, trib. (442 m., 365 navigbl.) of Riv. Danube; rises from two springs in *Carnic Alps*; joins Danube nr. Belgrade.

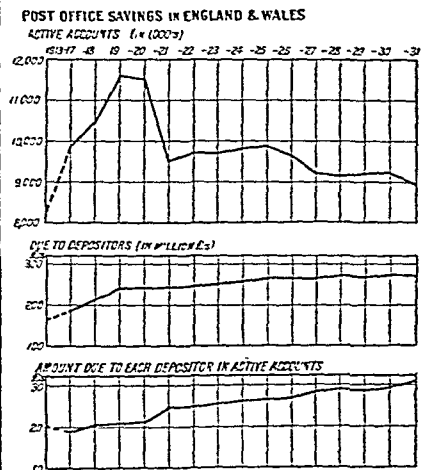
**Savernake Forest**, woodland (4,000 acres), Wilts, Eng.; 5 m. S. E. Marlborough; beech avenue 4 m. long.

**Saverne**, **Zabern**, tn., Bas Rhine, Alsace, Fr.; pop., 7,500; **Zabern incident** (1913), fracas due to ill-feeling betw. Pruss. soldiery and populace, tn. then belonging to Germany.

**Savin**, evergreen shrub of Juniper family *Juniperus Sabina*; young shoots contain a volatile oil.

**Savings accounts**, (banking) sums placed by individuals, firms, etc., with banks, on wh. int. is paid. S.A. may only be withdrawn

banks. In U.S.A. banks must hold 3% cash agst. savings accounts. **S. banks**, banks taking deposits from public on wh. a fixed per cent. of interest is paid annually, deposits being withdrawable only under agreed



No. of actual accounts increased by nearly half during World War but has since decreased. Nevertheless, amount due to depositors as whole and to each separately has steadily increased.

conditions of notice. Designed to encourage thrift among poorer classes. For this reason regulated by legislation to protect depositors.

In Gt. Brit. there are *trustee savings banks* (*q.v.*) and *post-office savings banks*. Joint-stock and private banks also run savings accounts. Brit. savings are also largely placed in *national savings certificates* (*q.v.*); while large savings are also in *building societies* (*q.v.*), and *co-operative societies* (*q.v.*).

**Savoie**, dépt. E. Fr.; 2,390 sq.m.; pop., 235,510; drained by Riv. Isère; mountainous (several peaks over 2,000 ft.); cattle-breeding; mineral springs at Aix-les-Bains; cap., *Chambéry*.

**Savoir-faire** (Fr.), "to know how to act"; tact; adaptability. **S.-vivre**, worldly knowledge.

**Savona**, port, prov. of Genoa, Ital. Riviera; pop., 66,000; iron and steel works.

**Savonarola**, Girolamo (1452-98), Ital. Dominican monk; reformer of morals; excommunicated and burnt as heretic.

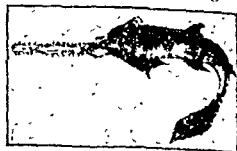
**Savoy**, 1) princely Hse. of S. and Piedmont; present Roy. Hse. of It.; descended from Humbert the White-handed (d. 1038); dukes of S. since 1416; kgs. of Sardinia since 1720; kgs. of It. since 1861. 2) **The S.**, dist. of London betw. Strand (*q.v.*) and Riv. Thames. Site of Palace of Peter of Savoy (1247), uncle to Eleanor, Qn. of Henry III; bldg. was destroyed by Wat Tyler's followers, 1381; rebuilt as Hospital of St. John the Baptist by Henry VII; site now occupied mainly by S. Hotel and Theatre.

**Chapel of the S.**, attached to hospital, declared Chapel Royal by George III, 1773; restored, 1864, after damage by fire. 3) Kind of cabbage with crinkled leaves.

**Savska**, dept. of Jugoslavia, watered by the Save (Sava); 14,340 sq.m.; pop., 2,336,700; cap., *Zagreb*.

**Saw**, tool with a toothed blade, for cutting up wood, iron, or other metals, stone, etc.; **hand s.**, used by carpenters and joiners: e.g., rip-S., tenon-S., keyhole-S.; **machine s.**: e.g., circular S., band-S.; for hand use on metal, hack-saw. **S.-fish**, elasmobranch fish with a long, flat, serrated continuation of the snout (saw); two genera: *Pristiophorus* and *Pristis*; first, relatively small fishes from the seas of Australia and Japan; second, found in all

tropical seas, growing to over 20 ft. in length and using their formidable saw to rip open the bodies of their victims. **S.-fly**, hymenopterous insect whose larvae closely resemble caterpillars; often harmful to plants. **S.-mill**, works in which tree trunks are sawn up into planks and beams, usu. with frame saws; power is provided by steam, water, or wind. See **MILL**. **S.-tooth roofing**, (bldg.) form spec. adapted for factory bldgs.; so called from outline of cross-section; see **ROOF**. **S.-wort**, *Scutellaria tinctoria*, perennial herb; grows c. 2 ft. high; has serrated leaves, purple flowers.



Sawfish



Savonarola

**Sawatch**, **Sagnache**, part of Rocky Mtn. system (*q.v.*) in Colorado, U.S.A.; granite; Mts. *Elbert* (*q.v.*), *Holy Cross*, 13,980 ft., *Ouray*, 13,950 feet.

**Saxe**, Maurice (1696-1750), Fr. marshal; victor of Fontenoy (*q.v.*), 1745.

**Saxe-Altenburg**, **S.-Eisenach**, **S.-Meiningen**, **S.-Weimar**, former duchies and States of Ger. Empire; included in Thuringia in 1920. **Saxe-Coburg**, **House of**, designatn. of Brit. Roy. and Imp. family from accessn. of Edw. VII (1901) till 1917, when it was changed (by Roy. Proclamtn.) to Hse. of Windsor; from ducal family of Albert, Prince Consort, father of Edw. VII. **S.-Coburg-Gotha**, former duchy and State of Ger. Empire: Coburg included in Bavaria and Gotha in Thuringia, 1920.

**Saxhorn**, brass wind instrument, with conical tube smaller than that of tuba, and three valves; used esp. in French military bands.

**Saxifrage**, gen. name given to varieties of *Saxifraga*; small plants growing on mountains, having white, yellow, or red flowers; freqly. cultivated as garden plants. *London Pride* is variety of saxifrage.

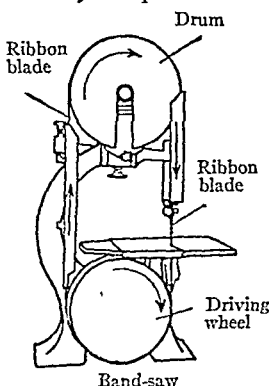


Saxifrage

**Saxo Grammaticus**, Dan. chronicler, d. c. A.D. 1210; *History of Denmark* (contains story of Hamlet).

**Saxons**, Teut. tribe from N.W. Ger., with varying territory; appeared as pirates in N. Sea and Eng. Channel (A.D. 286), crossed Elbe c. 350 and extended sway almost to Rhine; in 5th cent. settled at Bayeux and mouth of Loire; assoc. with Angles and Jutes in invasion of Brit., their name surviving in Essex, Middlesex, Sussex, Wessex; also natives of mod. Ger. kgdm. (now repub.) of Saxony, wh. orig. in 8th cent. in land inhab. by S. betw. Elbe, Rhine, and Eider.

**Saxon Switzerland**, part of the *Elbsandstein Mtns.* sit. in Saxony; many fissures form main characteristic of the rock formation.



**Saxony**, 1) land of the Saxons (*q.v.*); geographical term of widely varying application. 2) Republic, Ger., on borders of Bohemia, from wh. it is separated by the Erzgebirge; bounded E. and N. by Prussia, and W. by Prussia, Thuringia, and Bavaria; 5,756 sq.m.; pop., 5 millions. Watered by Elbe and trib., Mulde. Contains Saxon Switzerland (*q.v.*). Fertile in N.: rye, oats, wheat, barley, potatoes; orchards; vineyards; cattle, pigs, goats, horses, sheep. Rich in minerals: coal, lignite, copper, iron. Important industries: textiles, engineering (Chemnitz), porcelain (Meissen; Dresden china), books (Leipzig), furs (Leipzig), tobacco (Dresden). Rlys., 2,150 m. Divided into depts. of Dresden, Leipzig, Bautzen, Chemnitz, and Zwickau. Largest tns.: Dresden (cap.), Leipzig, Chemnitz, Plauen, Zwickau. Anc. cap., Wittenberg (now in Prussian S.). Univ. at Leipzig, tech. school at Dresden, mining academy at Freiberg. Supreme crt. of the German State at Leipzig.

After the extinction of the Ascanian line (1423) Saxo-Wittenberg passed to house of Wettin; divided, in 1485, betw. the Ernestine and Albertine lines. Under the Albertine Frederick Augustus III (1763-1827) the electorate became a krdm. in 1806; acquired (from Napoleon) Grand Duchy of Warsaw, 1807; on French side in battle of Leipzig (1813); at Congress of Vienna (1814) lost to Prussia the N. half of its territory (Prussian prov. of Saxony), besides losing Grand Duchy of Warsaw to Russia. On Austrian side in Austro-Prussian War, 1866. Joined N. German Confederation, 1866; joined German Empire, 1871; repub., 1918. 3) Prov. of Prussia; 9,760 sq.m.; pop., 3,300,000; watered by the Elbe and Saale; includes parts of Harz Mtns. and Thuringian Forest; mainly agricultural: sugar-beet, wheat, hops, fruit; cattle, sheep, goats; coal, iron, and copper, rock-salt, potassium salt; brine and sulphur springs; cap., *Magdeburg*. 4) A fine woollen yarn prod. in S.; tweed cloth of high-grade wool.

**Saxophone**, brass mus. instr. invented by Adolphe Sax (1814-94), with a mouthpiece resembling that of a clarinet; esp. for jazz music.

**Sayan Mountains**, Centr. Asia, part of Altai range (*Mun-*); Sredn. 11,440 ft.; frontier betw. Siberia and N.W. Mongolia; rich coal and ore deposits.

**Sayers**, Tom (1826-65), Eng. pugilist; bricklayer; 1st prize fight, 1840; champ., 1853; renowned for fight with Amer. J. C. Heenan, 17 Apr., 1850; 37 rounds, lasted 2 hrs., 6 min.; declared draw after injury to S.'s arm.

**Sazhen**, Russ. linear measure, 7 ft. (2.134 metres); 500 sazhen = 1 verst.

**Sazonov**, Serge D. (1851-1927), Russ. statesman; For. Min. at outbreak of World War; *For. Secy*, 1925.

**Sb**, (chem.) symbol for antimony (*q.v.*).

**Sbirri** (Ital.), body of police spies employed by the Venetian Republic until the beginning of the 19th century.

**Sc**, (chem.) symbol of scandium (*q.v.*).

**Sc.**, abbr., a) *sculpit* (Lat.), he graved it; b) *scilicet* (Lat.), namely.

**S.C.**, abbr. South Carolina.

**Scab**, infectious skin disease that attacks horses and cattle; resembles mange.

**Scabies** (*the itch*), a very irritating skin disease caused by a parasite (*Acarus scabiei*). Cured by applications of sulphur ointment.

**Scabious**, general name given to varieties of *Scabiosa*; teasel-like plant, usu. with bluish flowers. Field scabious (*S. arvensis*) grows to a ht. of 3 feet.

**Scad**; see HORSE MACHERILL.

**Scaevola**, *Galus Mucius*.

legendary hero; attempted to kill Lars Porcena, who was besieging Rome; when threatened with torture held own rt. hand in fire till consumed, wh. so impressed Porcena that he granted peace. **S., Quintus Mucius** (d. 82 B.C.), Rom. consul, and gov. of prov. of Asia.

**Scafell**, mtn., Cumb., Lake Dist., Eng. (3,102 ft.), sep. by *Middleridge* from **S. Pike** (3,210 ft.), the highest mtn. in Eng.; both overlook West Water.

**Scaffold**, temporary structure of timber or metal for support, workmen and materials, in buildg., etc., elevated platform for execut. of criminals.

**Scala**, La, opera house at Milan, bld. 1772.

**Scala Regia**; see VATICAN.

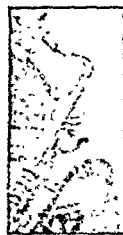
**Scala Sancta**; see LATERAN.

**Scale**, 1) regular markings on measuring instruments, e.g., temperature degrees on thermometers; inches on rulers. 2) (Cartog.) Ratio of distance as measured on map to actual distance; e.g., 1 in 100,000 means that 1 unit (in., cm., etc.)

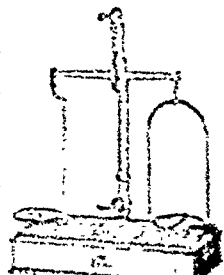
on map represents distance of 100,000 units; 1 in 63,360 = 1 in. to the mile (63,360 ins.). 3) (Tech.) Coating on substance, usually metal. On iron that has been heated, S. consists of oxide (Fe<sub>2</sub>O<sub>3</sub>). On inside of boiler, it forms from hard water, consisting of carbonates and sulphates of lime, and sometimes silicates and phosphates. Prevented by 2)



Scabious



Saxophone



Platform Scale



using softened water; b) adding organic substances, e.g., tannins; c) elec. current between inside of boiler surface and insulated electrode. 4) (Mus.) Succession of notes in regular order.

**Scalene triangle**, triangle with all sides unequal.

**Scales**, weighing machine consisting of balanced cross-piece pivoting in centre, having at either end a container in one of wh. weights are placed and in other article to be weighed. Also, self-indicating S. with dial or sliding indicator, and platform beneath for articles. See Ills. above and at foot of prev. page.

**Scaliger**, Jos. Justus (1540-1609), Ital. scholar and philol., domiciled in France; fndr. of mod. science of chronology; his father, S., **Julius Caesar** (1484-1558), doctor and classical scholar, was an opponent of Erasmus.

**Scallop**, (zool.) bivalve mollusc, with ribbed, fan-shaped shell. Numerous species, varying in size, many most beautifully coloured and patterned. Mantle margins are fringed, and bordered by row of conspicuous, round black eyes, which can be seen when the living scallop rests in a tidal pool, with the valves of its shell partly open. Progresses rapidly through water by rapid opening and closing of valves. Edible; baked in half shell, served with egg-and-bread-crumbs.

**Scalp**, skin of head with hair; formerly drawn off heads of enemies by N. Amer. Indians and worn round waist as trophies.

**Scamander**, **Xanthus** (modern *Mendere*), riv. of the Troad, Asia Minor; flows past Troy into the Aegean.

**Scandinavia**, penins., N.E. Europe, on Atlantic Ocean. Comprising Norway and Sweden; separated from Finland by Gulf of Bothnia, from the Baltic repubs. and Germany by the Baltic Sea, and from Denmark by Kattegat and Skagerrak. Area, 298,100 sq.m.; pop., 8,900,000. Traversed from N. to S. by longest European mtn. range (1,050 m.), with highest peaks in N. Europe (to 8,140 ft.); many glaciers; steep descents to fjords on W., more gradual slope to E.; many lakes and rapid rivers. Climate mild and damp in W. owing to

Gulf Stream; continental in East. **Scandinavian**: see LANGUAGE SURVEY, *Germanic Languages*.

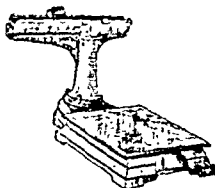
**Scandium**, (chem.) element, sym. Sc; at.wt. 45.10; very rare metal of cerium group; pres. in cert. Swed. yttrium metals.

**Scapa Flow**, land-locked expanse of sea in S. Orkneys (q.v.), surrounded by Hoy, Mainland, Burray, and S. Ronaldshay (area, c. 60 sq.m.); Britain's chief naval base in World War. In June, 1919, 53 of the surrendered Ger. warships were scuttled by their crews here; many of them have been raised since.

**Scapegoat** (Judaism), one of two goats presented to Yahveh on Day of Atonement; sent to Azazel in the Wilderness, bearing sins of the congregation.

**Scape-wheel** of a watch or clock; fastest wheel of the train, released and allowed to travel round one tooth at every swing of balance-wheel or pendulum (q.v.). See ESCAPEMENT.

**Scapula, shoulder-blade**, flat, triangular bone found in all mammals at upper back part of chest-wall, extending from second to seventh rib, and supporting various muscles.



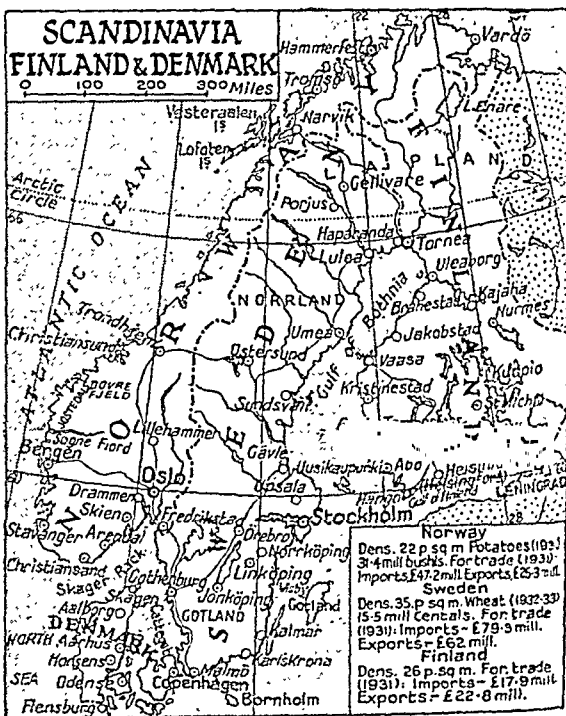
Parcel Scales



Scallop



Scapa Flow.  
Scuttling of the  
"Bayern"



**Scapular, scapulary** (Lat.), two small squares of cloth, bearing some sacred symbol, worn on back and chest, suspended by narrow shoulder-straps; worn by R.C. monks and nuns and also by laity.

**Scar**, a mark left by the fibrous tissue wh. finally unites the two edges of a wound.

**Scarab**, a dung-rolling beetle; regarded as sacred by anc. Egyptians, who used seal-stones in shape of S. as charms. See DORBEETLE.



**Scarborough, tn.** in N. Riding of Yorks, Eng., on North Sea; pop., 41,800; popular seaside resort; ruined castle.



Scarborough  
Bathing Pool and South  
Bay

**Scarlatti, Alessandro** (1659-1725), Ital. composer; fndd. Neapolitan school of opera; Bathing Pool and South concert music. His s.

**Giuseppe Domenico** (1685-1757), pianist and composer.

**Scarlet fever**, acute infectious and contagious disease, characterized by inflammation of throat and a scarlet rash; inflammation of the ear and kidneys may occur. Skin peels off in flakes and scales, after 6th-8th day of illness.

**Scarlet-runner**: see BEAN.

**Scarron, Paul** (1610-60), Fr. author, chfily. of burlesques and satires; *Roman comique*, 1651-57.

**Scaup**, var. of duck, similar to pochard (q.v.), found in Europe, Asia, and N. Amer.; purplish-black and white in colour.

**Scavenging**, (mechan.) in internal-combustion engines, removal of gaseous products of explosion, preparatory to admission of new charge. See INTERNAL-COMBUSTION ENGINES; TWO-STROKE MOTOR.

**Seate**, earliest Saxon coin, in gold or silver, worth c. 1d.

**Scenario**, outline of play, opera, etc., with divisions of acts, scenes, names of characters, scenic arrangements, appearance of players.

**Scent**, the perfume (q.v.) emitted by the volatile and essential oils of plants and flowers; a preparation from these or other perfumes. Also, the taint or odour left by an animal on the ground or in the air, by which it is tracked by other animals; esp. that left by the fox, hare, stag, etc., which hounds follow; hence, the power in animals or men to perceive this or other perfume.

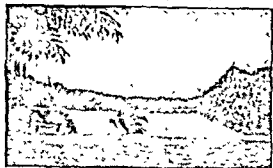
**Septicism**, beginning of all philos.; deliberate doubt of, hence inquiry into, the trustworthiness of knowledge; represented in anc. times by Pyrrho, c. 330 B.C. Montaigne's motto, *Que sais-je?* ("What do I know?") indicates that true S. can only ask questions,

and not make statements; Hume (1711-76) supplied most logical defence of S., doubting the ideas of Substance and Cause, hence threatening the foundations of science. French S. of 18th cent. less a philos. than an anti-Christian movement, its doubt being levelled agst. authority and tradition. See AGNOSTICISM; POSITIVISM; RATIONALISM.

**Sceptre**, ruler's staff or baton, symbolic of his authority.

**Scesaplana**, highest peak (9,741 ft.) of the *Rhaetian Alps*, Vorarlberg, Austria, on the borders of Switzerland.

**Schaffhausen**, northernmost canton, Switzerland; Waterfall on Rhine at Schaffhausen 115 sq.m.; pop., 54,100; agric., vineyards, cattle-breeding; cap., *Schaffhausen*, on Riv. Rhine, above S. Falls; pop., 22,600; weaving, machinery, clocks.



**Schappe**, yarn made of silk waste; cloth woven from such yarn.

**Scharlieb**, Dame Mary Dacomb (1845-1930), Brit. surgeon; worked esp. among women of India; *Reminiscences*, 1924.

**Scharnhorst**, Gerhard Johann David von (1755-1813), Pruss. gen.; created nat. army based on universal conscription.



**Schaumburg-Lippe**, repub., Ger.; 131 sq.m.; pop., 50,000; agric.; textiles; timber; cap., *Bückeburg*, pop., 57,000.

Dame Mary  
Scharlieb

**Scheele**, Karl Wilhelm (1742-86), Swed. chem.; disc. chlorine; also arsenic, and tartaric, oxalic, and prussic acids. **S.'s green** (copper arsenite) is used by artists; obtained from the mineral **Scheelite**, a yellowish or brownish crystalline mineral, comp. of calcium tungstate.

**Scheffer**, Ary (1795-1858), Fr. painter of histor. and relig. subject pictures.

**Scheherazade**, relater of tales of *Thousand and One Nights* (q.v.).

**Scheidegg**, Alpine passes, Bernese Alps, Switzerland; *Great S.* (6,434 ft.), from Hasli Tal to Grindelwald; *Little S.* (6,772 ft.), from Grindelwald to Lauterbrunnen (Alpine railway).

**Scheldt, Schelde, Escaut**, riv., Fr., Belgium, and Holland (223 m., 200 nvgl.); rises dépt. Aisne, Fr.; passes Cambrai and Valenciennes; enters Belgium nr. Bleharries; passes Tournai, Ghent, and below Antwerp divides into W. and E. Scheldt (on either side isls. of Beveland, in Zeeland); W. Scheldt reaches N. Sea at Flushing; connected by canals with rivs. Oise and Somme.

Upper S. scene of much fighting in World War.

**Schelling**, Friedrich Wilhelm von (1775-1854), Ger. philos.; *System of Transcendental Idealism*.

**Schenectady**, tn., New York State, U.S.A., on Mohawk Riv.; pop., 95,700; iron foundries, electrical works; airport.

**Scherzando**, (mus.) gaily, playfully.

**Scherzo**, (mus.) lively playful movement; usually 3rd movement in a sonata, quartet, or symphony.

**Scheveningen**, seaside resort, S. Holland; suburb of The Hague; pop., 22,000; fisheries.

**Schiaparelli**, Giovanni (1835-1910), Ital. astron.; disc. "canals" on Mars, 1877.

**Schiedam**, tn., S. Holland, at confluence rivs. Schie and Maas (Meuse); pop., 47,950; large dry-dock; gin distillery.

**Schiehallion**, mtn. (3,547 ft.), N.W. Perthsh.; scene of observations by Nevil Maskelyne on earth's density, 1774.

**Schiller**, Friedrich von (1759-1805), Ger. poet; dramatist, philos., and qualified doctor; prof. of history at Jena, 1789. Among his principal works are—dramas: *Maria Stuart*, *Wallenstein*, *Wilhelm Tell*; poems: *The Song of the Bell*, *The Diver*, *Ballads*; historical works: *The Decline of the Netherlands States*, *The Thirty Years' War*; etc.



Schiller

**Schilling**, 1) obsolete N. German silver coin, equiv. to 1/40 thaler (q.v.). 2) Aust. monetary unit = 100 groschen (q.v.); 34.585 schillings = £1 (\$4.8665) at par.

**Schipperke**, small black dog with pointed ears, orig. kept for killing rats on Dut. barges.

**Schism**, cleavage in the Christian Church. *Western* (or *Great*) *Schism*, the division in the Ch. lasting from 1378 to 1417, when lines of claimants to the Papacy reigned at Rome and Avignon, respectively. **Eastern S.**, the separation of the Eastern Chs. (q.v.) from R.C.Ch., in 1054; temporarily healed in 1274, but revived in 1280. **Schismatic**, an adherent to a community not in communion with the Cath. Church.

**Schist**, (geol.) crystalline, metamorphic rock formation wh. splits readily into plates or laminae; many varieties, each designated by its chief mineral constituent, e.g., *hornblende-S.*, *mica-S.* Shales and slates are not, in Eng. usage, included in this term.

**Schlageter**, Albert Leo (1894-1923), Ger. officer, during the French occup. of the Ruhr engaged in directing sabotage; exec. by Fr.; made, with Wessel, chief hero of Nazis.

**Schlegel**, Friedrich von (1772-1829), Ger. poet, critic, and philos.; leader of Romantic movement.

**Schleich**, Karl Ludwig (1859-1922), Ger. surgeon; first to employ local anaesthesia.

**Schleiermacher**, Friedrich (1768-1834), Ger. Protestant theolog. and philos.; *Talks on Religion*, 1799; *Educational Lectures*.

**Schleswig-Holstein**, prov., N.W. Prussia, comprising former Dan. duchies of *Schleswig* (*Slesvig*), *Holstein*, and *Lauenburg*; 5,820 sq.m.; pop., 1,520,000; coast-line broken by fjords on E.; N. Frisian Is. off W. coast; fertile marshy ground in W.; moors in centre; higher ground with numerous lakes in E.; agric., stock-raising, fisheries; cap., *Schleswig*, on the Schlei (pop., 18,500); leather goods. United to Holstein (q.v.) 1386; under Dan. kgs. from 1460; Kg. of Denmark, as Duke of Holstein, entered Germanic Confederation, 1815; abortive Ger. war with Den. over S.-H., 1848-50; war of Austria and Ger. with Denmark in 1864 gave prov. to Germany. Under Treaty of Versailles Schleswig frontiers readjusted by plebiscite (1920), the territory N. of Flensburg Fjord being restored to Denmark.

**Schleyer**, Johannes Martin (1831-1912), Austr. bp.; inv. Volapük (q.v.).

**Schliemann**, Heinrich (1822-1890), Ger. archaeol. (nat. American); pioneer of scientific investigatn. of anc. Grk. sites; disc. buried city of Mycenae, etc.

**Schlüsselburg** (officially *Oryeshok*), Russ. isl. fortress on L. Ladoga; from 18th cent. to 1905 prison for polit. offenders.

**Schmoller**, Gustav von (1838-1917), Ger. political economist; chief of younger historical school, led Social-Political Union (q.v.), 1890-1917.

**Schnadahüpfel**, type of merry, extempore pop. song, of 4 short lines (2nd and 4th rhymg.), sung in Bavarian and Austrian mtn.-districts.

**Schnapps**, strong spirit; name given to a kind of Hollands (q.v.).

**Schnee**, Heinrich (1871- ), Ger. soldier; Gov. Ger. E. Africa, 1912-19; defended colony, 1914-18.

**Schneeberg**, 1) tn., Saxony, in the Erzgebirge; pop., 9,300; textiles, lace. 2) Name of sevrl. mtn. peaks in centr. Eur.; a) summit of *Fichtelgebirge* (3,445 ft.); b) peak in *Sudetes Mtns.* (4,675 ft.); c) peak in *Austrian Alps* (6,808 ft.), etc.

**Schneider Trophy**, prize contest for fast seaworthy aircraft, instituted by Jacques Schneider, 1912. Trophy 'secured for Gt.



Schneider Trophy

Schneider, 1912. Trophy 'secured for Gt.

Brit. by 3 successive wins 1927, 1929, 1931 (Flight-Lieut. Stainforth; highest speed 408-288 m.p.h.).

**Schnitzler, Arthur** (1862-1931), Austr. dramat. and author; plays *Liebelein, Anatol, Roundelay*; novel: *Fräulein Else*.

**Schober, Johannes** (1874- ), Austr. statesman; Pres. of Police, 1918, '22; Chanc. and For. Min., 1921-22, '29.

**Scholarship**, 1) erudition; esp. of classical languages. 2) (Educ.) Yearly grant of money to an individual to enable him to study at a school or univ.; election to a sch. usu. made on results of competitive examination.

**Scholasticism**, characteristic philos. of Mid. Ages and later (9th-16th cent.), adherents of wh. studied phil. less for its own sake than for that of religion. S. attempted to give a rational basis to Christianity but tended to degenerate into discussions of verbal subtlety; largely concerned with problem of Universals, *Realism* (q.v.) ascribing reality to universal ideas alone, *Nominalism* (q.v.) seeing in a gen. idea no more than a mere name. Anselm (1033-1109), Thomas Aquinas (1225-74), Duns Scotus (c. 1274-1308); Suarez (1548-1617) revived and systematised Scholasticism.

**Scholemaster, The**, treatise by Ascham (q.v.), chsfy. on teaching of Latin, 1570.

**Schönbein, Christian Friedrich** (1799-1868), Ger. chemist; disc. ozone, guncotton, and collodium.

**Schönberg, Arnold** (1874- ), Austr. composer: *Gurrelieder, Pierrot Lunaire*. Pioneer of modern (atonal) music.

**Schönbrunn**, summer palace and park on outskirts of Vienna, in the manner of Versailles.

**Schongauer, Martin** (1450-c. 88), Ger. painter and engraver; *Virgin Mary in a Bow of Roses*.

**School boards**, cmmtces. created by Eng. Educatn. Act, 1870; at first appointed by town council or vestry, later elected by ratepayers, for providing or assisting element. schools out of rates and to compel attendance of children; abolished by Educatn. Act, 1902. See ELEMENTARY SCHOOL, PUBLIC.

**Schoolmen**, adherents and teachers of Scholasticism (q.v.).

**Schooner**, sailing vessel with 2 or more masts, fore-and-aft rigged.

**Schopenhauer, Arthur** (1788-1860), Ger.

philos.; *The World as Will and Idea*, 1819; essays and aphorisms in *Parerga and Paralipomena*, 1851.

**Schottische**, modif. form of polka with 2 figs.; **Highland S.**, lively dance resembl. a "fling" (q.v.).

**Schreiner, Olive**, pen-name of Mrs. Cronwright-Schreiner (1862-1920), novelist; dau. of Ger. missionary in Basutoland; pubd. 1st novel, *Story of an African Farm*, 1883, under pseud. Ralph Iron; *Dreams*, 1890; *Trooper Peter Halkett*, 1897, etc.

**Schrotblatt**, dotted print, picture reproduced from metal plate by method practised in Ger. in 15th and 16th cent.; design appeared in relief on dark, dotted background.

**Schubert, Franz Peter** (1797-1828), Austr. composer; made Ger. *Lied* independent art-form; symphonies (*Unfinished* in B flat), chamber and piano music, *Forelle Quintette, Lieder*, and song-cycles.

**Schücking, Walter** (1875- ), Ger. pol. econ. and jurist; member of National Assembly, 1919, and peace delegation Versailles; member of Hague Court of Arbitration; elected to Reichstag, 1920, '24; leader of Ger. Democratic party.

**Schumann, Clara** (1819-96), wife of Robert S.; pianist. **S., Robert** (1810-56), Ger. composer; master esp. of shorter musical forms: symphonies, choral: *Paradise and the Peri*, 1843; chamber and piano music: *Papillons*, 1831; *Kreisleriana*, 1838; *Kinderszenen*; songs: *Frauenliebe und Leben*, 1840; *Dichterliebe*, 1840.

**Schütt, Great and Little S.**, two wooded isls. formed by branches of the Danube, betw. Bratislava (Pressburg) and Komárom; Great S., Czech since 1919; Little S., to the South, is Hungarian.

**Schwarz, Berthold** (c. 1300), Ger. Franciscan monk and alchemist; reputed inv. of gunpowder.

**Schweitzer, Albert** (1875- ), Ger. theolog. and musical critic (Bach).



Schopenhauer



Schrotblatt, or Dotted Print, 16th Cent.



Schubert



Robert Schumann



Schnitzler



Schooner

**Schwerin**, cap. of Mecklenburg-Schwerin, Ger., on **Lake S.** (22.4 sq.m.; max. depth, 140 ft.); outlet, Riv. Stör to the Elbe; pop., 50,000; castle with museum.

**Schwyz**, canton, Switzerland, crossed by the *S. Alps* (Rigi, 5,906 ft.); 349 sq.m.; pop., 621,500; in the W. is L. of Zug; in the S., L. of Lucerne; cotton, silk, wood-cutting. Cap., S.; health-resort (1,700 ft.), on St. Gotthard Rly., at foot of the Mythen.

**Sciatica**, painful and deep-seated affection of sciatic nerve of the thigh.

**Science**, sum total of knowledge; investigation of truth for its own sake; knowledge duly arranged and referred to general truths and principles on wh. it is fndd.; systematic knowledge of natural or physical phenomena.

**Scientific and Industrial Research, Dept. of**, Brit. body incorporatd. by charter (1916) to administer funds voted by Parl. or otherwise for purposes of scientif. and indus. research; receives grants from Treasury. Subsidiary cmttees. under its administration incld. research boards for building, chemistry, food supplies, forestry, fuel, radio, etc. **S. management**, (indus.) system of organization in factories, etc., originated in U.S.A., c. 1905, by F. W. Taylor, wh. aims at max. output by means of standardization of all machines doing similar work, study of time and motion involved in performance of every piece of work, payment by results, "functional control" (q.v.), and systematic planning of work by spec. department.

**Scilicet** (Lat.), to wit, namely.

**Scilly Islands**, group of c. 150 islands, islets, and rocks, Cornwall, Eng., 25 m. W. of Land's End; included in Cassiterides of Herodotus; relic of the traditl. *Lyonesse* (vanished land betw. the group and the mainland); five inhabited; St. Mary's (cap., *Hugh Town*), Treco, St. Martin's, Bryher, and St. Agnes; area, c. 63 sq.m.; pop., 1,700; flowers and early vegetables grown.



Scimitar

**Scimitar**, sabre, gen. much curved, with cross-guard; in Near E. and India.

**Scipio**, Rom. family name, patrician branch of Cornelian generals, of whom the most important members are: 1) **S., Publius Cornelius**; consul, 218 B.C.; deftd. and wounded in cavalry charge agst. Hannibal, on Riv. Ticinus; victories over Carthaginians in Sp., 212-11; final defeat and death prob. due to desertion of Celtiberi. 2) **S., Aemilianus Africanus**, Pub. Corn., the Younger (185-129 B.C.), consul 147, 134; destroyed Carthage, 146; conq. Sp., 133; opposed Gracchan party; prob. assassinated. 3) **S., Africanus**, Pub. Corn., the Elder (237-183 B.C.), son of 1); served at Ticinus and Cannae; pro-consul, 210; captured New Carthage; defeated Hasdrubal, 209; con-

quered Sp., 206; consul, 205; defeated Hannibal at Zama, 202; ended 2nd Punic War, 201.

**Scissors**, steel instr. for severing materials; movable and fixed; worked by hand or machine; cutting effected with two sharp blades, e.g., tailors' S., garden S., plate S., profile cutters; for cutting on a larger scale, worked hydraulically. See **SHEARS**.

**Sclerometer**, instrument for testing hardness of materials by determining force required to cause some hard, sharp edge (e.g., diamond) to effect definite injury to surface. **Scleroscope**, apparatus for testing relative hardness (q.v.) of materials.

**Sclerosis**, (med.) the hardening of a part, e.g., calcification of the arteries; **Multiple S.**, condition in wh. many hard patches are formed in brain and spinal cord, resulting in muscular weakness and tremor.

**Sclerotic**, (physiol.) thick coat or "white" of the eye.

**Scoliosis**, (med.) S-shaped lateral curvature of the spine.

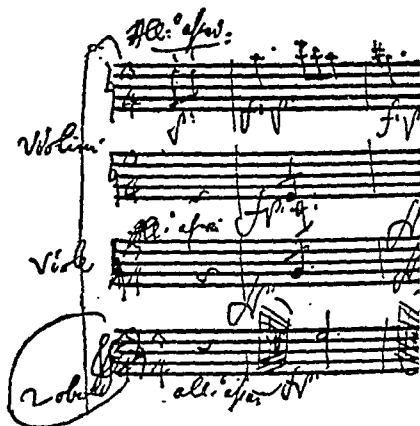
**Scolopendra**, genus of tropical centipedes able to inject venom into bites; the Giant S. of Trinidad attains length of 12 inches.

**Score Palace**, modern mansion on site anc. abbey; here was Stone of Destiny (see **DESTINY**) on which kgs. of Scotland were crowned until its removal to Westminster in 1297.

**Scopas**, Gr. sculptor, 4th cent. B.C., assisted in erection of tomb of Mausoleus, c. 350 B.C.; constructed Temple of Athena Alea at Tegea.

**Scopolamine**: see **HYOSCYAMUS**.

**Score**, 1) (meas.) set of twenty. 2) (Mus.) Systematic presentation of constitu-



Portion of Score of Mozart's "Entführung aus dem Serail"

ent parts or voices of a composition. **Piano s.**, reduction from full orchestral S., for piano. **Vocal s.**, reduction for voices with piano.

**Scoria**, 1) (metall.) dross or slag produced in smelting metal ores. 2) Fragments of pumice and other lava products emitted by a volcano.

**Scorpio**, "the Scorpion," zodiacal constellation; ♏ 8th sign of Zodiac (q.v.); see PL., ASTRONOMY, S.C.H., C.

**Scorpion**, insects allied to spiders, but possessing no spinning apparatus; S.s are provided with crab-like claws and have the body elongated into a long tail, having at its end a sting, through which poison is injected. Carnivorous; sting of large species is painful to man. Occur in tropical and sub-tropical countries. Females viviparous.



Scorpion

**Scotch eggs**, hard-boiled eggs covered with sausage meat, rolled in beaten egg and bread crumbs; fried in deep fat. **S. fir**: see PINE. **S. lovage**, *Ligusticum scoticum*, umbelliferous plant c. 2 ft. high; reddish flowers and stem; root used as a carminative in folk medicine. **S. terrier**, small rough-coated T. with short legs. Varieties: *Aberdeen*, black; *West Highland*, white; *Cairn*, grey. **S. woodcock**, buttered toast covered with anchovy paste, beaten yolk of egg and cream, heated until thick.

**Scoter**, black marine duck (*Oedema nigra*) found in cold regions of N. Europe. **American S.** with orange base to beak, fnd. in Japan and N. America.

**Scotland** (see coloured map), anc. kgdm. forming N. portion of isl. of Gt. Brit., sep. from Eng. by Solway Firth, Cheviots, and Riv. Tweed; and from Ire. by North Channel. Area, 29,785 sq.m.; pop., 4,842,500 (Church of S. 71.9%; Rom. Cath. 12.2%); 137,100 speak Gaelic and English, 7,100 speak Gaelic only. The surface is divided into the *Northern Highlands*, with the Grampian Hills (*Ben Nevis*, 4,406 ft.; highest summit in the U.K.), *Central Lowlands* (incl. Edin. and Glasgow), and *Southern Uplands* (*Merrick*, 2,764 ft.). The extreme N.E. coast and parts of E. coast are lowland. Over 750 islands, incl. Outer and Inner Hebrides (q.v.), Orkney Isls. and Shetland Islands. Coast-line extremely irregular, esp. in the sparsely populated W., with its innumerable *Firths* (incl. Firth of Clyde), *sea-lochs*, and penins. (*mulls*); E. coast indented by the firths of Forth and Tay and by the Moray Firth. Rivers include the Clyde (105 m.), the Tay (117 m.; longest in S.), the Spey (110 m.), the Dee (90 m.), and the Forth (66 m.). Characteristic are the lakes or inland lochs (Loch Lomond, 24 m. long, 1-5 m. wide; the largest in U.K.); scenery is unsurpassed, climate is equable, being influenced by the Gulf Stream. Agriculture on E. side

(oats), grazing on the W. and in the Southern Uplands. The Highlands are largely covered with heather (many grouse-moors and deer-forests). Cattle-breeding and fisheries of great importance. Mines of coal, lead, iron, and copper in Central Lowlands. Industries include shipb. (on the Clyde), machinery, aluminium, textiles, cotton, woollens (tweeds), linen, jute, linoleum; most important ports are Glasgow, Greenock, Leith, Grangemouth, Dundee, Methil, and Aberdeen. There are 33 counties. Cap., Edinburgh, largest city Glasgow.

The early inhabitants of *Caledonia* (as it was known to the Romans) were *Picts*, the *Scots* originally coming from Ire. (the orig. Scotia) and settling in Argyll in 5th cent. A.D. The ambitious designs of Edward I were frustrated after his death at the battle of *Bannockburn* (1314), which won independence for Scotland. The accession in 1603 of James VI to Eng. Crown as James I brought about union of Eng. and S., which was ratified a hundred years later by Act of Union (16 Jan., 1707). Jacobite risings in 1715 and 1745.

**Scotland Yard**, pop. name for NEW SCOTLAND YARD (q.v.).

**Scots Fusiliers, Royal**, Brit. infantry regt.; old 21st Foot (raised 1678); depot, Ayr; record office, Leith; 18 battalions in World War. **S. Greys, Royal** (2nd Dragoons), Brit. cavalry regt. (see DRAGOON); mounted on grey horses; raised 1678. **S. Guards**, 3rd regt. of Brit. Foot Gds.; raised in Scotland after Restoration; taken on Eng. estab., 1707, as 3rd Gds.; known as *Scots Fusilier Gds.*, 1831-77.

**Scott, Chas. Prestwich** (1846-1932), Brit. journalist and editor; began connection with *Manchester Guardian*, 1871; ed., 1872-1929; chf. proprietor, 1905; Lib. M.P., 1895-1906. He d. on 1 Jan., 1932. **S., Cyril Meir** (1879- ), Eng. composer; operas, ballets, symph. works, and chamber music; best known by his numerous piano pieces and songs. **S., Sir Geo. Gilbert** (1811-78), Eng. architect; noted for restoration of Eng. Gothic bldgs.; erected Martyrs' Memorial, Oxford, 1841; restored Ely Cathed., 1847; blt. new govt. offices, 1856 (Renaissance style insisted upon by Ld. Palmerston); Albert Memorial, 1862-63. **S., Sir Giles Gilbert** (1880- ), g.s. of Sir Geo. Gilbert S., designs accepted for new cathed. at Liverpool, 1903; Ch. of the Annunciation, Bournemouth; chapel of the Visitation Convent, Harrow; new bldgs. at Clare Coll., Cambridge; etc. **S., Hugh S.**: see MERRIMAN, HY. SETON. **S., Sir Percy Moreton** (1853-1924), Brit. sailor and leading gunnery expert; served in Ashanti War, 1873-74; Egypt. campaign, 1882; Naval Brigade, S. Afr. War, 1899; Internat. Brigade at Boxer

Rising, China, 1900; retired as adm., 1913; in charge of air force defence of London, 1914; publ. *Fifty Years in Royal Navy*, 1919. **S., Robert Falcon** (1868-1912), Brit. sailor and Antarctic explorer; commd. National Antarct. Exped. in "Discovery," 1900-04; prom. Captain R.N.; com. 2nd Antarct. Exped. in "Nova Terra," 1910; reached S. Pole 1912, shortly after Amundsen; perished with his party on return journey. **S., Sir Walter** (1771-1832), Scot. poet and novel.; histor. novels; *Waverley*, 1814, *Ivanhoe*, 1820; *Kenilworth*, 1821, and many others; poems: *Marmion*, 1808, etc.



Sir W. Scott

**Scottish School of Philosophy**, fndd. by Thomas Reid (1710-96); opposed to scepticism of Hume (*q.v.*); known as *Common-sense Philosophy*.

**Scott-Moncrieff**, Charles Kenneth (1889-1930), Eng. translator of Marcel Proust, Pirandello.

**Scow**, term used, chfly. in Amer., for a large flat-bottomed, square-ended lighter or barge.

**Scranton**, tn., Pennsylvania, U.S.A., on Lackawanna Riv; pop., 143,000; anthracite mines, iron and steel works; silk manufacture.

**Scrap**, (tech.) material which has served its purpose and has no value except as raw material to be worked up again.

**Scratch**, (sport) mark on ground indicating starting point of race; hence, to *start from S.*, to receive no handicap, to run the full course. Competitors are said to have *scratched* when their names are struck out (scratched) off the list.

**Screen**, 1) (optics) surface on which a picture is projected by optical means. Pure white S. (best titanium oxide paint) allows picture to be seen from side, but semi-reflecting S. (matt-surface aluminium) sends more light to spectators in front of screen. Translucent S. (for through-projection) made of ground glass or matt-surfaced cellulose. 2) (Tech.) Sieve for separating pulverised materials.

**Screen-grid**: see *VALVE*.

**Screw**, in mechanics, so-called "simple" machine, con-

sisting of an inclined plane wound around a cylinder. *Pitch* = amt. of forward motion for one complete rotation. Inclined plane of engineering screw is called the *thread*, and may be triang. or rectang. in section. Thread shapes and pitches in Brit. standard usage are Whitworth, B.A., and gas; of these only the gas-thread is used on the Continent of Europe. Ss. are cut on smooth rods by means of *dies* held in *stocks*; to form thread in holes, *taps* are used (*taper* and *plug*); best S. are cut on a lathe provided with a *lead S.*: see *SLIDE-REST*, see also *THREAD*.

**Scriabine**, Alex. N. (1872-1915), Russ. composer; symphonic works (inclgd. *Poem of Extasy* and *Prometheus*), piano pieces, and orchestral works; individual harmony.

**Scribe**, Eugène (1791-1861), Fr. dramat.; opera, *The Huguenots*.

**Scribe, Scriber**, (tech.) sharp steel-pointed instr. clamped to a stand, used for marking off metal work, gen. on a plane table.

**Scribes** (N.T.), class of lawyers and instructors of the people; applied literal precepts of Scriptures to minutiae of life; asctd. chfly. with Pharisees in disputes with Sadducees.

**Scrip**, document issued provisionally as title for securities upon wh. further instalments of payment are to be made; in Gt. Brit. new issues of capital are usu. paid for by investor in instalments.

**Scrofula**, form of tuberculosis in wh. the bones and lymphatic glands are affected.

**Scrubber**, (tech.) appar. for removing some component of a gas mixture by bringing it in contact with a liquid solvent or reagent; e.g., ammonia from coal-gas, by means of sulphuric acid. Solvent usu. drips downwards over mass of granulated material (coke, brick); gas passes upwards.

**Scrumbling, scumbling**, in painting, use of a dry brush on a wet painted surface to obliterate sharp contours, e.g., in sky.

**Scruple** 1) Brit. and U.S. apothecaries' wt., 20 grains or 1/3 dram. 2) A small amount. 3) Doubt, hesitation, as to course of action, compunction. (From Lat. "a small stone").

**Scudo**, Ital. gold or silver coin and money of account, equiv. to 5 lire, worth abt. 4s. (\$ .97) at par.

**Scull**, (rowing) short light oar; one rower works 2 sculls. (See *OAR*). **Sculling**, propulsion of boats by sculls (*q.v.*); S. races are popular sport in Eng., Australia, and Canada, esp. Wingfield Sculls (fr. 1830), Eng. amateur championship race rowed annually on Thames from Putney to Mortlake (4 1/4 miles) and Diamond Sculls (fr. 1844) at Henley (1 m. 550 yds.).



Screw bolt and nut



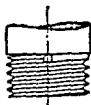
Lead screw



Wood screw



Thread buttress



Triangular-threaded screw

Types of Screw

**Sculpture**, art of carving or cutting, in stone or wood, figures, designs, etc., either in round or relief; term also applied to art of

**Scyphomedusae**, (zool.), order of jelly-fish (*q.v.*), with sensitive, tentacular appendages. **Scythe**, (agric.) implement for mowing by



Egyptian Animal Figure



Egyptian Rock Carving, Abu Simbel



Archaic Greek goddess



Examples of Early Sculpture: fig. on rt. is the Aphrodite of Cyrene, prob. early Hellenistic.

modelling in clay, or other plastic material, and casting in bronze. See ART, HISTORY OF.

**Scumbling**: see SCRUMBLING.

**Scunthorpe**, urb. dist., Lincs, Eng.; pop., 33,800; iron-smelting.

**Scupper-holes**, openings in bulwarks (*q.v.*) of ships to permit of escape of loose water from deck's side-channels, or *scuppers*.

**Scurf**, flakes of cast-off skin of the scalp lying among the hairs; see DANDRUFF.

**Scurvy**, disease attended by effusion of blood under skin, bleeding from gums and



Scutari

mucous membranes; due to lack of anti-scorbutic vitamin C (present in oranges and lemons). **S. grass**, plant (*Cochlearia officinalis*) with spoon-shaped leaves and white flowers; reputed cure for scurvy.

**Scutage**, money formerly paid by a knight in lieu of personal service. First levied 1139.

**Scutari**, 1) or **Uskudar**, Asiatic suburb of Constantinople; pop., 125,000; marine customs port. 2) Or **Skodra**, largest tn., Albania, on Lake S. (area c. 150 sq.m.); pop., 24,000 (66% Mohammedans); Orthodox and R.C. catheds.; expts. tobacco, cereals, hides, and skins. Occupied by Austrians in 1916.

**Scylla**, in Homer's *Odyssey*, sea-monster (perhaps the rock on Ital. side in Str. of Messina), opposite the whirl-pool Charybdis (*q.v.*); hence betw. S. and Charybdis: betw. two evils.

hand; long curved blade, with sharp inner edge, set in wooden handle with projecting grips.

**Scythians**, Gr. collective name for anc. nomadic races from S. Russ. Steppe to the Danube, c. 7th cent. B.C.

**Se**, symb. of selenium (*q.v.*).

**Sea**, the body of salt water covering 71% of the earth's surface; the various oceans and seas regarded individually or collectively. Mean depth, c. 12,450 ft.; greatest known, 44,000 ft. (8½ m.), 75 m. N. of Puerto Rico. **S. breeze**, breeze blowing landwards from sea.

**S. level**, level taken midway betw. high-and low-water marks; also called *mean sea-level*, and used as datum-line for measurements of geog. heights and depths. **S.-anemone**, brightly coloured marine invertebrate animal, closely allied to the corals and included in the Anthozoa, but forming no stony skeleton, its body always remaining soft, and, when expanded, bearing at its free end an encircling mass of tentacles surrounding the mouth, the basal end being attached to the rock by a disk. **S.-breem**, large family of marine, bony fishes having compressed oblong bodies with one dorsal fin. The common S.-B. (*Pagellus centrodontus*) is typical; often caught in great numbers offshore with the seine net; a good table-fish. **S.-buckthorn**, *Hippophaë rhamnoides*, thorny shrub with silvery leaves and greenish flowers wh. form orange berries; grows on sandy banks and cliffs. **S.-cow**, 1) popular name for aquatic mammals belonging to order Sirenia, incldg. *Manatis* and *Dugongs*. All lead a permanently aquatic life, so that their fore-



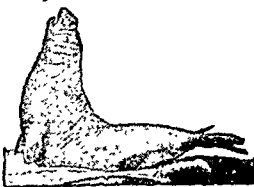
Scyphomedusa



Sea Anemone (Snakelock)



limbs have become modified into paddle-like flippers; hind-limbs have completely disappeared externally, the tail being developed as a flattened paddle lying horizontally in the water. Inhabit large river estuaries, sheltered bays, and shallow seas; exclusively vegetable feeders, devouring water plants and seaweeds. Chfly. tropical. Northern S.-C. now quite extinct. 2) Steller's S.-C.; seal formerly found in Behring Strait; became extinct owing to slaughter by whalers, about 1870. **S.-cucumber**, pop. name for the members of the class *Holothuroidea* of the Echinoderms. The body resembles more or less a badly grown cucumber, with the mouth at one end fringed by branching tentacles; five rows of tube-feet pass down the sides of the body from mouth to anus; beneath the skin there is a scattered armature of calcareous spicules, often of very beautiful form and colour. When



Sea-elephant

boiled and dried, they are known as *bêche-de-mer* or *tre-pang*, and are regarded by Malays, Chinese, etc., as a delicacy. **S.-elephant**, enormous species of seal, frequenting Antarctic seas and S. Shetlands; males attain length of 20 ft. and have a trunk-like prolongation of the nose, inflated with air when animal is excited.

**S.-fan**, brightly coloured branching Anthozoa of the genus *Gorgonia*, found on coral reefs in tropical seas. **S.-hare**, popular name for one of the sea-slugs. These molluscs are shell-less in adult stage, though when still in the egg can be seen to possess a miniature shell. To be found in rock-pools near low-tide mark, feeding on seaweeds. Some are very beautiful in colour. Found in Mediterranean. **S.-holly**, *Eryngium maritimum*, grows on seashore; blue flowers somewhat like a thistle. Large fleshy roots from wh. a sweetmeat was formerly made.

**S.-horse**, small marine fish, with head and body shaped like the knight in a set of chessmen; tail prehensile; male has an incubatory, in which the eggs are deposited and reared; many tropical species are finely coloured. **S. kale**, *Crambe maritima*, a variety of cabbage. **S.-lavender**, marsh rosemary; any plant of genus *Limnium*. See STATICE.

**S.-lily**, a class of the echinodermata (*Crinoidea*), with cup-shaped body and long arms; the body supported on a stalk; very anc. type of marine invertebrate, now com-



Sea-lion

paratively rare; survived in the seas of the Carboniferous Period. **S.-lion**, the popular name for the members of the family *Otariidae*, the eared-seals or fur-seals, all large aquatic carnivora, feeding on fish, crustaceans, and other marine animals; wide geographical distribtn.: Falkland Islands, Patagonia, N. Pacific, from California to Japan, S. Africa, Australia, and New Zealand. Live on land during breeding season, where they form "rookeries." Much reduced in numbers owing to excessive slaughter for fur. **S.-mark**, a conspicuous object on shore, beacon or the like, serving as guide for ship's course when approaching land, harbour, etc. **S.-mine**: see MINE. **S.-mouse**, one of the handsomest of common marine chaetopod worms, fnd. on sandy shores at low tide; derives its name from soft grey felting covering the back; the *chaetopoda*, or false feet, terminate in groups of sharp spines (*chaetae*), wh. are iridescent. **S.-onion**: see SQUILL.

**S.-otter**, aquatic carnivore, marine in habit, about 4 ft. long; resembles the stream-loving otter in shape; fnd. on coasts of N. Pacific as far as S. California and Mexico; also on Asiatic coast at Komandorski Isles, Kamchatka, and Kurile Isles. Becoming rare owing to excessive slaughter for its beautiful fur. **S.-serpent**, gigantic marine reptile, believed to live at great depths of the ocean and to have been seen by travellers from time to time; absolute proof of their existence or non-existence has never been established.

**S.-sickness**, nausea, vomiting, accomp'd. by giddiness and prostration, caused by rolling and pitching of a vessel at sea; may also be induced by aeroplane flight or by railway travelling. Condition is caused by disturbance of balancing system of semi-circular canal (see EAR) and of visual centres. **S.-snakes**, reptiles of aquatic habit forming sub-family *Hydrophiinae*, having compressed and oar-like tail. All are highly venomous, handsome, and brightly coloured; abundant in tropical parts of Indian Ocean and Western Pacific.

**S.-spider**, marine creature belonging to sub-class *Pycnogonida*; small, long-legged, sluggish animal, with narrow body and long, suctorial proboscis, living among seaweeds at low tide, on the shore. Probably an intermediate link betw. the Crustacea and the Arachnida. Some species have been brought up from considerable depths. **S.-squirt**, tunicate ascidian attached to stones, rocks, or seaweeds; the primitive backbone or notochord is confined to the hinder part of the body. **S.-urchin**, echinodermata, lives on seabed; body, gen. ball-shaped, oval or discoid, is composed



Sea-urchin

of chalky plates from wh. innumerable sharp

spines project and wh. are movable in all directions; long tube-feet protrude from spaces betw. the spine. **S.-water**, ctns. av. of 3.5% dissolved matter of wh. 77.8% is salt (sodium chloride), 10.8% magnesium chloride, 4.7% magnesium sulphate, 3.6% calcium sulphate, 2.5% potassium sulphate; also traces of iodine, etc. **S.-weed**, gen. any marine plant; spec. a marine alga; see **KELP**.

**Seaforth Highlanders** (Ross-shire Buffs, The Duke of Albany's), Highland regt., Brit. Army; union of old 72nd Foot (raised 1778 by Earl of Seaforth) and 78th Foot (1800); depot, Fort George (Inverness-sh.); record office, Perth; 19 battalions in World War.

**Seaham Harbour**, urb. dist., co. Durham; pop., 19,400; coal port.

**Seal**, 1) carnivorous, aquatic mammal, having fore and hind limbs converted into flippers. In true S. (*Phoca*), external ears are wanting, while the hind-flippers are permanently diverted backwards alongside the tail. Common S., found on rocky coasts of N. Atlantic and Pacific. 2) Impression (in wax, lead, etc.) of stamp or die (*matrix*) incised with some distinguishing device or design; used for the authentication of documents or as proof that the fastening has not been broken.



Seal



Seal of Emp. Otto I (10th century)

**Sealing-wax**, mixture of shellac, rosin, turpentine with mineral pigments (cinnabar, minium, chrome yellow); used for sealing.

**Sealyham terrier**, small rough-coated T. with very short legs.

**Seam**, Brit. glass wt., 120 lbs.

**Seaman**, Sir Owen, Bart. (1861- ), Brit. humorist, editor of *Punch*, 1906-32; *Borrowed Plumes*, 1902; *Harvest of Chaff*, 1904; *From the Home Front*, 1918; etc.



Sealyham

**Seaman, Ordinary**, deck hand on a mod. mercantile ship, capable of carrying out minor duties in connection with handling of the ship; a definite rating in the Brit. Navy.

**Séance** (Fr.), session; spiritualist meeting.

**Seannachie**, Scot. Highlanders' bard who recited traditions of clan.

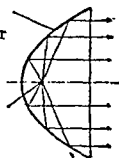
**Seaplane**, aeroplane 'able to operate from surface of water. See **AEROPLANE**; **AVIATION**.

**Searchlight**, optical apparatus in wh.

light from a powerful source (usu. elec. arc) is collected by a mirror and thrown in a beam in any desired direction.

Concave parabolic mirror

Beam of light in focus



Searchlight (section)

**Seasons**, four quarters of the year in temperate regions, viz., *spring*, *summer*, *autumn*, and *winter* (qv.). In tropical regions, seasons are *dry* and *rainy*, temperat. showing little variation. Polar seasons: short summer, long winter.

**Seattle**, port, Washington, U.S.A., on Puget Sound; pop., 366,000; univ. (1862); timber; canning industry.

**Sebaceous glands**, glands in the skin which secrete the slight coating of grease natural to the skin. The grease becomes excessive in those suffering from indigestion or other forms of ill-health. If the glands are inflamed, pustules appear, as in *acne*; extensive inflammation may give rise to boils or carbuncles.

**Sebastian, St.**, Gaulish convert to Christianity; shot with arrows and beaten to death under Diocletian c. 300 A.D.

**Sebastopol**: see **SEVASTOPOL**.

**Sebenico**: see **SIBENIK**.


**Seborrhœa**, disease of sebaceous glands (qv.) characterized by excessive production of greasy material. In scalp, S. causes scurf.

**Sebu**, longest riv. in Morocco (224 m.); flows from the *Atlas Mtns.* into the Atlantic.

**Sec.**, abbr., 1) second; 2) *secundum* (Lat.), according to.

**Secant**, (geom.) any straight line that cuts another line, curve, or figure.

**Secession**, separation from gov. unit of a group, either without territorial bond (e.g., plebs seceded in anc. Rome but rejoined State) or forming territorial unit (e.g., Sthrn. States in Amer. Civil War). **S., War of** (1861-65), civil war in U.S.A., betw. the Northern (federal) and Southern (confederate) States wh. seceded from Union in opposition to proposed abolition of slavery. Although South, under Lee and Jackson, achieved some initial successes, the Federals, under Grant and Sherman, were eventually victorious.

**Second**, 1) abbr. *sec.*, the 86,400th part of a mean solar day; one-sixth of a minute; (geom.) one-sixth of a minute. 2) (Mus.)  2nd degree of a scale and corresp. interval.

Major Minor Augmented Second

3) (Sport) Pers. supporting and serving 1 of combatants in duel, boxing-match, etc.

**Second Advent**, the return of Jesus Christ to earth in visible form, expected by certain Christian bodies to occur at or immediately before the Last Judgment; at various dates,

carriage to Mint, loss of interest during mint-age, etc.

**Seine**, 1) longest riv. (482 m.) in N. Fr.; rises Plateau de Longres (q.v.); flows through dépts. of Côte-d'Or, Aube (Troyes), Seine-et-Marne (Melun), Seine-et-Oise, Seine (Paris), Eure, and Seine-Inférieure (Rouen); drains into English Channel through wide estuary betw. Havre (N.) and Honfleur (S.). Tribs.: Aube, Yonne, Marne, Oise, Eure. Navig. to Rouen; connected by canals with rivs. Saône, Loire, Marne, Meuse, Somme, Scheldt. 2) Dépt. N. France, including Paris and suburbs; 185 sq.m.; pop., 4,933,900; cap., Paris. **S.-et-Marne**, dépt. N. France; 2,275 sq.m.; pop., 406,100; cap., *Melun*. **S.-et-Oise**, dépt. N. France; 2,200 sq.m.; pop., 1,365,600; cap., *Versailles*. **S.-Inférieure**, dépt. N.W. France; 2,450 sq.m.; pop., 995,300; cap., *Rouen*; ports, Havre and Dieppe.

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**Selby**, mkt. tn., W. Riding, Yorks, Eng., on Riv. Ouse; oil-works, flax mills; abbey ch.; pop., 10,100.

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to draw up Petition of Right (q.v.); member of Trinity Hall, Cambridge, 1646; pubd. *Privileges of the Baronage of England*, 1649; *Table Talk*, 1689; etc.

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**Selectivity**, in wireless reception; degree to wh. a receiving-set can be tuned to receive only one particular wave-length.

**Selene**, (Gr. myth.) moon goddess, *moon*; See LUNA.

**Selenga-Orkhon**, riv. (750 m.), Ctr. Asia, rises in Khansa Mtns.; falls into L. Baikal.

**Selenite**, gypsum (q.v.) in crystalline form. **Selenium**, (chem.) element, Se; at. wt. 79.2; m.p., 220° (metal. form); found combined with sulphur; 3 forms, 2 red, 1 black; used in glass manuf. *S. cell*: electric resistance formed of S. layer or film, which greatly decreases its resistance when exposed to light. Effect very rapid, but not instantaneous. *S. cell* now of great use in *talking films* (q.v.) and also as "electric eye" in apparatus, such as counters, light-signals, burglar-alarms, depending on effect of ray of light on electric circuit. Also used for automatically switching on street lamps at nightfall.

**Seleucia**, name of several anc. cities (from Seleucus I, Nicator, 358-280 B.C.). 1) *S. on the Tigris*, tn. in Mesopotamia, founded ju B.C., fl. 3rd-2nd cent. B.C.; destroyed by Romans, A.D. 165; ruins 25 m. S.E. Baghdad, opp. Ctesiphon. 2) *S. Pieria*, in Syria, 4 m. N. of the Orontes; port of Antioch. 3) *S. Tracheotis*, in Cilicia, Asia Minor, near coast, 70 m. S.W. of Tarsus.

**Seleucus**, name of Asian kgs. of Seleucid Dynast. **S. I., Nikator**, gen. under Alexander the Gt.; created kgdm. of Syria.

**Self-capacity**, (elec.) electro-static capacity (q.v.) of a conducting wire, cable, or coil.

**S. cheque**: see CHEQUE. **S.-defence**, lawful use of amt. of force reasonably necessary to ward off a criminal attack. **S.-determination**, doctrine that people of an area have rt. to decide form of its govt., or country to wh. it shall be attached. Esp. applied after World War in rel. to areas detached from former Aust., Ger., or Russ. empires.

When area contains mixed pop., application of doctrine gives rise to *minorities question* (q.v.). **S.-government**, tech. name for condition in wh. the governed select governing body conceived as responsible to them. See REPRESENTATIVE DEMOCRACY. **S.-heal**, short-stemmed, purple-flowered herb, with oblong leaves and creeping roots, formerly used for healing cuts and wounds. **S.-induction**,

phys.) process by wh. a given current in any conductor creates a certain magnetic field, depending on shape of conductor and surrounding medium. A coil surrounded by iron creates max. field. **S.-insurance:** 1) system by wh. a company, instead of insuring, relies on its reserves as cover agst. loss or damage; 2) condition in insur. contract by wh. a part of the damage is not refunded to the insured party. **S.-starter,** apparatus, usually electric battery and motor, for starting internal-combustion engines (*q.v.*), which need to be given an impulse before they will commence to operate.

**Selim,** name of 3 Turk. Sultans: **S. I** (1467-1520), conq. Mesopotamia, Syria, Egypt. **S. II** (1524-74), treaty with Maximilian II, 1568; treaty with Ivan the Terrible, 1570. **S. III** (1761-1808), relinquished to Russ. coast-land of Black Sea up to Dniester (Peace of Jassy, 1792); reformed army and administration.

**Seljuks,** Turk. race wh. built up an important empire in Near East (11th-13th cents.) by conquest; Mohammedans.

**Selkirk,** Alex. (1676-1721), Scot. sailor; reputed original of Defoe's *Robinson Crusoe*; put ashore on Juan Fernandez at his own request; 4 years there alone; subject of poem by Cowper; *Life and Adventures*, pubd. by Howell, 1829.

**Selkirkshire,** inland co., S.E. Scot.; area, 269 sq.m.; pop., 21,400; surface generally hilly heather-covered moorland (Dun Rig, 2,430 ft.); St. Mary's Loch; rivs. Yarrow and Ettrick unite to join Tweed; sheep farming, woollens. **Selkirk,** co. tn. and royal burgh; manuf. tweeds; pop., 5,700.

**Selling race,** (horse-racing) race of wh. the winner must be put up for auction. **S. rate,** (Stk. Exch.) price at wh. securities (*q.v.*) are offered by a jobber; as opposed to *buying rate*, price the jobber will offer for securities. Also used in Foreign Exchange Market (*q.v.*).

**Selsey, Selsea,** parish, S.W. Sussex, on penins. in Eng. Channel; at S. extremity is *Selsey Bill*.

**Selvae,** *selvedge*, edge or border of cloth, so woven as to prevent ravelling.

**Selvas,** densely wooded lands in basin of Riv. Amazon, with high temperature and heavy rainfall.

**Selwyn College,** Cambridge, fndd., 1882, by pub. subscrip. in memory of George Augustus Selwyn (1809-78), Bp. of Lichfield, 1868-78.

**Semantics,** science of meaning of words.

**Semaphore,** apparatus for signalling, consisting of vertical post, with one or more projecting arms, which can be moved into various positions; formerly for milit. purposes, now chfly. in rly. signalling.

**Semele,** (Gr. myth.) dau. of Cadmus and Harmonia; loved by Zeus; moth. of Dionysus.

**Semen,** or seminal fluid, fluid secreted from testicles of males, by wh. impregnation of females is effected; the vehicle of the *Spermatozoa* (*q.v.*).

**Semester,** half-year course at coll. or univ., in U.S.A., Germany, etc.

**Semi-**, Latin prefix meaning half; e.g., semi-circle. **S.-circular canals:** see EAR; VERTIGO. **S.-precious stones:** see PRECIOUS STONES.

**Seminar,** group of advanced students for study and discussion of specific subject under a teacher.

**Seminary,** place of education, school; esp. training college for R.C. priesthood.

**Sempalatinsk,** tn., Kazakstan, A.S.S.R., Asia, on Riv. Irtysh; pop., 57,885; inland port; salt and soda, metal indus.; terminus of Turk.-Sib. Railway.

**Semi-permeable membrane:** see OSMOSIS.

**Semiramide,** opera by Rossini (*q.v.*), 1823.

**Semiramis,** mythical Assyrian Qn.; with her husband, Ninus, fndd. Assyrian Empire.

**Semites,** generic term for races of Near East, incl. Arabs, Syrians, and Jews. **Semitic Languages:** Assyrian-Babylonian (E. Sem.), Aramaic (N. Sem.), Hebrew (Cent. Sem.), Arabian (S. Sem.); see LANGUAGE SURVEY.

**Semmelweiss,** Ignaz Philipp (1818-65), Hung. gynaecol.; disc. infectious nature of puerperal fever; first to stress necessity of cleanliness of implements and operator.

**Semmering Pass,** pass (3,215 ft.) betw. Austria and Styria; road from Gloggnitz to Mürtzschlag; rly. (built 1848) with tunnel one mile long; winter sports.

**Semolina,** meal prepared from coarsely ground wheat and used for making macaroni and otherwise in cookery.

**Sempach,** small tn., Switzerland, canton of Lucerne; scene of defeat of Austrians by Swiss and of trad. heroism of Arnold of Winkelried, 1386.

**Semper aliquid haeret** (Lat.), something always sticks, with reference to slander.

**S. idem** (or *eadem*) (Lat.), always the same.

**Sempronia,** anc. Rom. gens (family), of wh. the Gracchi (see GRACCHUS) were members.

**Sen,** Jap. copper coin = 1/100 yen (*q.v.*) or c. 1d. (S.005).

**Sen.,** abbr. *senior* (Lat.), the elder.

**Senate,** in anc. Rome, deliberative assembly, orig. of heads of noble families. In U.S.A., upper Hse. of Congress (*q.v.*); term similarly used in sevr. Brit. Dominions.

**Sendai,** tn., Hondo, Japan; pop., 189,500; univ.; manuf. lacquer ware and silk goods.

**Seneca,** Luc. Annaeus (4 B.C.-A.D. 65), Rom. philos. and dramat., tutor to Nero;

esp. c. 1000 A.D., and in modern times, sects have arisen prophesying its exact date. Cf. ADVENTISTS; CHILIASM.

**Secondary** (geol.): see MESOZOIC. **S. schools**, State-aided S., establd. Gt. Brit. by Educ. Act, 1905, administered by county and county borough councils, and inspected by Bd. of Educ.; to provide "general educ. of wider scope and higher grade than that of elementary school, up to and beyond age of 16" (Bd. of Educ. Regs., 1905).

**Second ballot**, in some systems of vote by ballot 1st result treated as ineffectual unless there is prescribed maj.; 2nd ballot then taken when usu. bare maj. suffices. **S. bill of exchange**: see BILL IN A SET. **S.-pendulum**, pendulum with oscillation period of one second. **S. sight**: see CLAIRVOYANCE.

**Secrecy declaration**, reqd. of all members of a bank's staff; bankers are prohibited from divulging details of their customers' accs. but may be compelled to do so for purpose of giving evidence in a court of law.

**Secretariat**, office or staff controlled by secretary; an organizing or governing body.

**Secretary**, one employed by another to assist him in correspondence, literary work, etc.; an official of a business company or social organisation who conducts its correspondence, keeps its records and minutes, and acts as its representative; in Gt. Brit. training and interests of Ss. watched over by *Chartered Institute of Ss. and Incorporated Ss.' Association*. **S. bird**, large bird of prey, with abnormally long legs and crest of pointed feathers on head, from wh. it derives its name. Confined to Africa, where it is now protected on account of its usefulness in destroying venomous snakes, which form part of its natural food. **S. of state**, princ. min. of Tudor kings. More than one afterwards apptd. for diff. duties. Title now borne by head of Home Off., Foreign Off., Dominions Off., Colonial Off., War Off., India Off., Air Minis., and Scot. Office. In U.S.A., Sec. of State is in charge of foreign affairs.

**Secretions**, (physiol.) liquids formed by glands. **Internal S.**, or *hormones*, substances secreted by the ductless glands wh. are passed into blood-stream and excite changes in other parts of body; chemical messengers. Excess or deficiency of S. leads to grave illness. *Glands of internal secretion* are: pituitary, thyroid, parathyroid, suprarenals, pancreas, ovaries, testicles, and possibly thymus. See GLAND.

**Sect**, body of persons holding certain philos. or relig. doctrines in common, esp. one with beliefs at variance with those commonly held; now (in Gt. Brit.) generally a group with distinctive relig. opinions, who are schismatics from Ch. of E. or Ch. of Scotland. **Sectarians**, members of a relig. sect.

**Section**, 1) (milit.) smallest milit. unit, c.

8-16 men, gen. commanded by a corporal. 2) (Archit.) Scale drawing of an imagined cut thr. a bldg. in any vertical or horizontal plane; prepd. by architect to show details of its structure; see PROFILE.

**Sector**, (geom.) that part of a circle which is bounded by 2 radii and the included arc.

**Secular**, 1) pertaining to this world; temporal as opp. to spiritual; 2) recurrng. once in a cent. or era. **Secularization**, trans. from relig. to lay purposes, e.g., of eccles. property at time of Reformation. **S. priest** (R.C.), one not bound by the vows of any relig. order.

**Secularism**, term invented by G. J. Holyoake (1817-1906) as name for view that human interests should be limited to concerns of present life without regard to any possible future existence or divine government of universe.

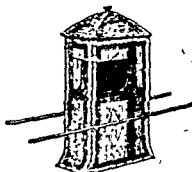
**Security** (banking), something given to lender by borrower to secure repayment of money lent. Commonest forms: share certif. with transfer to name of lender; title deeds of properties or bearer bonds; guarantee of 3rd person, or life insur. policy. Banks commonly take all these as security for advances (loans, in U.S.A.). **Securities**, (Stk. Exch.) gen. term covering shares, govt. and corporation bonds, debentures, stocks, etc. **S. for costs**, partial or full payment of legal costs before hearing is fixed, sometimes required in civil actions; normally a foreign plaintiff is required to give it.

**Sedan**, tn., dépt. Ardennes, France, on Riv. Meuse; pop., 18,300; textiles. Ger. victory over French, 9 Oct., 1870; surrender of Napoleon III and Fr. army of 82,000, leading to fall of Fr. Empire and establishment of republic. **S. chair**, enclosed seat, borne on two poles by two men; inventd. Sedan, Fr.; introduced Eng., 1581; fashionable 18th century.

**Sedburgh**, mkt. tn., Yorks, Eng.; 10 m. E. Kendal; pop., 2,600; public school for boys, fndd. by Dr. Roger Lupton, 1525; re-constituted 1874; c. 420 boys.

**Seddon**, Richd. John (1845-1906), New Zealand statesm.; for some years worked as miner; entered N. Zealand legislature, 1879; Minister of Public Works, Defence and Mines, in Ballance ministry, 1891; succ. Ballance as Premier, 1893, and held position until his death.

**Sedge grass**, plants of genus *Carex*, monocotyledonous, having solid stems; grow in marshy places; some varieties provide useful fodder; others used in making baskets, mats, etc.; loosely applied to any marsh grass.



Sedan Chair

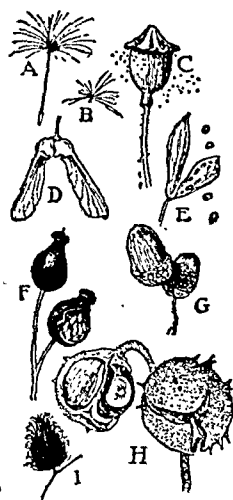
**Sedgemoor**, dist., Somerset, Eng. **Battle of S.**, 1685, defeat of Monmouth who had raised a rebellion against James II.

**Sediment**, suspended matter in a liquid, may be removed by filtration, centrifugalisation (in a churn or centrifuge), or by sedimentation; *i.e.*, allowing liquid to stand until solids have settled at bottom of container (see PRECIPITANT).

**Sedimentary (or stratified) rock**, geol. formation due to disintegration of older, unstratified rock, by action of wind and, esp., water; formed chfly. in seas and inland lakes, and often largely of fossil constitution. Its origin may be *chemical*, *e.g.*, salt, sulphate of lime, sinter; *organic*, *e.g.*, limestone, chalk, dolomite, coal, peat, graphite; *mechanical*, *e.g.*, rubble, erratic boulders, volcanic ash and tufa, clay, marl.

**Sedley**, Sir Chas. (c. 1639-1701), Eng. playwright, poet, and wit; sat in Parliament for New Romney; pubd. *The Mulberry Garden*, 1668; *Bellamira*, 1678; *The Grumbler*, 1702; etc.

**Seduction**, enticing away some person whereby his or her services are lost to an-



TYPES OF SEED

other; esp., the inducing of a woman to consent to illicit sexual intercourse; no action by the woman is permissible in law but action by father or guardian, as deprived of her services, is allowed.

**Seeckt**, Hans von (1866- ), Ger. gen.; Ch. of Staff, III Army Corps, 1913-14; Ch. of Staff, Mackensen's Army, 1915; invaded Serbia; chf. army command, 1920; organized Reichswehr; *Thoughts of a Soldier*.

**Seed**, (bot.) germ produced by a plant wh., when fertilized, is capable of developing into

and reproducing another of its kind. Many seeds are commercially valuable on account of nutritive substances (albumen, fat, and starch) they contain. **S.-sowing, machines for**, (agric.) implements either for broadcasting or for dibbling (*q.v.*); simplest form, worked by hand, has device for scattering seed (grass, clover, etc.); for more regular planting and covering, *drills* of various types are used.

**Seeley**, Sir John Robert (1834-95), Eng. historian and essayist; prof. of Latin, Univ. Coll., London, 1863, and mod. hist., Cambridge, 1869; pubd. *Ecce Homo*, 1866; *Life and Times of Stein*, 1879; *Expansion of England*, 1883.

**Segantini**, Giovanni (1858-99), Ital. pointillist painter; *Unnatural Mothers* (Liverpool).

**Segesta**, anc. city, W. Sicily, well preserved remains of Doric temple and theatre.



Temple of Segesta

**Segment**, (geom.) a portion of a surface cut or marked off; part of a circle or sphere cut off by a chord or plane not passing through the centre.

**Segner**, John (1704-77), Ger. physicist; invented Segner's water-wheel; engine (turbine) driven by the recoil of centrifugally moving pressure-water; still in use for lawn-watering.

**Segovia**, provincial cap., centr. Spain, on Riv. Eresma; pop., 16,400; citadel (Alcázar); late-Gothic cathed.; Rom. aqueduct.

**Segrave**, Sir Henry O'Neal Dehane (1896-1930), Brit. engineer and motorist; world land speed record at Daytona, U.S.A., 1929; world water speed record in "Miss England" trials, 1930; accidentally drowned when motor-boat racing on L. Windermere.

**Seguidilla**, Span. dance, resembl. fandango (*q.v.*).

**Segura**, riv. (150 m.), S. Sp., rises in Sierra de S.; flows into the Mediterranean.



Sir Henry Segrave

**Selche**, slight variation in level of inland lakes, due to changes in atmospheric pressure.

**Seidlitz powder**, mild aperient consistg. of tartaric acid and sod. bicarbonate mixed with Rochelle salt (potassium and sodium tartrate).

**Seignorage**, charge made by Mint authorities for coining metal; no such charge made in the U.K., but practice is for gold to be conveyed to Mint thr. Bk. of Eng., wh. pays in coin at rate of £3.17s.9d. p. oz., while Mint price (*q.v.*) is £3.17s.10½d. The odd 1½d. is not S., but payment for banking service of

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to draw up Petition of Right (*q.v.*); master of Trinity Hall, Cambridge, 1646; pubd. *Privileges of the Baronage of England*, 1642; *Table Talk*, 1689; etc.

**Selection**, (biol.) process by which certain members of a species are eliminated; *artificial S.*: choice by man in breeding domestic animals; *natural S.*: by which evolution is ruled; *sexual S.*: largely instrumental in developing adornments used by animals to attract mates.

**Selectivity**, in wireless reception; degree to wh. a receiving-set can be tuned to receive only one particular wave-length.

**Selene**, (Gr. myth.) moon goddess, moon. See LUNA.

**Selenga-Orkhon**, riv. (750 m.), Centr. Asia, rises in Khansa Mtns.; falls into L. Baikal.

**Selenite**, gypsum (*q.v.*) in crystalline form.

**Selenium**, (chem.) element, Se; at.wt., 79.2; m.p., 220° (metal. form); found combined with sulphur; 3 forms, 2 red, 1 black; used in glass manuf. *S. cell*: electric resistance formed of S. layer or film, which greatly decreases in resistance when exposed to light. Effect very rapid, but not instantaneous. *S. cell* now of great use in *talking films* (*q.v.*) and also as "electric eye" in apparatus, such as counters, light-signals, burglar-alarms, depending on effect of ray of light on electric circuit. Also used for automatically switching on street lamps at nightfall.

**Seleucia**, name of several anc. cities (from Seleucus I, Nicator, 358-280 B.C.). 1) **S.** on the Tigris, tn. in Mesopotamia, founded 312 B.C., fl. 3rd-2nd cent. B.C.; destroyed by Romans, A.D. 165; ruins 25 m. S.E. Bagdad, opp. Ctesiphon. 2) **S. Pieria**, in Syria, 4 m. N. of the Orontes; port of Antioch. 3) **S. Tracheotis**, in Cilicia, Asia Minor, near coast, 70 m. S.W. of Tarsus.

**Seleucus**, name of Asian kgs. of Seleucid Dynas. **S. I., Nikator**, gen. under Alexander the Gt.; created kgdm. of Syria.

**Self-capacity**, (elec.) electro-static capacity (*q.v.*) of a conducting wire, cable, or coil. **S. cheque**: see CHEQUE. **S.-defence**, lawful use of amt. of force reasonably necessary to ward off a criminal attack. **S.-determination**, doctrine that people of an area have rt. to decide form of its govt., or country to wh. it shall be attached. Esp. applied after World War in rel. to areas detached from former Aust., Ger., or Russ. empires. When area contains mixed pop., application of doctrine gives rise to *minorities question* (*q.v.*). **S.-government**, tech. name for condition in wh. the governed select governing body conceived as responsible to them. See REPRESENTATIVE DEMOCRACY. **S.-heal**, short-stemmed, purple-flowered herb, with oblong leaves and creeping roots, formerly used for healing cuts and wounds. **S.-induction**,

(phys.) process by wh. a given current in any conductor creates a certain magnetic field, depending on shape of conductor and surrounding medium. A coil surrounded by iron creates max. field. **S.-insurance:** 1) system by wh. a company, instead of insuring, relies on its reserves as cover agst. loss or damage; 2) condition in insur. contract by wh. a part of the damage is not refunded to the insured party. **S.-starter**, apparatus, usually electric battery and motor, for starting internal-combustion engines (*q.v.*), which need to be given an impulse before they will commence to operate.

**Selim**, name of 3 Turk. Sultans: **S. I** (1467-1520), conq. Mesopotamia, Syria, Egypt. **S. II** (1524-74), treaty with Maximilian II, 1568; treaty with Ivan the Terrible, 1570. **S. III** (1761-1808), relinquished to Russ. coast-land of Black Sea up to Dniester (Peace of Jassy, 1792); reformed army and administration.

**Seljuks**, Turk. race wh. built up an important empire in Near East (11th-13th cents.) by conquest; Mohammedans.

**Selkirk**, Alex. (1676-1721), Scot. sailor; reputed original of Defoe's *Robinson Crusoe*; put ashore on Juan Fernandez at his own request; 4 years there alone; subject of poem by Cowper; *Life and Adventures*, pubd. by Howell, 1829.

**Selkirkshire**, inland co., S.E. Scot.; area, 269 sq.m.; pop., 21,400; surface generally hilly heather-covered moorland (Dun Rigg, 2,430 ft.); St. Mary's Loch; rivs. Yarrow and Ettrick unite to join Tweed; sheep farming, woollens. **Selkirk**, co. tn. and royal burgh; manuf. tweeds; pop., 5,700.

**Selling race**, (horse-racing) race of wh. the winner must be put up for auction. **S. rate**, (Stk. Exch.) price at wh. securities (*q.v.*) are offered by a jobber; as opposed to *buying rate*, price the jobber will offer for securities. Also used in Foreign Exchange Market (*q.v.*).

**Selsey**, **Selsea**, parish, S.W. Sussex, on penins. in Eng. Channel; at S. extremity is *Selsey Bill*.

**Selvae**, *selvedge*, edge or border of cloth, so woven as to prevent ravelling.

**Selvas**, densely wooded lands in basin of Riv. Amazon, with high temperature and heavy rainfall.

**Selwyn College**, Cambridge, fndd., 1882, by pub. subscrip. in memory of George Augustus Selwyn (1809-78), Bp. of Lichfield, 1868-78.

**Semantics**, science of meaning of words.

**Semaphore**, apparatus for signalling, consisting of vertical post, with one or more projecting arms, which can be moved into various positions; formerly for milit. purposes, now chfly. in rly. signalling.

**Semele**, (Gr. myth.) dau. of Cadmus and Harmonia; loved by Zeus; moth. of Dionysus.

**Semen**, or seminal fluid, fluid secreted from testicles of males, by wh. impregnation of females is effected; the vehicle of the *Spermatozoa* (*q.v.*).

**Semester**, half-year course at coll. or univ., in U.S.A., Germany, etc.

**Semi-**, Latin prefix meaning half; *c.g.*, semi-circle. **S.-circular canals:** *see* EAR; **VERTIGO**. **S.-precious stones:** *see* PRECIOUS STONES.

**Seminar**, group of advanced students for study and discussion of specific subject under a teacher.

**Seminary**, place of education, school; esp. training college for R.C. priesthood.

**Semipalatinsk**, tn., Kazakstan, A.S.S.R., Asia, on Riv. Irtysh; pop., 57,885; inland port; salt and soda, metal indus.; terminus of Turk.-Sib. Railway.

**Semi-permeable membrane:** *see* OSMOSIS.

**Semiramide**, opera by Rossini (*q.v.*), 1823.

**Semiramis**, mythical Assyrian Qn.; with her husband, Ninus, fndd. Assyrian Empire.

**Semites**, generic term for races of Near East, incl. Arabs, Syrians, and Jews. **Semitic Languages:** Assyrian-Babylonian (E. Sem.), Aramaic (N. Sem.), Hebrew (Cent. Sem.), Arabian (S.Sem.); *see* LANGUAGE SURVEY.

**Semmelmweis**, Ignaz Philipp (1818-65), Hung. gynaecol.; disc. infectious nature of puerperal fever; first to stress necessity of cleanliness of implements and operator.

**Semmering Pass**, pass (3,215 ft.) betw. Austria and Styria; road from Gloggnitz to Mürzzuschlag; rly. (built 1848) with tunnel one mile long; winter sports.

**Semolina**, meal prepared from coarsely ground wheat and used for making macaroni and otherwise in cookery.

**Sempach**, small tn., Switzerland, canton of Lucerne; scene of defeat of Austrians by Swiss and of trad. heroism of Arnold of Winkelried, 1386.

**Semper aliquid haeret** (Lat.), something always sticks, with reference to slander.

**S. idem (or eadem)** (Lat.), always the same.

**Sempronius**, anc. Rom. gens (family), of wh. the Gracchi (*see* GRACCHUS) were members.

**Sen**, Jap. copper coin = 1/100 yen (*q.v.*) or c. 1d. (S.005).

**Sen.**, abbr. *senior* (Lat.), the elder.

**Senate**, in anc. Rome, deliberative assembly, orig. of heads of noble families. In U.S.A., upper Hse. of Congress (*q.v.*); term similarly used in sevr. Brit. Dominions.

**Sendai**, tn., Hondo, Japan; pop., 189,500; univ.; manuf. lacquer ware and silk goods.

**Seneca**, Luc. Annaeus (4 B.C.-A.D. 65), Rom. philos. and dramat., tutor to Nero;



committed suicide at Nero's command; *Medea, Letters*.

**Seneca**, tribe of N. Am. Indians, branch of the Iroquois (*q.v.*), located in country W. of L. Erie; supported Eng. in War of Independence; now almost extinct.

**Seneca, Lake**, in N.Y. State, U.S.A., 66 sq. miles.

**Senefelder**, Alois (1771-1834), Ger. actor; invtd. lithography *c.* 1800.

**Senega**, dried root of *Polygala senega*, grows widely in U.S.A.; used medic. for chronic bronchitis.

**Senegal** (Senegambia), 1) Fr. colony, W. Africa, betw. Riv. S. and the Atlantic; area, 74,112 sq.m.; pop., 1,400,000 (Sudanese Negroes); unhealthy hill-country; chf. exports, rubber, ground nuts, palm kernels; cap., *St. Louis*. 2) Riv. (*c.* 1,000 m.) Fr. W. Africa; sources rivs. Bakhoi, Bafing, and Faleme, rising Fouta Jalon Plateau (*q.v.*); flows through colony of S.; drains into Atlantic through delta; navigable 400 miles.

**Senegambia**: see SENEGAL.

**Senegambian**: see LANGUAGE SURVEY, *Sudanese*.

**Seneschal**, steward or major-domo in great households in Mid. Ages; at French crt. a great official; as Lord High Steward in England.

**Senlac**: see HASTINGS.

**Senna**, *Cassia acutifolia* (Alexandrian) and *Cassia angustifolia* (Tinnevely or Indian), small shrubs cultv'd. in India; former. indig. enous to Nile terr.; leaves and pods used in med. as laxative.

**Sennacherib**, Kg. of Assyria (705-681 B.C.); destroyed Babylon; blt. palace of Kuyunjik at Nineveh and grt. wall of N.; murdered by his sons.

**Sennar**, dist., Anglo-Egypt. Sudan, betw. White and Blue Nile, on border Abyssinia; cap., *Sennar*; cotton grown in dist. of El Gezira, irrigated by water from *Sennar Dam*.

**Sensation**, (philos.) simplest cognitive element of consciousness, arising in connection with nervous stimulation.

**Sensationism**, (philos.) doctrine that sensation is sole source of knowledge (*There is nothing in the intellect but what has been previously in the senses*), upheld by Locke and Hume; Leibnitz opposed S. adding to above formula the words: *except the intellect itself*. See INTUITION.

**Senses**, faculties by means of which external impressions are received and transformed into sensations: hearing, sight, smell, taste, touch.

**Sensitive plant** (*Mimosa pudica*), Centr. Amer. leguminous prickly plant; leaflets fold up and hang loosely from stalk on slightest touch.

**Sensualism**, (philos.) another name for sensationism (*q.v.*).

**Sentence**, thought expressed in sequence of words containg. predicate and subject.

**Sentimento**, (mus.) feeling; **con s.**, with feeling.

**Sentry**, one or more soldiers posted for guard, safety, or observation, etc. **S. groups** in an outpost line (*q.v.*) fall back on picquet (*q.v.*) if attacked in force.

**Senussi**, relig. and politic. sect of strict Mohammedans in Sahara and N.E. Africa; founded by Sidi Mohammed es Senussi, 1835.

**Senza**, (mus.) without.

**Seoul**, cap., Korea, on E. coast of Korean penins.; pop., 315,000; chf. local trading centre.

**Sepal**: see FLOWER.

**Separation**, (tech.) magnetic, electrostatic, dielectric, etc., methods of separating constituents of mineral ores; see ORE-DRESSING.

**Separator**, (tech.) 1) magnetic, electrostatic, dielectric, etc., ore-dressing machines; 2) mechanical device for septg. cream from milk, operated centrifugally.

**Sephardim**, Span. or Portug. Jews (and those descended from them) who follow the Span. rite and pronunciation of Hebrew. Mainly in Mediterranean countries and West Indies; also represented in Holland and England.

**Sepia**, black, inky fluid secreted by cuttlefish (*q.v.*), from wh. a dark-brown pigment is made; used in water-colour drawing.

**Sepoy**, Indian native soldier (Pers., *sipahi*, a soldier). **S. Mutiny**: see INDIAN MUTINY.

**Sepsis**, (med.) poisoning due to absorption of bacterial toxins.

**September** (Lat.: *septem*, seven), 9th month, of 30 days; the 7th of the Rom. Calendar.

**Septet**, (mus.) composition for 7 instr. or voices.

**Septimus**: see SEVERUS.

**Septuagesima** (Lat.: 70th), 3rd Sunday before Lent; so called because falling 70 days before Easter.

**Septuagint**, Gr. version of O.T. composed accord. to tradition by 70 scholars in Alexandria.

**Septum**, (physiol.) a partition, esp. in the nose (*nasal septum*).

**Sequani**, Gallic tribe living on upper course of Seine, 1st cent. A.D.

**Sequence**, 1) (mus.) mediaeval, non-rhythmical chant; repetition of a harmonic progression or motif on a different deg. of the scale. 2) (Cards) Run of 3 or more cards in unbroken numerical order.

**Sequestrum**, (med.) piece of dead bone that has become detached, usu. owing to suppuration.

**Sequin**, Venet. gold ducat = about 9s., later introd. in East; spangle made of tin-

foil or celluloid, used as ornamental trimming.

**Sequoia**, 1) mammoth trees of Calif., the giant redwood. *S. Washingtonia* and *S. sempervirens*, pinaceous and attain a hgt. of 300 feet. 2) The Big Tree National Park (1890) in California, U.S.A., 604 sq.m.; immense trees: General Sherman tree, 37 ft. 4 in. in diameter, 274 ft. high.

**Sérac**, (geog.) pointed mass or pinnacle of ice formed by crevasses crossing a glacier at steep slopes; often known as *Gendarmes*; source of danger, owing to liability to collapse as bases get melted by heat of sun during daytime. Cf. **PENITENTES**.

**Seraglio**, sultan's palace in Constantinople; large house with a harem (q.v.); the harem.

**Seraing**, tn., prov. Liège, Belgium, on Riv. Meuse; pop., 45,300; glass factories, coal and iron.

**Serajevo**: see SARAJEVO.

**Serang**: see CERAM.

**Seraphim** (O.T.), order of celestial spirits having 3 pairs of wings; described in vision of Isaiah (Isa. vi). **Order of the S.**, old Swed. order of knighthood, revived 1748.

**Serapis**, **Sarapis**, Egyptn. god of the Underworld; princ. god of Ptolemaic Egy.; later venerated throughout Rom. Empire.

**Serbia**, **Srbija**, chf. constituent State of Yugoslavia (q.v.); former kgdm. in N. of Balkan Penins. (33,600 sq.m.); cap., *Belgrade* (now cap. of Yugoslavia). United into a country under the Nemanyich Dynasty (1150-1355); reached greatest extent under Stephan Dusan (1331-55), who absorbed Bulgaria and annexed Macedonia and Albania in an attempt to unite Balkan peoples against Turkey. After defeat of Serbs and Bulgars at *Kosovo*, 1389, became, first, a despotate tributary to the Porte, and (after 1459) a pashalik of the Turkish Empire. Revolt under Miloš Obrenović in 1815 led to Turkey's recognition of Serbian autonomy, 1830. Unsuccessful war with Turkey, 1877, with object of uniting Serbia, Bosnia, Hercegovina, and Montenegro. After Treaty of Berlin (1878) obtained full independence, though Bosnia and Hercegovina were occupied by Aust.-Hungary. Kgdm., 1882. Defeated in war with Bulgaria, 1885. Acquiesced in Austrian annexation of Bosnia and Hercegovina, 1908. Balkan League, betw. Serbia, Bulgaria, Greece, and Montenegro, 1912. In First Balkan War (1912), the League defeated Turkey; in Second Balkan War (1913), Serbia, Greece, Montenegro, and Rumania defeated Bulgaria. Austria's ultimatum to Serbia after assassination of Archduke Francis Ferdinand at Serajevo (Bosnia) precipitated the World War. Occupied by Centr. Powers, 1914-18.

**Serblans**, Slavonic people in Balkan

Penins. together with Croats, Hercegovinians and Montenegrins, designated **Serbo-Croats**, forming kgdm. of Yugoslavia.

**Serbo-Croatian**: see LANGUAGE SURVEY, *Slavonic*.

**Serreq**: see SARK.

**Serenade**, evening mus., generally in several movements, performed in the open



Serenade after Spitzweg

air. Also a song, or instrumental piece in song form.

**Seres**, **Serres**, tn., Macedonia, Greece, on L. Takhino (Riv. Struma) and on rly. Salonika-Constantinople; pop., 29,700; Orthodox cathed.; mosques; tobacco, rice, cottons, woollens. During World War in Bulg. hands, 1916-Oct., 1918.

**Serf**, one in a condition of servitude distinct from slavery by fact that services due and master's powers are limited by law or custom; usu. attached to the land rather than to individual owner. **Serfdom** abolished from Eur. by close of 18th cent., except in Russ., where the peasants were emancipated in 1861.

**Serge**, form. silk fabric, now hard-wearing, twilled, woollen matl. used for men's and women's outer garments.

**Sergeant** 1) (in law) more commonly *Serjeant*, rank higher than Kg's. Counsel (q.v.); now abolished; Eng. holders extinct, Irish not entirely. 2) (Milit.) Senior N.C.O., gen. second in command of a troop or platoon. **S.-at-arms**, officer attending a royal or other exalted personage and (esp.) official charged with maintaining order in precincts of Hse. of Commons.

**Sergius**, name of 4 popes, of whom the most important, historically, are: **S. I** (687-701); sent missionaries to convert Saxons; refused consent to canons of council assembled at Constantinople by Justinian II. **S. IV** (904-13), elected through influence of Theodora.

**Sericin**, the natural gum of silk.

**Series** (Lat.). 1) set of related objects or matters arranged in order of succession. 2) (Bibliog.) No. of works, having similar



Sergeant-at-arms

size and scope, published successively from same firm, dealing with related subjects and edited according to common plan. 3) (Math.) Succession of terms arranged according to a common law; see PROGRESSIONS. 4) (Elec.) Arrangement of batteries connected end to end and not parallel. 5) (Chem.) Group of compounds having common radical, as the hydrocarbons. 6) (Geol.) Group of allied strata forming subdivision of a system. **S. motor**, (elec.) one in which the armature and field coils are connected; speed varies greatly with load. Corresp. *S. dynamo* rarely used.

**Serif**, the finishing stroke at the end of the stems and arms of letters, originally made by the flick of the quill or pen. In type its shape, wh. can take many forms, strongly characterizes the letter and is the chief feature which makes so great a variety of type faces possible. **Sans-s.** is a type of letter having no serifs and with all its lines of equal thickness.

**Seringapatam**, tn., S. India, former cap. of Mysore, on isl. of S. in Riv. Cauvery; pop., 7,200; fndd. c. 1455 as city of Vishnu; fortress of Tippoo Sahib (stormed by Brit., 1799); mausoleum of Hyder Ali.

**Sermon on the Mount** (N.T.), famous discourse by Jesus (Matt. v-vii) containing the Beatitudes.

**Serpent**, 1) altern. name for snake (*q.v.*), gen. now used only of larger deadly varieties. 2) (Mus.) Obsolete bass wind-instr. made of wood and leather. It had a cup mouthpiece and was curved serpent-wise. **S.-worship** found among primitive races all over world; still prevails widely in India; S. in folklore and primitive relig. often assoc. with guardianship of treasure, possession of great wisdom, and healing powers; S. twined round staff form. symbol of Aesculapius, god of healing, and hence of medical profession, as in badge of Roy. Army Med. Corps. **S. of brass** (O.T.), made by Moses, by divine command, as cure for those bitten by fiery serpents in Wilderness (Num. xxi, 8); afterwards object of idolatry; see NEHUSHTAN.

**Serpentine**, (geol.) a rock or mineral consisting of hydrous magnesium silicate, found in fibrous state as asbestos (*q.v.*) or in masses of soft rock, of deep green or red colour, taking a high polish and used as a form of marble for ornamental work; also an old form of cannon.

**Serpukhov**, tn., prov. Moscow, Russia, on Riv. Nara; pop., 55,950; textile indus.; chintz manuf.; cathed. (1380), rebuilt 18th century.

**Serpula**, fam. of marine worms, forming chalky tubes on stones, mollusc shells, etc., with two brightly coloured plumes or gill filaments on head for breathing and light-detection.

**Serum**, 1) watery fluid remaining from fluids of body, esp. blood, after coagulation. 2) (Pathol.) Fluid from blood (blood-serum), may contain *antibodies* agst. infectious diseases; this is basis of *S. treatment* with antitoxin. S. is gen. taken from horses, previously immunized (e.g., agst. diphtheria, or tetanus, or scarlet fever). **S. diagnosis**, obtained by observation of reactions of antibodies present in blood (e.g., in case of typhus or syphilis). See also BLOOD.

**Serval**, wild cat of Africa; tawny skin with black spots.

**Service**, Robt. W. (1874- ), Canad. poet; *Ballads of a Cheechako*; *Rhymes of a Red Cross Man*, 1916; *The Roughneck*, 1923.

**Service tree**, *Sorbus domestica*, related to mountain ash (*q.v.*); fruit is edible; name used for white-beam, *Sorbus aria*.

**Servites**, "Religious Servants of the Holy Virgin," fndd., 1233, by 7 merchants of Florence; became in 1487 a mendicant order on an equal footing with the Franciscans, Dominicans, Augustinians, and Carmelites.

**Servius Tullius**, 6th of 7 legendary kgs. of Rome; walled Rome; reformed constitution.

**Servus servorum Dei** (Lat.), "Servant of the servants of God"; title of the Pope.

**Sesame indicum**, plant grown largely in E.; seeds yield an edible oil, having many uses: directly, in manuf. of margarine as substitute for olive oil, and in med. as a vehicle.

**Sesostris**, name of legendary Kg. of Egy., c. 2000 B.C.; accordg. to Herodotus, Diodorus Siculus, and Strabo, he conquered entire world.

**Sesquiplane**, aeroplane having one large and one small pair of wings.

**Sessions**, Roger (1896- ), Amer. composer; symphony.

**Sesterce**, anc. Rom. coin and money of account, orig. of silver, later of copper or bronze, equiv. to quarter of denarius, 2½, later 4 asses, value c. 2d. **Sestertium**, anc. Rom. money of account, 1,000 sesterces, value c. 170s.

**Sestet**, last 6 lines of sonnet, formg. 2 3-lined stanzas.

**Sestina**, **Sixtine**, old Fr. verse form; orig. 6 stanzas of 6 unrhymed lines with final triplet, the same terminal words bng. used in each stanza, but arranged differently; modern forms are written on two or three rhymes.

**Set**, Egypt. god of storm and darkness; killed Osiris (*q.v.*).

**Seth** (O.T.), 3rd son of Adam, ancestor of Noah.

**Setif**, tn., dépt. Constantine, Algeria, N. Africa; pop., 34,200 (10,000 Europ.); wheat; horse breeding.

**Setter**, sporting dog with long wavy coat, trained to indicate game like a pointer (*q.v.*).

*Irish S.*, red; *English S.*, white, or black-and-white, etc.; *Gordon S.*, black-and-tan.

**Setting**, (tech.) holder (usu. metal) for prec. stones, lenses, cutting diamonds.

**Settlement**, family arrangement of property made on marriage or by will or on any other occasion. **S., Act of (1700)**, settling the succession to throne of Eng. on the Electress of Hanover and her heirs, and limiting powers of Crown. **S. day**, (Stk. Exch.) last day on wh. outstanding accts. may be settled, either by payment or carrying fwd. to future date.

**Seurat**, Georges (1859-91), Fr. post-impress. painter; *Baignade*, 1884; *Un Dimanche à la Grande Jatte*, 1886.

**Sevastopol**, Russ. naval harbour in Crimean S.S.R., on Black Sea; pop., 74,800; could accommodate Europe's combined fleets; arsenal; restrictions on entry of foreign ships; museum of biology; sch. of navig.; favourite sea-bathing resort. Bombarded by Eng., Fr., and Turk. troops during 11 months' siege, 1854-55.

**Seven Champions of Christendom**, **The**, in mediaeval lore, St. Denis of Fr., St. Anthony of It., St. James of Sp., St. George of Eng., St. Andrew of Scot., St. Patrick of Ire., and St. David of Wales. **S. Deadly Sins**: see SIN. **S. Dials**, district in W. Centr. London, junction of 7 streets (Grt. and Little St. Andrew St., Grt. and Little White Lion St., Grt. and Little Earl St., Short's Gardens) betw. Shaftesbury Av. and Long Acre; so called from stone Doric pillar bearing seven "dials" with names of above streets, removed 1773. Formerly notorious haunt of thieves. **S. Hills of Rome**, Aventine, Caelian, Capitoline, Esquiline, Palatine, Quirinal, Viminal. **S. Sages** (anc. Greece), Bias of Priene, Chilon of Sparta, Cleobulus of Rhodes, Periander of Corinth, Pittacus of Mitylene, Solon of Athens, Thales of Miletus. **S. Sleepers of Ephesus**, seven Christians who, during Decian persecution (250), fell asleep in a cave and woke 200 yrs. later. **S. Weeks' War**, see AUSTRO-PRUSSIAN WAR. **S. Wonders of the World**, in anc. times: Egypt. pyramids; hanging gardens of Nebuchadnezzar at Babylon; temple of Diana at Ephesus; Zeus of Pheidias (Olympia); Mausoleum at Halicarnassus; Colossus of Rhodes; Pharos Lighthouse. Altar of Pergamon is also often included. **S.**



The Seven Sleepers  
after Ludw. Richter

**Years' War (1756-63)**, Pruss. (Frederick the Great) in alliance with Eng. agst. Austr. (Maria Theresa), Fr., Russ. (till 1762), Saxon-Poland, Sweden. Victories of Frederick at Prague, Rossbach, Leuthen, Zorndorf, Burkersdorf; defeats at Kolin, Hochkirch, Kunersdorf. *Peace of Hubertusburg*, 1763: Prussia's possessions retained (Silesia). *Peace of Paris*, 1763 (ended war). Fr. lost Canada to England.

**Sevenoaks**, urb. dist. and mkt. tn., Kent; pop., 10,500; grammar school (1432); 1 m. S.E. is Knole (q.v.).

**Seventh**, (mus.) 7th degree of the scale, and corresponding interval. **S. Heaven**, me-



Major Minor  
Diminished  
Seventh

taphorical expression for supreme degree of ecstasy or beatitude, fr. Babylonian (or Ptolemaic) cosmology, in wh. seven superimposed celestial spheres, corresp. to the seven planets, approached gradually nearer to the First Cause.

**Severinus**, Pope (640), succ. to Honorius; held papal office only 3 months.

**Severn**, longest riv. in Eng. (220 m.); rises in centr. Wales (on Plynlimon), and flows past Shrewsbury, Worcester, and Gloucester into Bristol Channel. *Severn Bore*, a tidal wave c. 6 ft. high; is seen below Gloucester. **S. Tunnel** (4 m. 638 yds.), on main G.W.R. to S. Wales, is longest tunnel in United Kingdom.



Severus

**Severus, Lucius Septimus** (146-193-211), Rom. emp.; quaestor and praetor under Marcus Aurelius; proclaimed emp. by his soldiers on death of Commodus, 192; deftd. var. rivals, 193-197; successful agnst. Parthians, 197-202; in Britain, 208-211; died and buried at York. **S., Marcus Aurelius Alexander**: see ALEXANDER SEVERUS.

**Séviñe**, Marie de Rabutin-Chantal, Marquise de (1626-86); Fr. letter-writer; *Letters*.

**Seville** 1) inland prov., Andalusia, S. Sp.; 5,430 sq.m.; pop., 751,200. 2) Cap. of prov., on Riv. Guadalquivir; pop., 218,000; abpric.; large 15th-cent. cathed. (tomb of Ferdinand Columbus); Alcázar palace; picture-gall. with unsurpassed examples of Seville school (found also in the numerous chs.);



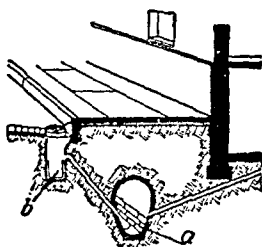
Seville, Hall in the Alcázar

palaces; public bldgs.; city walls; univ.; bullring. Exports pottery, oranges, tobacco.

**Sèvres**, tn., dépt. Seine-et-Oise, France, S.W., suburb of Paris; pop., 14,500; State manuf. of porcelain. *Treaty of S.* (11 May, 1920), betw. Turkey and the Allied and Associated Powers, partially dismembered Ottoman Empire and provided for internationalisation of the Straits from Constantinople to the Dardanelles. Revised by Treaty of Lausanne (24 July, 1923).

**Sewage**, waste matter, water, etc., carried off by pipes or conduits: see SEWERAGE. **S. disposal**, liquid sewage of towns runs into sewers beneath streets; gases prevented from entering houses by *siphons* (bends in pipe filled with liquid). Disposal into sea or by spreading on land is not always possible, and uneconomic owing to complete waste of nitrogen. Agitation with air in channels or by sprinklers leads to complete precipitation, with production of inoffensive *sludge*; very difficult to dry. If sludge is "digested" by action of bacteria in closed containers a valuable, easily dried, nitrogenous manure results.

**Sewerage**, (bldg.) underground system of closed ducts for carrying off surplus water, etc., of a town; a) main sewer, showing connection from adjacent house; b) street gutter, gully in wh. rain-water and mud collect; *sewer pipes* are made of cement or acid-resisting earthenware.



Cross Section of Sewerage System

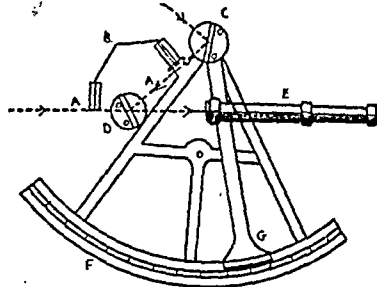
**Sewing machine**, worked by hand or power, for sewing, darning, or embroidering fabrics mechanically. Fundamental invention, needle with eye near point. Three varieties of stitch. 1) *Simple chain* or *tambour*, 2) *double chain*, 3) *lock*. 1) Uses single thread; 2) and 3) one above one below fabric. *Lock-stitch* now almost universal. Needle pushes through fabric and leaves loop on lower side, through which the underthread is passed by a hook or shuttle. Household machines up to 2,000 stitches per min., industrial up to 4,000.

**Sex**, the quality of maleness or femaleness in an individual animal or plant which determines whether it plays an active or passive part in the reproduction of its kind; in higher animals the sexes are gen. sharply distinguished, the male producing spermatozoa or antherozoids, the female, ova, and there are frequently differences betw. the sexes in size, shape, coloration, habit, etc.; in lower forms the same individual often manifests the char-

acteristics of each S. simultaneously or successively; S. is determined at fertilization; plants are either *diocious*, bearing flowers of one sex only, or *hermaphroditic*, in which parts bearing characteristics of each sex are borne on the same plant or in the same flower.

**Sexagesima** (Lat.), "60th," and Sunday before Lent; so called because falling 60 days before Easter.

**Sextant**, 1) (math.) one sixth of a circle; sector of 60°. 2) (Naut.) Instrument for



Sextant

- |                         |                         |
|-------------------------|-------------------------|
| A) Path of light        | D) Fixed horizon mirror |
| B) Tinted glass         | E) Sighting telescope   |
| C) Movable index mirror | F) Scale of angles      |
|                         | G) Vernier              |

measuring altitude of sun at noon to determine latitude; comprises reflectors, telescope and vernier (q.v.).

**Sextet**, (mus.) composition for 6 instr. or voices.

**Sexton**, official of a ch., employed to open, warm, and light the ch., ring the bells, and dig graves. See SACRISTAN.

**Seychelles**, group of 101 islands and rocks, Ind. Ocean; Brit. Crown colony; area (incl. dependencies), 155 sq.m.; pop., 28,000; largest, *Mahe* (55 sq.m.); with cap., Victoria (coaling station); exports: coconuts, copra, spices; *coco-de-mer* (double coconut) found only here (see LODOICEA).

**Seymour**: see SOMERSET, EARLS AND DUKES OF.

**Sforza**, Ital. fam., dukes of Milan, 1450-1535. **S. Attendolo, Jacopo** (1369-1424), soldier and adventurer; Constable of Naples, 1422; assumed name *Sforza*, 1377. His s. **S., Francesco** (1401-1466), proclmd. D. of Milan, 1450. **S., Ludovico Maria** (1451-1510), D. of Milan; joined Ferd. I of Naples, and Florence, in league agst. Venice, 1482; m. Beatrice d'Este; fought agst. Louis XII, 1499-1500. **S., Maximilian** (1491-1530), D. of Milan, besieged by Fr., ceded Duchy to Francis I, 1515.

**Sforzando**, *sforzato*, (mus.) abbr. sf. (fz=forzato), strongly accented; emphasized.

**Sgraffito**, method of mural decoration consisting of coating a black stucco ground with white and scratching the latter so that the black shows through to give effect of line drawing.

**Shabrack** (Turk.), ornamented saddle-cloth, usually covered with a leopard skin, used in parade uniform by a cavalry officer.

**Shackleton**, Sir Ernest Henry (1874-1922), Brit. explorer; lieutenant on Scott's Antarctic Exped., 1901-04, but forced to return through illness; commanded Antarctic Exped. on "Nimrod," 1908-09; on "Erebus," 1914-17; on "Quest," 1921, during which he died from angina pectoris; buried on S. Georgia Island.



Sir E. Shackleton

**Shad**, coastal fish of the herring family; ascends rivers to spawn; 2 to 4 ft. in length.

**Shadchen** (Hebr.), Jew. marriage broker, esp. in E. Europe, where a paid intermediary is frequently employed. First mentioned in 12th century.

**Shaddock**, another name for grapefruit (*q.v.*).

**Shadow plays**, dramas in which small cardboard, leather, or parchment figures are used, esp. in East: China, Turkey (Karagöz), Java (Wayang plays with coloured figures), Burma.

**Shadrach, Meshach and Abednego** (O.T.), court names of Daniel's 3 friends, Hananiah, Mishael, and Azariah; cast into fiery furnace on refusal to practise idolatry; miraculously saved.

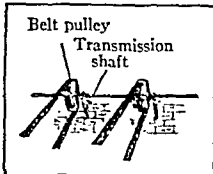
**Shadwell**, Thos. (1640-92), English dramatist and poet laureate (1688); satirized by Dryden in *MacFlecknoe*, and as Og in *Abdolom and Achitophel*; plays: *Epsom Wells*, 1672; *The Squire of Alsatia*, 1688; satire: *The Medal of John Bayes*, 1682.

**Shaft**, (tech.) 1) generally, a long, straight, circular object. 2) (Mach.) Long rotating axle carrying wheels, pulleys, cranks, etc.; see SHATTING. 3) (Mining) Vertical opening by which access is gained to workings of mine, by means of a cage raised and lowered by the winding-engine, which winds a cable upon a drum. 4) Handle of various weapons and tools, e.g., spear, axe. **S. Graves**, royal tombs at Mycenae (*q.v.*); referred to 16th-15th cent. B.C. Yielded immense treasure of Mycenaean Age (excavations of Schliemann).

**Shaftesbury, Anthony Ashley Cooper**, 1st E. of (1621-83), Eng. statesman; leader of Royalist party during Protectorate; Ld. Chanc., 1672. **S., Anthony Ashley Cooper**, 3rd E. of (1671-1713), Eng. philos.; co-founder. "Scottish School" (*q.v.*). 3) **S., Anthony Ashley Cooper**, 7th E. of (1801-85), Eng. philanthropist; opposed Reform Bill, 1832; supported Cath. emancipation; Ten Hours Bill, 1847; pres. of Ragged School Union for 40 years.

**Shaftesbury**, mkt. tn., Dorset, Eng., trad. fndd. by Kg. Alfred; pop., 2,500.

**Shafting**, (tech.) long rods of steel revolving in bearings on wall or ceiling brackets, and carrying pulleys at intervals from which various machines in a shop are driven, the S. being driven by a steam engine, electric motor, or other prime mover. *Stepped pulleys* (*q.v.*) allow speed of machines to be changed; *loose pulleys* take belt when drive is not required.



Shafting

**Shag**, 1) (text.) cloth of coarse wool, strongly fulled, for sports clothing, uniforms, overcoats; often made waterproof. 2) Finely cut pipe tobacco. 3) (Ornith.) Small, crested cormorant (*q.v.*).

**Shagreen**, untanned leather made from horse, ass, or camel hide, with roughened, granulated surface produced artificially by embedding small seeds in skin while soft; often dyed green; used for small ornamental cases, etc. Shark-skin, used for similar purposes, has naturally granulated surface.

**Shah**, title of the Kg. of Persia.

**Shah Jehan** (c. 1593-1627-66), Mogul Emp. of Delhi; fndd. city of Shah Jehanabad; bld. the mausoleum, Taj Mahal (*q.v.*), the Pearl mosque at Agra, and the palace and great mosque at Delhi; constructed "peacock throne"; deposed by his son, Aurangzeb, 1658; his reign marked highest point of Mogul power.

**Shāhnāma**, Pers. epic poem by Firdousi (*q.v.*), fndd. on Pahlavi legend.

**Shakers**, Christian communist sect of N. Amer.; offshoot of the Quakers, founded by Ann Lee (1736-84).

**Shakespeare**, William (1564-1616), Eng. dramatist and poet; b. at Stratford-on-Avon; m. Anne Hathaway, 1583; left Stratford for London, c. 1586; known in 1592 as an actor and playwright associated with the Globe Theatre, London; retired c. 1612 to Stratford; bought house near Blackfriars Theatre, 1613; buried at Stratford. First earned recognition as a poet (*Venus and Adonis*, 1593; *Lucrece*, 1594); *Sonnets*, first mentioned in 1598, and publ. 1609, have given rise to much controversy as to how far they reflect the poet's own experiences; by his *Plays* (see list below) he is known throughout the civilized world as the greatest dramatist of all time. See also FIRST FOLIO, THE.



Shakespeare

	PLAY	CLASS	DATE OF	
			WRITING	PUBLICATION
1	All's Well that Ends Well	Comedy	c. 1602	Folio, 1623
2	Antony and Cleopatra	Tragedy	c. 1606	Folio, 1623
3	As You Like It	Comedy	c. 1599-1600	Folio, 1623
4	Comedy of Errors	Comedy	c. 1592-93	Folio, 1623
5	Coriolanus	Tragedy	c. 1607-08	Folio, 1623
6	Cymbeline	Comedy	c. 1609-10	Folio, 1623
7	Hamlet	Tragedy	c. 1600-01	Quarto, 1603, 04
8	Henry IV, Part I	History	c. 1597-98	Quarto, 1598
9	Henry IV, II	History		Quarto, 1600
10	Henry V	History		Quarto, 1600
11	Henry VI, Part II	{ History }	c. 1590-91	Folio, 1623
12	Henry VI, III			Folio, 1623
13	Henry VI, I			Folio, 1623
14	Henry VIII	History	c. 1612-13	Folio, 1623
15	John	History	c. 1596-97	Folio, 1623
16	Julius Cæsar	Tragedy	c. 1599-1600	Folio, 1623
17	Lear	Tragedy	c. 1605-06	Quarto, 1608
18	Love's Labour's Lost	Comedy	c. 1594-95	Quarto, 1598
19	Macbeth	Tragedy	c. 1605-06	Folio, 1623
20	Measure for Measure	Comedy	c. 1604-05	Folio, 1623
21	Merchant of Venice	Comedy	c. 1596-97	Quarto, 1600
22	Merry Wives of Windsor	Comedy	c. 1597	Quarto, 1602
23	Midsummer Night's Dream	Comedy	c. 1595-96	Quarto, 1600
24	Much Ado about Nothing	Comedy	c. 1598-99	Quarto, 1600
25	Othello	Tragedy	c. 1604-05	Quarto, 1622
26	Pericles	Comedy	c. 1608-09	Quarto, 1609
27	Richard II	History	c. 1595-96	Quarto, 1597, 1608
28	Richard III	History	c. 1592-93	Quarto, 1597
29	Romeo and Juliet	Tragedy	c. 1594-95	Quarto, 1597
30	Taming of the Shrew	Comedy	c. 1593-94	Folio, 1623
31	Tempest	Comedy	c. 1611-12	Folio, 1623
32	Timon of Athens	Tragedy	c. 1607-08	Folio, 1623
33	Titus Andronicus	Tragedy	c. 1593-94	Quarto, 1594
34	Troilus and Cressida	Tragedy	c. 1601-02	Quarto, 1609
35	Twelfth Night	Comedy	c. 1601-02	Folio, 1623
36	Two Gentlemen of Verona	Comedy	c. 1594-95	Folio, 1623
37	Winter's Tale	Comedy	c. 1610-11	Folio, 1623

## SOURCES, ETC.

1. Ultimately from Boccaccio's *Decameron*, (iii, 9) through Painter's *Palace of Pleasure*.  
 2. North's transl. of Plutarch's *Life of Antony*.

3. Lodge's romance, *Rosalynde*.  
 4. *Menaechmi* and *Amphitruo* of Plautus.  
 5. North's transl. from Plutarch's *Lives*.  
 6. Boccaccio's *Decameron*, with historical material from Holinshed's *Chronicle*; Act V, Sc. iv, prob. interpolation.

7. Through older revenge-play, ultimately from Scandinavian legend.

8, 9. Holinshed's *Chronicle*; suggestion for Falstaff, orig. called Oldcastle, fnd. in older play, *The Famous Victories of Henry Fifth*; name altered to Falstaff through protest of Oldcastle's descendants.

10. Holinshed's *Chronicle*; 1st Quarto, surreptitious text without choruses; 1st complete text fnd. in 1st Folio.

11, 12. Holinshed's *Chronicle*; relation to

*The Contention of York and Lancaster* obscure and subject of much controversy.

13. Holinshed's *Chronicle*, written after 11 and 12 as introductn. to them; possibly with collaborators.

14. Holinshed's *Chronicle*, with material from Hall's *Union of Lancaster and York* and Foxe's *Acts and Monuments of the Church*; written in collaboration with Fletcher and others.

15. Older play, *The Troublesome Reign of Kg. John*.

16. North's transl. from Plutarch's *Lives*.

17. Older play, *The True Chronicle History of Kg. Lear*, with material from Holinshed's *Chronicle*, and, perhaps, Spenser's *Fæerie Queene*.

18. Unknown; doubtful if present 1st Quarto really is 1st editn. of the play.

19. Holinshed's *Chronicle*, possibly with material from Scot's *Discoverie of Witchcraft*, or Kg. James I's *Demonologie*; interpolations

of additional rhymed doggerel, prob. by Middleton, in witch-scenes.

20. Giraldi Cinthio's *Hecatommiti*.

21. Possibly older play, *The Jew*; various elements fnd. in folk-tales and Ital. *novelle*.

22. Said to have been written to please Qn. Elizabeth, who expressed desire to see Falstaff in love; incidents based on those in Ital. *novelle* and their Eng. adaptations.

23. Unknown; prob. written for courtly wedding, rather than public stage, poss. for marriage of Thomas Berkeley and Elizabeth Carey.

24. Unknown, though some of incidents occur in Bandello's *novelle* and Ariosto's *Orlando Furioso*; possible relationship with Ayer's *Die Schöne Phaenicia* and Hy.-Julius of Brunswick's *Vincentius Ladislaus*.

25. Cinthio's *Hecatommiti*; 1st Quarto text inferior to that of 1st Folio.

26. Gower's *Confessio Amantis*; authorship doubtful; portions certainly by Shakespeare, and author prob. Wilkins; but unknown whether re-written or collaboration.

27. Holinshed's *Chronicle*; deposition scene omitted from first two Quartos, though obviously integral part of play.

28. Holinshed's *Chronicle*.

29. Brooke's narrative poem *Romeus and Juliet*; 1st Quarto surreptitious; 2nd Quarto gives "corrected, augmented and emended text."

30. Older play, *The Taming of a Shrew*; prob. written in collaboration.

31. Stories of Virginian colonization in contemporary pamphlets, poss. on Jourdain's *Discovery of the Bermudas*.

32. North's transl. of Plutarch's *Life of Marcus Antonius*, Lucian's dialogue *Timon* and accounts in Painter's *Palace of Pleasure*. Shakespeare's authorship partial, perhaps only rough draft.

33. Unknown; tradition that Shakespeare merely added "master-touches" to work of "private author."

34. Chaucer's *Troilus and Criseyde*, Caxton's *Recuyell of the Historyes of Troy* and Chapman's *Homer*.

35. Rich's *History of Apolonius and Silla* in *Farewell to Military Profession*.

36. Montemayor's *Diana* and contemporary fiction.

37. Greene's *Pandosto*.

**Shale**, clay rock-formation of many varieties, which splits readily into plates or laminae.

**Shalloon**, light, loosely woven worsted cloth used for men's suits.

**Shallot**, *Allium ascalonium*, onion-like plant producing clustered edible bulbs.

**Shaman**, priest or medicine-man of Shamanist cult. **Shamanism**, relig. of Siberian and Centr. Asiatic races, combin-

ing crude nature-worship mingled with sorcery.

**Shamrock**, 1) leguminous plant of clover fam., with tripartite leaves; national floral emblem of Ireland. 2) Name given to a series of 5 yachts built successively, 1899-1930, by Sir Thos. Lipton in unsuccessful endeavour to win the America Cup (q.v.).

**Shan**, tribes of Thai (q.v.) stock found in Chinese prov. of Yunnan, in Siam, and in Upper Burma, esp. in six divisions of last named known as **Shan States**; tribal orgn. under local chiefs subj. to Burmese government; mainly Buddhists; written lang.; agric. and industries.

**Shanghai**, port, Kiang-su, China, S. of the Yang-tse-kiang estuary; pop., 2,677,000; important centre for sea-borne trade of E. Asia; treaty port since 1842 (one of the first five). Two Europ. settlements; Chin. univ.; textiles, shipp.; exports: silk, cotton, tea. Unsuccessful attack by Japan, 1932.

**Shanklin**, tn. and seaside resort, E. coast, Isle of Wight, Eng.; pop., 7,400.

**Shannon**, Sir Jas. Jebusa (1862-1923), Anglo-Amer. portrait and figure painter; R.A., 1909; *Mr. Henry Vigne*; *Phil May*; *The Flower Girl*.

**Shannon**, principal riv. in Ire. (I.F.S.), and largest in Brit. Isles (240 m.); rises in Co. Cavan and flows through a series of lakes or *loughs* past Athlone and Limerick into Atlantic; large power station at Limerick, supplying electricity to I.F.S. generally.

**Shansi**, prov., N. China; 81,000 sq.m.; pop., 12,200,000; mountainous country, rich loess soil; wheat, millet, vegetables, fruit, vines; cattle breeding; coal, iron, salt; cap., Tai-yuan; pop., 50,000.

**Shan'tow**: see SWATOW.

**Shantung**, penins. forming a maritime prov. of N.E. China; 57,700 sq.m.; pop., 35,000,000; mountainous (coal and iron in parts), fertile only in N.; densely populated plain; cultiv. of grain, cotton, hemp, and poppies; silk and glass industry; pottery and straw-plaiting; cap., Tsinan.

**Shap**, urb. dist., Westmorland, below S. Fells (1,600 ft.); pop., 1,220; S. Summit (1,000 ft.) is highest point of L.M.S. rly. from London to Carlisle; remains of Premonstratensian abbey.

**Shares**, (Stk. Exch.) stated amt. of the capital owned by a member of a company. S. may be **ordinary**, with no priority of dividend; **preference**, with priority of dividend and / or capital, rate usu. being ltd. to a fixed percent.; they may be a) **cumulative pref. s.**, i.e., when there are no distributable profits for one or more years, profits of succeeding years may be used to pay full divids. ac-



crued, bef. divids. are paid on Ord. S.; b) **non-cumulative pref. s.** (Participatory Pref. S.); in add. to fixed divid., holders of these have right to further share of profits after ord. shares have paid a named amt. of int.; c) **deferred s.**, holders of wh. do not rec. a divid. until those on ord. and pref. S. have been pd. Rly. ord. S. are split into Defd. ord. and Pref. ord. S. are *fully paid* or partly paid acc. to whether there is or is not an *uncalled portion* of each subscrbd. S. not paid: see CAPITAL.

**Sharks**, carnivorous elasmobranch fishes of the order Selachii, which includes the blue-shark, hammer-head (q.v.), porbeagle, thresher, basking, Port Jackson shark, and the dog-fishes. S. are characterized externally by a long, almost cylindrical, body,



Blue Shark

powerful rudder-like tail, presence of an anal fin, wide gape of mouth, filled with sharp-pointed teeth. The order has a world-wide distribution, the larger carnivorous species, of tropical seas, are capable of devouring human beings.

**Sharon** (O.T.), dist. of pasture-land in Palestine; **Rose of S.** cited in *Song of Songs* as type of female beauty. See CANTICLES.

**Sharp**, Wm. (1856-1905), Scot. poet and man of letters; art critic to *Glasgow Herald*, 1885; poems: *Flower o' the Vine*, 1894; *Sospiri d'Italia*, 1906; under pseud. of "Fiona Macleod" (identity not revealed until his death) pubd. novels: *Pharais*, 1894; *The Sin-Eater*, 1895; play: *Winged Destiny*, 1904, etc.

**Sharp** (mus.): see ACCIDENTAL.

**Shatt-el-Arab**, riv. formed by confluence of the Euphrates and Tigris.

**Shavegrass**, *Equisetum arvense*, used in folk med. as diuretic and astringent. See EQUESETUM.

**Shaw, George Bernard** (1856- ), Ir. dramat. and critic; *Arms and the Man*, *Mrs. Warren's Profession*, *Cæsar and Cleopatra*, *Candida*, *Man and Superman*, *St. Joan*; Nobel Prize (Lit.), 1926. **S.**, (Richd.) **Norman** (1831-1912), Brit. archit.; R.A., 1877; known chfly. for his country houses and for *New Scotland Yard*. **S.**, **Thos.** (1872- ), Brit. lab. politician; Sec. Internat. Congress of Textile Workers, 1911; M.P., 1918-31; Minister of Labour, 1924; Sec. for War, 1929-31.



G. B. Shaw

**Shawm**, shepherd's pipe, forerunner of the oboe (q.v.).

**Shay**, *chaise*, obsolete one-horse carriage.



Shay

**Shearing**, (mechan.) method of parting solid material by applying force in such a way as to slide one part of it over an adjacent part. **S. stress**, stress applied so as to cause shearing.

**Shears**, means for cutting by action of common scissors; two sharp cutting edges crossing one another. *Guillotine*, a form of S. in wh. one blade is formed by edge of table. S. used from smallest to largest scale (iron plate 1 in. thick) for cutting purposes with hand and machine power in all trades. See SCISSORS.

**Shearwater**, (*Puffinus*) sea-bird allied to petrel; long, slender beak. **Ashy s.** (*Puffinus Kuhl*), of Medit. and E. Atlantic, has brownish-grey upper plumage. **Great s.**, 18 in. long, occas. visits British Isles. **Manx s.**, smaller bird with dark upper plumage, is found throughout N. Atlantic, esp. in Brit. Isles and N. Europe.

**Sheathbill**, marine bird related to gull; white plumage, pinkish legs. Found in Falkland Is. and Strait of Magellan.



Sheathbill

**Sheatfish**, large, edible, freshwater fish of the catfish, fnd. in Cent. and E. Eur. rivers.

**Sheba** (O.T.), unidentified territ., prob. in S. Arabia; **Qn. of S.** visited Solomon (1 Kgs. x); claimed by Abyssinians as joint ancestor, with Solomon, of their reigning house.



The Queen of Sheba from a Turkish miniature

**Shechem**: see NABLUS.

**Shed**, (weaving) space betw. upper and lower part of warp, thr. which shuttle is passed.

**Shee**, Sir Martin Archer (1769-1850), Irish portrait painter; R.A., 1800; succ. Lawrence as P.R.A., 1830; *Wm. Thos. Lewis*, *Thos. Morton*, *Infant Bacchus*.

**Sheep**, ruminating ungulata of genus *Ovis*, characterized by massive horns of male (ram), curving backwards and downwards. Distribtd. thr. Centr. and N. Asia, Europe, N. Africa. *Domesticated S.*, bred for wool or meat, Brit. varieties incld.: Leicester, Cotswold, Devon, Kent, etc. (Long-wool breeds): Southdown, Suffolk, Shropshire, Hampshire, etc. (Short-wool): Scotch Blackface, Welsh, Exmoor, Dartmoor, etc.

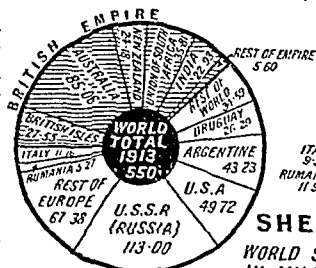
(Mountain). S. breeding practised extensively in Australia and New Zealand (Canterbury mutton), for export of chilled meat and wool. See also ARGALI; BHARAL; BIGHORN; MERINO; MOUNTFLO; URIAL. **S.-dog**, any breed trained to guard and round up sheep. **Old English S.-d.** breed with long woolly coat and short tail (bob-tail).

**Sheepshead**, large fish of genus *Sargus* (*S. ovis*) found on Atlantic coasts of U.S.A.; valued as food; may weigh 15 pounds.

**Sheerness**, seaport. tn. at the mouth of Riv. Medway, on Isle of Sheppey, Kent, Eng.; pop., 18,700; naval base and dockyard; seaside resort.

**Sheet**, 1) (paper meas.) piece of paper, 24th part of a quire. 2) (Naut.) Rope for

**Shekel**, old Jewish unit of weight of  $\frac{1}{2}$  oz. and silver coin worth c. 2s. 5 $\frac{1}{2}$ d.  
**Sheldrake**, genus of wild duck (*Tadorna*)



means of escape from the danger and unpleasantness of conditions at the front. The sufferer is unaware of the real reason for the production of the symptoms. Treated by rest, suggestion, and psychoanalysis.

**Shellac**, resin produced by cochineal insect in E. Indian fig-trees; used for lacquer, varnish, sealing-wax, etc.

**Shelley**, Percy Bysshe (1792-1822), Eng. poet; sent down fr. Oxford thr. his *Necessity of Atheism* (1811); travelled with Byron; drowned in Gulf of Spezia; *The Cenci*, 1819; *Prometheus Unbound*, 1820; *Adonais*, 1821.

**Shem**, (O.T.) eldest son of Noah; tradit. ancestor of Semitic races.

**Shenandoah**, 1) tn., Pennsylvania, U.S.A.; pop., 25,000; anthracite mining; manuf. of dynamite; coal.

2) Riv., Virginia, U.S.A., joins Potomac at Harper's Ferry; **S. Valley**, scene of several campaigns in Amer. Civil War, 1861-65.

**Shensi**, prov. centr. China, W. of Yellow Riv.; 76,400 sq.m.; pop., 17,200,000; mountains in S.; wheat and coal in N.; cap. *Sian*.

**Sheol**, (O.T.) place to wh. dead were believed to go; also known as the Abyss, *Shahat*, Bor.

**Shepherd's pie**, cold meat cut up finely into pie-dish with potato and onion; covered with potato and baked in oven until well browned. **S. plaid**, cloth woven with black-and-white check pattern. **S. purse**, *Cap-sella bursa-pastoris*, white-flowered common weed, used in domestic med. as antiscorbutic, diuretic, etc.

**Sheppard**, Jack (1702-24), Eng. robber; apprenticed to carpenter; made 2 remarkable escapes from Newgate, but third time captured and hanged; hero of Ainsworth's romance, *Jack Sheppard* and of a pamphlet (1724) attrib. to Daniel Defoe.

**Sheppey**, *Isle of*, isl. N. coast, Kent, Eng., at mouth Riv. Medway (9 m. by 5); sep. from mainland by Riv. Swale; contains Sheerness, Queenborough, and Minster Abbey (Saxon).

**Shepton Mallet**, urb. dist. and mkt. tn., E. Somerset; pop., 4,100; mkt. cross (1500); breweries, potteries, rope-works.

**Sheradization**, (tech.) invention of Sherard Cowper-Cowles; coating of iron with zinc by heating it with zinc-powder in a rotating furnace, at a temp. below the m.p. of zinc.

**Sheraton**, Thomas (1751-1806), Eng. cabinet-maker; mahogany and satinwood furniture characterised by elegance and fine construction; extensive use of inlay and marquetry.



Shelley

**Sherbet**, iced beverage with fruit juice; orig. juice of pomegranate, cooled with snow.

**Sherborne**, mkt. tn., Dorset, Eng.; abbey; pop., 6,500; public school for boys, fndd. by Edw. VI, 1550.

**Sherbrooke**, tn., Quebec, Canada, on Riv. St. Francis; pop., 40,303; textiles; saw-mills; machinery.

**Sheridan**, Philip Hy., (1831-88), Amer.

gen.; served with distinction in Civil War; successful campaign in Shenandoah Vall., 1864; rallied retreating troops and turned deft. to victory, Cedar Creek, 1864; succ. Sherman as gen.-in-chf., 1883. **S., Rich. Brinsley** (1751-1816), Eng. playwright and politician; M.P., 1780-1812; held office 3 times, renowned orator; *The Rivals*, *School for Scandal*, 1777.



Richd Brinsley Sheridan

**Sherif** (Arab.), noble, a descendant of the prophet Mohammed through his dau., Fatima.

**Sheriff**, orig. kg.'s rep. in county or city, for finance and keeping peace. Now mainly ceremon. duties. Position conferred in turn upon county landowners selected by Chanc. of Excheq. or (where office survives, as London, Hull, York) upon leading citizens. In parts of U.S.A., official with police duties, sometimes acting as magistrate.

**Sheriffmuir**, **Battle of**, indecisive action fought 3 m. E. of Dunblane, 13 Nov., 1715, betw. Royalists and Jacobites.

**Sheringham**, seaside resort and urb. dist., Norfolk, Eng., 5 m. W. Cromer; pop., 4,000.

**Sherman**, Wm. Tecumseh (1820-91), Amer. gen.; served during Civil War in Union Army with conspicuous gallantry; major-gen. in regular army, 1864; received surrender of Johnston's forces, 26 Apr., 1865; succ. Grant as Commander of Army, 1869; pubd. *Memoirs of Gen. Wm. T. Sherman by Himself*, 1875.

**Sherrington**, Sir Charles Scott (1861-), physiol.; Waynflete Prof. of Physiol., Oxford; Nobel Prize (Med.), 1932.

**Sherry**, Span. fortified wine from district of Jerez (Andalusia). Types: Manzanilla (very dry); Amontillado (dry); Oloroso and Amoroso (sweet); E. India or Brown (very sweet).

**'s Hertogenbosch**, cap., N. Brabant, Holland, at confluence of rivs. Aa and Dom-mell; pop., 42,000; cathed.; gold and silver ware.

**Sherwood Forest**, anc. royal forest, Eng., mainly in Notts; haunt of Robin Hood; contains Dukeries (q.v.). **S. Foresters** (Notts and Derbysh. Regiment), Brit. infantry regt.; union of old 45th Foot (1741)

and 95th Foot (1800); depot, Derby; record office, Lichfield; 30 battalions in World War.

**Shetland or Zetland Islands**, group of c. 100 islands (29 inhabited), 50-60 m. N.E. of Orkneys, in extreme N. of Scot., forming a Scottish co. (area, 551 sq.m.; pop., 21,400). Fine cliff-scenery; barren and treeless interior, rising to 1,475 ft.; largest, *Mainland*, (cap., *Lerwick*); fishing, breeding of sheep and *Shetland ponies*; knitted woollens. **S. pony**, small, heavily maned breed of pony, with heavy winter coat, c. 4 ft. high.



Shetland Pony

**Shew-bread**, loaves formerly brought as a communal offering to the Jewish Temple and renewed every Sabbath. Custom was discontinued when the Temple service ceased to be maintained.

**Shi'ah, The**, Moslem sect wh. regards Ali and his descendants as the only rightful Caliphs; chfly. located in Persia. See IMAM.

**Shibboleth** (O.T.), password by the pronunciation of which Jephthah distinguished his own men from the Ephraimites (Judg. xii. 6); hence any catchword used as test of loyalty to a party, or of social status.

**Shield**, defensive weapon of var. shapes and materials, intended to ward off enemy's blows, or missiles.

**Shields, North:** see TYNEMOUTH. **S., South:** see SOUTH SHIELDS.

**Shift**, change, alter; transfer from one place to another. (Indus.) Relay of men working in mines, factories, etc., in rotation with other relays, also working time of a relay.

**Shifting sands**, drifts or dunes of sand loosened by action of weather; liable, esp. on sea coasts and in deserts, to be shifted in mass by action of wind, hence a source of danger.

**Shilites:** see SHI'AH.

**Shi-king**, anc. collectn. of Chinese songs, made by Confucius (q.v.).

**Shikoku**, smallest of Jap. main isls. (7,245 sq.m.), betw. Hondo and Kyushu; pop., 3,300,000; mountainous (max. alt. 7,355 ft.); rice-growing, copper mines; cap., *Tokushima*.

**Shilka**, river (300 m.), E. Siberia, rises in Transbaikalia, flows into Riv. Amur; navig. from Nerchinsk.

**Shilling**, 1) Eng. silver coin, = 12 pence or, nominally, £ $\frac{1}{20}$  (\$24); 1st struck, 1504.

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2) Scots coin current until 1707; orig. of same value as 1), but debased to value of abt. 4d. at time of withdrawal. 3) Coin formerly current throughout U.S.A., value varying with each State; now obsolete except locally in rural districts. 4) Former term in U.S.A. for Span. real, silver coin worth 12½ cents. **King's S.**, shilling formerly handed to recruit on declaration of his intention to enlist; considered equiv. to signature of contract.

**Shiloh** (O.T.), city of Ephraim, 19 m. N.E. Jerusalem, in wh. the ark and sanctuary were placed after Israelites had settled in Palestine; destroyed by Philistines.

**Shimonoseki**, seapt. tn. (cap. prov. of Yama-guchi) at S.W. end of isl. of Hondo. **Treaty of S.** (1895) ended war betw. China and Japan.



Buddhist Temple of Tennoji, Osaka



Nippon Yuen Kaisha Temple of Kwannon (Goddess of Mercy), Nagoya

Japanese Temples

**Shinbone**, (anat.) the tibia, the larger of the two bones of the leg. Extends from the knee to the ankle and can be felt in front, just below the skin.

**Shingle**, (metallurg.) to apply heavy pressure or percussion to iron for purpose of driving out impurities.

**Shingles**, 1) (med.) *herpes zoster*, inflammation of nerve associated with very painful blisters, which appear along the distribution of a nerve in the skin; often occurs round the waist. Related to chicken-pox; see HERPES. 2) (bldg.) Thin, narrow pieces of wood (usu. oak) used to cover roofs; also used for sides of outside walls in bldgs. (then called weather-boarding and commonly of elm).

**Shintoism** (Chin.), Way of the Spirits; ancient national belief and (since 1868) State relig. of Japan; no sacred books or special ethical teaching; principal emphasis on virtue of patriotism; numerous gods; largely influenced by, and even held simultaneously with, Buddhism.

**Shinty**, or **hurling**, form of hockey (q.v.) played in Ireland.

**Ship**, any large vessel used for navigating the sea, propelled by sails, steam, or other mechanical means; in narrow naut. sense, a vessel with bowsprit and 3, 4, or 5 masts, each carrying square sails. **S.-broker**,

1) agent of a shipping company, transacting business for their vessels when in port, securing cargoes, etc. 2) Agent for marine insur. business. **S.-money**, a tax ostensibly for defence of the realm, imposed by Charles I, 1628, '34, '35, '39; resistance to it by Hampden one of causes of Civil War. **S.'s articles**, list in wh. a ship's company is entered.

**Shipka Pass** (4,373 ft.), from Tirnovo to Kazanlik, Bulgaria. Scene of heavy fighting in Russo-Turkish War, 1877-78.

**Shipley**, Sir Arthur Everett (1861-1927), Eng. zoologist; lecturer at Cambridge Univ., 1894; auth., *Zoology of the Invertebrata*; collab. in editing and writing *Cambridge Natural History*.

**Shipley**, urb. dist., adjoining Bradford, W. Riding, Yorks, on Riv. Aire; pop., 30,200; manuf. worsted.

**Ship of Fools**, The: see NARRENSCHIFF.

**Shipping business**, term used in London to describe business of certain merchants who obtn. orders from overseas countries (esp. colonies and dominions) for miscellaneous products, purchase goods in London and assemble and ship them to the country concerned, sometimes chartering a ship for the purpose. They perform a service in assembling a great variety of goods in the comparatively small quantities required of each for a given market at a given time.

**Shipton, Mother**, witch and prophetess; reputed maiden name Ursula Southill (b. c. 1457); m. Tobias Shipton; prophesied

downfall of Wolsey, etc.; belief that she foretold end of world in 1881 caused alarm at that time; 1st. mentioned in tract, 1641.

**Shiraz**, cap. Fars prov., Persia; pop., 35,000; mediaeval centre of Persian art and science; rugs, cotton, silk, gold-and silverware; attar of roses; wine similar to sherry, produced in vineyards of Khullar.

**Shire**, Anglo-Saxon name for territorial division of Eng., Wales, and Scot., later gen. superseded by the Norman name "county"; a few counties (e.g. Surrey, Durham, Cornwall) are never so called; also spec. applied to the fox-hunting counties, Leicester, Rutland, and Northants. **S. horse**, Brit. breed, employed for heavy haulage, prob. developed from crossing Flanders horse with old Eng. war-horse.

**Shittim**, wood used by Israelites for building, esp. in constr. of the Ark of the Covenant and tabernacle in the desert, prob. from the *Acacia sergal*, found in neighbourhood of Dead Sea.

**Shoddy**, *mungo*, fibrous matl. made from old worn woollen cloth, or from waste woollen matl. shredded or ground up and respun and woven to form cheap cloth; cloth made from such material.

**Shoe-bill**, large bird related to heron, found in neighbourhood of White Nile, with very broad ridged beak, concave at sides; long-legged, non-webbed feet, greyish plumage.



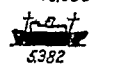
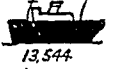
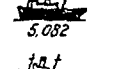
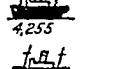
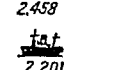
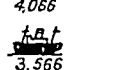
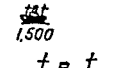
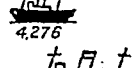
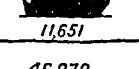
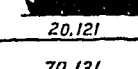
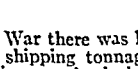
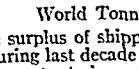
**Shoeburyness**, urb. dist., Essex, adjoining Southend-on-Sea; pop., 6,700; school of gunnery.



Shiraz, Street View

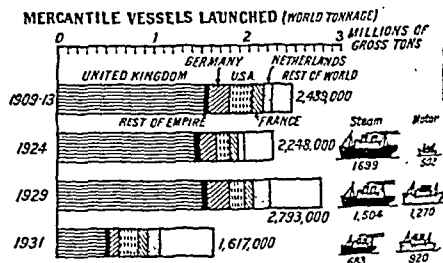


Shoe-bill

	1913	1931
UNITED KINGDOM	 18,656	 20,303
U.S.A.	 5,382	 13,544
GERMANY	 5,082	 4,255
NORWAY	 2,459	 4,066
FRANCE	 2,201	 3,566
JAPAN	 1,500	 4,276
REST OF WORLD	 11,651	 20,121
WORLD TOTAL	46,970	70,131

World Tonnage of Mercantile Ships

After World War there was large surplus of shipping tonnage. Motorship has become increasingly popular, so that incr. of shipping tonnage during last decade is mainly confined to incr. of motorships, world steam shipping tonnage having remained almost constant, i.e., new tonnage has been cancelled by scrapping and between 1929 and 1931 motorship tonnage incr'd. by half. Proportion of world tonnage owned by U.K. substantially fallen while that for U.S.A. and Japan incr'd. Decline in ships launched since 1929 mainly due to decline in U.K. Figures in diagram on left denote thousands of gross tons.



**Shogun** (Jap.), orig. a milit. title (*general*), but from 1185 until 1868, when the *shogunate* was abolished, the S.s were the actual rulers of Japan.

**Sholapur**, inland tn., Bombay, India, cap. dist. of S. (4,550 sq.m.; pop., 800,000); pop. of tn., 135,600.

**Shophar** (Hebr.), ram's horn, wind instrument sounded in synagogue service on Jew. New Year (Lev. xxiii, 24).

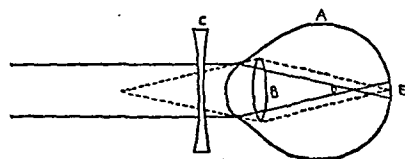
**Shops, Legislation relating to**, in Eng. principally contained in Shops Act (1912) and acts *re* Early Closing (*q.v.*); assistants must be granted proper meal intervals; seats must be provided for female assistants; employment of persons under 18 restricted to 74 hrs. per wk. incl. meal-times; barbers (unless Jews) must close on Sundays (1930).

**Shoreditch**, met. bor., E. London, Eng., N. of Riv. Thames; working-class dist.; pop., 97,000; furniture, boots, shoes.

**Short, selling short** (Stk. Exch.): *see* BEAR. **S. circuit**, (elec.) the inadvertent touching or connection of electric conductors, gen. caused by defective insulation or break in circuit, etc., results in incr. in strength of current owing to insuff. resistance; formation of sparks, heating, fire. Damage prevented by fuses, automatic cut-outs (*q.v.*), oil switches, and, recently, by expansion and compressed-gas switches wh. interrupt circuit when "shorted." **S. loan fund** (banking), amt. of money in the hands of London banks and Bank of Eng. available for lending to



Shophar



Short-Sightedness and Its Correction

Line of vision directed by crystalline lens (B) to focal point (D) in advance of true focal point (E); defect corrected by concave glass (C) directing line of vision (dotted lines) to true point (E).

bill-brokers and stockbrokers, for periods of a few days. Deposits with London and N.Y. bks. of foreign short-term funds, have swelled the S.L.F. in both centres from time to time; magnitude of these funds, sometimes called *floating balances*, or *foreign balances*, has come about as a result of a) Fr. funds establd. to stabilise the franc (1927); b) by the estabmt. of *gold exchange system* (*q.v.*) in many Europ. countries; fund has recently been much moved about for reasons of safety, or, as often alleged, for political reasons. One of prin. causes of financ. crisis of 1931. **S. sight** (myopia), caused by extension of the axis of the eye; gives rise to blurring of

distant objects; corrected by concave lenses.

**S. ton**, 2,000 lbs.; *see*

**T O N. S. - wave transmitter**: *see* WIRELESS.

**Shorthand**: *see* STENOGRAPHY.

**Shorthorn**, breed of cattle (*q.v.*) orig. Shorthorn Cow reared by Bros. Colling in Durham (late 18th cent.); hardy and adaptable.

**Shorthouse**, Jos. Henry (1834-1903), Eng. author; *John Inglesant*, 1881.

**Shot**, small lead pellets of var. sizes (No. 8 or 9 for small-game shooting); also larger round bullets, and heavier missiles (*e.g.*, grape shot, chain shot, round shot), formerly fired from cannon.

**Shottery**, vill., 1 m. W. of Stratford-on-Avon; Anne Hathaway's cottage.

**Shotts**, salt-lakes in N.W. Africa, esp. in Algeria and Tunis. **Plateau of S.**, extends c. 250 m. from Sahara Atlas to Tell Atlas Mtns., contng. a line of shotts.

**Shovell**, Sir Cloudisley (1650-1707), Eng. adm.; fought in 1st b. of Bantry Bay, 1689; convoyed Wm. III to Ireland, 1690; fought at La Hogue, 1692; 2nd in command in expedtn. agnst. Camaret Bay, St. Malo, and Dunkirk, 1695; took part in capture of Gibraltar, 1704, of Barcelona, 1705, and in unsuccessful attack on Toulon, 1707; drowned in wreck off Scilly Isles.

**Shoveller**, var. of duck with very large, broad beak, short legs, and pointed wings; metallic green marked with brown and white; found throughout N. Hemisphere.

**Show-bread**: *see* SHEW-BREAD.

**Shrapnel**, artillery bullet-filled shell with bursting-charge and time-fuse; invtd. by Col. Henry Shrapnel, R.A., c. 1802; great spread forward, poor penetration.

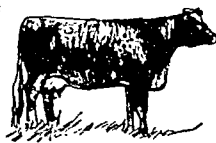
**Shreveport**, tn., N.W. Louisiana, U.S.A., on Red Riv.; pop., 76,650; centre of agric. dist.; valuable timber; oil, gas; airport.

**Shrews**, family of mouse-like or rat-like Insectivores, with soft, short fur and long, pointed snouts. Distribtd. over Europe, Asia, Africa, and N. America. The British *Lesser S.* is one of smallest existing mammals.

**Shrewsbury, Charles Talbot**, E. of (1660-1718); Ld. Treasurer, 1714. **S., John Talbot**, 1st E. of (1373-1453), Eng. soldier, com. in Fr. Wars.

**Shrewsbury**, co. tn. of Salop, on Riv. Severn; pop., 32,400; fine mediæval churches and timbered houses; manuf. stained glass, iron, thread, and *S. cakes*; rly. centre; public school for boys, fndd. by Edw. VI, 1552; c. 450 boys.

**Shrike**, passerine bird of stout build and striking grey plumage; found all over world, except S. Amer.; also called *butcher-bird* from its habit of impaling food on sharp thorns



near nest, frogs, mice, beetles, grasshoppers, etc., often forming part of its "larder."

**Shrimp**, small crustacean with semi-transparent body tapering to tail; long, slender antennae and limbs. Lives in shoals in shallow water on sandy shores.



Shrimp

**Shrine**, 1) a reliquary (*q.v.*). 2) Sculptured tomb of saint or hero. 3) Altar, chapel, church, temple, or other sacred place. 4) (Fig.) Place held sacred because of person, events, or ideas associated with it.

**Shrinkage**, (tech.) contraction due to cooling from a high temp.; must be allowed for in making patterns for casting (*q.v.*). For cast-iron  $\frac{1}{16}$  in. to  $\frac{1}{8}$  in. per ft.; brass  $\frac{3}{8}$  inch. Circular rings, tubes, etc., of metal are often fixed to shafts, etc., by being *shrunk on*, i.e., hole is too tight to fit when cold, but ring is heated and forced on. S. of timber due to loss of moisture.

**Shropshire**, or **Salop**, co., W. Eng., border of Wales; area 1,320 sq.m.; pop., 244,200; drained by Riv. Severn; surface hilly (*Clee Hills*, 1,790 ft.; *the Wrekin*, 1,335 ft.); riv. vall. fertile (agric., cattle); iron trade (Coalbrookdale); co. tn., *Shrewsbury*.

**Shroud**, (naut.) rope from masthead to bulwark of ship, taking lateral strain of the mast. Part of standing rigging (*q.v.*).

**Shrovetide**, week preceding Ash Wednesday, period of confession or shrivings (whence its name) of sins prepar. to Lent; last 3 days of S. observed as a *carnival* ("farewell to flesh") before coming Fast. **S. Tuesday**, last day of S., associated, in England, with eating of pancakes.

**Shu King**, Chin. sacred book, attribtd. to Confucius (*q.v.*).

**Shulamite**, **The**, (O.T.) character in *Song of Songs* (see *CANTICLES*); possibly Abishag, wife of David's old age.

**Shunt**, 1) (tech.) to divert into a side-path. (Elec. techn.) to divert an elec. current thus. *S.-circuit*, opp. of *main circuit*. To connect circuits in *shunt* is to connect them in parallel, so that current divides itself betw. them (opp. of *series* connection). Hence *shunt-wound dynamo*, with field coils connected in parallel with armature. Sensitive instrs. used to measure large currents are connected in parallel with a low resistance thr. wh. main current flows; this resistance is mis-called a *shunt*. 2) (Rly.) Movement of rolling-stock, usu. on side-tracks, by *shunting engines*, as when forming, or breaking up, trains, or in loading or unloading.

**Shuttle**, oblong tool used in weaving to take woof threads thr. warp; in sewing machines (*q.v.*) S. makes the lock-stitch (carrying the lower thread).



Shuttle

**Shuttlecock**, feathered missile with cork body, used in badminton (*q.v.*), etc. Body, 1 to  $1\frac{1}{2}$  in. diam., 16 feathers,  $2\frac{1}{2}$  to  $2\frac{3}{4}$  in. with  $2\frac{1}{4}$  to  $2\frac{1}{2}$  in. spread; wt., 73-85 grains. **S. and battledore**, game played with S. and a bat with long wooden handle and circ. blade covered with parchment.



Shuttlecock and Battledore

**Shuttering**, (bldg.) temporary casing, usu. of planks, built up to form moulds for walls, columns, arches, etc.; in mod. method of building in concrete (*q.v.*) when concrete has hardened S. is "struck" and removed.

**Shylock**, Jew. usurer in Shakespeare's *Merchant of Venice*.

**Shyok**, riv. Kashmir, trib. of the upper Indus, below Karakoram Pass; the action in 1926 of an obstructed glacier caused an ice-dam c. 500 ft. high, which produced a lake 9 m. long at alt. of 17,000 ft.; in Aug., 1929, the dam burst, resulting in a rise of 50 ft. in the Indus and severe flooding.

**Si**, chem. symbol of silicon.

**Sialkot**, tn. and dist. cap., Punjab, India; pop., 70,700; milit. cantonment; manuf. cotton, paper, cloth, boots.

**Sialogogue**, (med.) drug admins. to promote flow of saliva.

**Siam**, **Muang T'ai**, kgdm., centr. Indo-China, betw. Burma (W.) and Fr. Indo-China (E.), with southern extension occupying Kra Isthmus and N. part of Malay Peninsula. Area, 200,230 sq.m.; pop., 11,500,000 (nine-tenths Siamese, with about 450,000 Chinese, 400,000 Indians and Malays, 60,000 Cambodians, and 2,000 Europeans), mostly Buddhists. Mountainous in W. and N.; isolated ranges in S. of main territ. and in Malay Peninsula. Centr. plain watered by many rivs., incl. Menam, flowing into Gulf of Siam, with *Bangkok* (cap., chf. port, and trading centre) at its mouth, and Mekong, forming (in part) frontier of French Indo-China. Climate monsoonal. Chf. product rice; pepper, sesame, hemp, and tobacco also grown; teak forests, rubber, coconuts; silk culture. Minerals include tin, coal, iron, precious stones. Domesticated animals: elephants, buffaloes, bullocks; wild animals: lions, tigers, crocodiles. Rlys., c. 2,000 m.



**CONSTITUTION**: After revolution of 1932 Siam became a constitutional monarchy; executive power vested in Committee of National People's Party. Ministers aided by European (mainly Brit.) advisers. Country divided into 14 provs. or *Circles*. The Portuguese visited Siam in 16th, the Dutch and Eng. in 17th centuries. Treaty of friendship with Great Britain, 1826; with U.S.A., 1833. Anglo-Fr. Convention of

1896 settled E. and W. frontiers. In 1909 Siam yielded to Great Britain rights over certain dependencies in Malaya in exchange for the abolition of extra-territoriality. Joined Allies in World War, 1917.

**Siamang**, (zool.) var. of large gibbon (*g.r.*), confined to Sumatra, black with grey beard, second and third toes joined by web, pouch at neck, very long arms.

**Siamese**: see LANGUAGE SURVEY, Indo-Chinese.

**Sian**, *Si-gnan-fu*, city, China; cap. prov. Shensi, on the Wei-ho (right trib. of Hwang-ho); pop., 1,000,000.

**Sibelius**, Johan Julius (1865- ), Finnish composer; symphonies, songs.

**Sibenik**, **Sebenico**, seapt., Dalmatia, Jugoslavia, on Bay of S. (Adriatic); pop., 20,000; R.C. cathed.; naval base. Austrian, 1815-1918.

**Siberia**, former name for Asiatic Russia, betw. *Ural Mtns.*, and Pacific, now limited to portion in centre not included in newly formed repubs.; c. 5,000,000 sq.m.; pop., c. 10,250,000 (Russ. Yakuts, Tatars, Tungusians, Samoyedes). Incl. *Far Eastern Area*, *Western S.*, *Eastern S.*, and repubs. of *Yakutsk* and *Buriat-Mongol*. Immense plateau betw. Urals, Yeniseisk and *Altai Mtns.* Plains and hilly tundras in N., Steppes in S., taiga (*q.v.*) in S.E. Many lakes and marshes in N., wh. is Asia's coldest region. Desert on borderland betw. Siberia and Mongolia. Rivs.: Ob, Lena, Yenisei, Irtysh, Amur. Lakes: Baikal, Balkash, Bozobol. Climate: continental, very hot summers, cold winters. Fauna: tiger, bear, fox, wolf, sable; wealth of fish; stock-farming (reindeer, cattle, horse, pig). **Siberian Area**, admin. unit of *Asiatic Russ.* Bounded N. by Arctic O., S. by Mongolia and Kayakstan, E. by Yakutsk, W. by Uralsk; 1,600,000 sq.m.; pop., 3,710,000. Rich mineral deposits: gold, silver, lead, graphite, coal. Cap., *Noro Sibirsk* (*q.v.*). Polit., relig. and crim. exiles banished to S. up to 1900, and from 1904 to present time. Czechoslovak troops (60,000), Brit., U.S.A., and Jap. forces, took part in civil war betw. Red and White guards, 1917-22. Adml. Koltchak (*q.v.*) destd. by Reds, forfeiting his life.

**Sibyl**, prophetic woman of antiquity.

**Sibylline Books**, oracular books consulted in anc. Rome in times of peril. **S. Oracle**, 14 books of pagan, Jew. and Christian prophecies from 1st cent. B.C. and A.D.

**Sic** (Lat.), thus used, italicised and in brackets, to call attention to a doubtful word, phrase, or expression; also (loosely) to express author's surprise at some statement, etc., which he is quoting. *Sic itur ad astra*: such is the path to the stars. *Sic semper tyrannis*: thus ever (be the fate of) tyrants. *Sic transit gloria mundi*: so passes the glory of

the world. *Sic volo, sic jubeo*: thus I wish, thus I command (my wishes are orders). *Sic vos non vobis*: thus you (labour) but not for yourselves.

**Siccative**, prep. used in drying oil-paints, or to fix charcoal or pastel drawings, etc.

**Sicilian Vespers** (1282), massacre of all the Fr. in Sicily by adherents of Peter III of Aragon, whereby Angevin rule in Sicily was terminated.

**Sicily**, largest isl. in Mediterranean, part of kgdm. of It.; separated from S. It. by Str. of Messina; 80 m. from Cape Bon, Tunisia (N. Africa). Ancient name, *Trinacria*, due to its triangular shape. Area, incl. adjacent isls. (Lipari, Aegadean Isls., etc.), 9,934 sq.m.; pop., 4,430,000. Coasts low, except in the N.; mtns. in N. (4,000-6,000 ft.) are final ranges of the Apennines; highest point, *Mt. Etna* (c. 10,900 ft.) in E.; more moderate hills (up to 1,500 ft.) in south. Region of disastrous earthquakes (see *MESSINA*). Climate warm and equable, but subject to sirocco (*q.v.*). Inhab. mainly engaged in agric. (intensive and extensive): oranges, lemons, citrons, figs, prickly pears, vines, nuts, wheat; little forest-land; fisheries (tunny, sardines); sheep- and goat-rearing; sulphur and salt mines, pumice stone. Rlys., 1,200 m. Divided into nine depts. (Agrigento, Caltanissetta, Catania, Enna, Messina, Palermo, Ragusa, Syracuse or Siracusa, and Trapani); chf. tns., *Palermo* (cap.), *Messina*, *Catania*, *Syracuse* (all ports).

**HISTORY**: The *Sicels* (from whom isl. is named) said to have found the *Sicans* already in Sicily. Following the Phoenicians, the Greeks planted colonies in 8th-6th cent. B.C., incl. Syracuse, Catana, Selinus, Acragas (Agrigento, Girgenti), Himera, Zankle (Messina). City-states combined under tyrants (Phalaris, Gelon, Theron, Hieron, etc.). Danger from Carthage temporarily overcome by Gelon's decisive victory at Himera (480 B.C.). Period of prosperity in 5th cent. B.C. interrupted by Sicilian Expedition of the Athenians (415-13 B.C.; see *ATHENS*). New danger from Carthage (after 410) met by tyrants Dionysius (406-367) and Agathodes (317-289) of Syracuse, but not overcome till after First Punic War (241), when the Romans acquired all the Carthaginians' possessions in Sicily. Thenceforth Sicily a Rom. prov. until conquest by the Vandals, A.D. 440, succeeded by the Goths, 476. Recovered by Belisarius for E. Empire, 535; conquered by the Saracens in 9th, by the Normans in 11th century. Latter acquiring terr. in S. It. in 12th cent., fndd. *Kgdm. of the Two Sicilies* (Sicily proper and Sicily on the mainland). Death of Tancred (1194) ended Norman rule, and Sicily passed, with Naples, to the Hohen-



staufen emperors. Frederick II restored prosperity to Sicily after years of strife and faction. His natural son, Manfred, defeated and killed by Charles of Anjou, 1266. The unpopularity of the French rulers culminated in the rising of the *Sicilian Vespers* (q.v.), when Peter III obtained possession of the island. Thenceforth Sicily became alternately separated from and attached to S. Italy. For later history, see NAPLES and ITALY.

**Sickert**, Walter Richard (1860- ), Brit. painter and etcher; A.R.A., 1924; *Camden Town Murder*; *Baccarat at Dieppe*.

**Sicyon**, anc. city, N. Peloponnesus, on Gulf of Corinth, 10 m. N.W. of Corinth; flourished 7th-6th cent. B.C. Remains of walls, theatre, stadium, etc.

**Siddhartha**, personal name of *Buddha*.

**Siddons**, Sarah, *née* Kemble (1755-1831), Eng. tragic actress; famous as Lady Macbeth; orig. of Reynolds' *The Tragic Muse*.

**Side-arm**, sword or short weapon for cutting or thrusting, worn at left side (see BAYONET). **S.-slip**, (aeron.) tendency of aeroplane to slip sideways and inwards if banked too much on a turn; see SKID. **S.-stroke**, (swim.) once chief racing stroke, now displaced by *trudgen* and *crawl* (qq.v.).

**Sidereal**, relating to the constellations and fixed stars; measured by apparent motion of stars. **S. clock**, astron. clock regulated by marking S. time (q.v.). **S. day**, day less by c. 4 mins. than solar day of 24 hrs., measured by interval betw. 2 transits of Aries (q.v.) across the meridian. **S. time**, time measured by axial rotation of earth in reference to a fixed star, e.g., one in Aries. **S. year**, time occupied by complete revolution of earth round sun, measured by recurrence of a fixed star, 365 days 6 hrs. 9-10 mins., 20 mins. more than *tropical year*.

**Siderite**: see IRON ORES.

**Sidmouth**, seaside resort, S. Devon, Eng., on Riv. Sid; pop., 6,000.

**Sidney, Algernon** (1622-83), Eng. politician; younger son of 2nd Earl of Leicester; served in parliamentary army; leader of Independents; Gov. of Dublin, 1646; peace commissioner betw. Sweden and Denmark, 1659-60; arrested after Rye House plot (q.v.); charged with high treason, beheaded; *Discourses concerning Government*, 1763. **S., Sir Philip** (1554-86), Eng. author and soldier; *Arcadia*, 1590; *Sonnets*, 1591; *Defence of Poesie*, 1595; mortally wounded at Zutphen, 1586.

**Sidney Sussex College**, Cambridge, fndd. 1596 under will of Lady Frances Sidney, Dowager Countess of Sussex. Oliver Cromwell was among its alumni.



Sir Philip Sidney

**Sidon**, anc. Phoenician city, on Mediter. coast, 40 m. N. of Tyre, now represented by Saida (q.v.). Next to Tyre, chief source of Phoenician wealth and power; provided Pers. fleet; survived Alexander's empire and Rom. domin.; occup. by Crusaders; destroyed 1201.

**Siebenburgen**: see TRANSYLVANIA.

**Siegebirge**, mountainous region, 10,000 acres (now a Nature Reserve), on the Rhine, S.E. of Bonn, including the Drachenfels and Ölberg; volcanic (trachyte and basalt); thickly wooded hills.

**Siebold**, Karl Theodor Ernst von (1804-85), Ger. zoolog. and anatom.; investigated parthenogenesis amongst insects.

**Siege**, **State of**, assumption of special powers by milit. author. for maintenance of order in a state of emergency. **S. helmet**, in the Mid. Ages, heavy helmet with protectn. for neck, worn by infantrymen when assaulting walled positions.

**Siegfried** (in Edda, *Sigurd*), hero of *Nibelungenlied*, (q.v.); owner of the Nibelung hoard; won the Valkyrie Brynhild for Kg. Gunther of Burgundy; married G.'s sister Kriemhild; killed by Hagen; see RING OF THE NIBELUNGS, THE. **S. Line**, Ger. position on W. Front behind Somme line, from St. Quentin to Laon, during World War.

**Siemens**, family of Ger. engineers:

**Werner S.** (1816-92), pioneer in electro-

technics (telegraphy, floating mines with electric fuses, overland telegraphy, first dynamo (q.v.), electric lighting), fndd. the firm of Siemens and Halske, Berlin. **Sir William S.** (1823-83), naturalised in England, invtd. Siemens-Martin process. **Friedrich S.** (1826-1904), inven. re-

generative furnace. **S.-Martin Process**, or *open-hearth* process, method of making steel from pig-iron and/or scrap by melting and heating to high temperature in shallow open basin; in acid process, bed of furnace is made of sand or other siliceous material, whereby carbon, silicon, and manganese are reduced, but sulphur and phosphorus not; in basic process, dolomite (q.v.) and quicklime are used, removing sulphur and phosphorus. When tests show iron to be nearly pure, ferro-manganese is added.

**Siena**, city, Tuscany, It.; cap. prov. of S;



Siebengebirge, Basalt columns



Werner v. Siemens

pop., 47,800; abpric.; 13th-cent. Ital. Gothic cathed.; many mediaeval churches and public and private bldgs.; city walls; univ.; fountains by Quercia; picture gall. (Sienese school).

**Sienkiewicz**, Henryk (1846-1916), Pol. novel; *Quo Vadis?*; Nobel Prize (Lit.), 1905.

**Sierra** (Span.: saw), chain of mountains or hills with jagged ridges. **S. Leone**, Brit. Crown colony and protectorate, W. Africa, on the Atlantic, betw. French Guinea and Liberia; area (colony), 4,000 sq. m.; (protectorate) 27,000 sq. m.; pop. (colony), 85,200, (protectorate) 1,500,000; coast-lands marshy and unhealthy; interior hilly and densely forested; exports: palm kernels, palm oil, ginger; cap., *Freecown*. **S. Madre**, mtn. ridge of the Mexican highlands. **S. Morena**, mtns., Sp. (max. alt., 4,250 ft.), with the Despeñaperros Pass, betw. Cordoba and Madrid. **S. Nevada**, 1) highest mtn. range of Spain, nr. S. coast; highest peak *Mulhacen* (11,421 ft.) with most Sthrn. glaciers in Europe. 2) Mt. range in California (*Mt. Whitney*, 14,500 ft.), with rift valleys (e.g., Yosemite Valley).

**Siesta** (Span.), the 6th hour, noon; hence, short midday or afternoon nap.

**Sieve**, (in cooking) wooden frame with wire- or hair-netting. Used for pressing vegetables, meat, fruit, etc., into a pulp.

**Sieyès**, Emmanuel Joseph (1746-1836), Fr. Abbe and statesm.; supported rights of 3rd Estate in Fr. Revolt.; one of Paris deputies to States General.

**Sight**, 1) one of the "five senses," enabling its possessor to distinguish light from darkness and, without the aid of touch, the form, position, and movement of an object. 2) Aiming device on firearms; consists of foresight (blade), backsight (notch), wh. must be aligned on the target. 3) (Finan.) Time of presentation of bill of exch. (*q.v.*) to drawee, e.g., "30 days' sight." Bills are sometimes payable *at sight*, or 3 months *after sight*.

**Sigillaria**, genus of fossil trees of Middle Carboniferous Age.

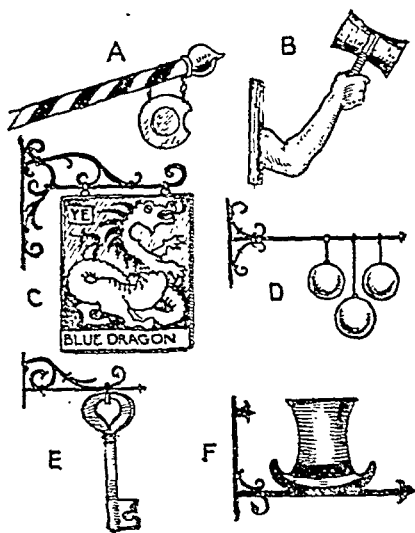
**Sigismund** (1361-1433-37), Emp. of Holy Rom. Empire; s. of Chas. IV; Kg. of Hungary, 1387; destd. by Turks at Nicopolis, 1396; deposed by Hungarians, 1401; recovered throne by force; Kg. of Germans, 1410; succ. bro. Wenceslaus as Kg. of Bohemia, 1419; permitted burning of Jn. Huss (*q.v.*); emp., 1433; last of Luxemburg line.



Siena Cathedral

**Sigismund**, 3 kgs. of Poland: **S. I** (1467-1506-48), protected middle classes, encouraged commerce; successful wars agnst. Russia, Walachia, and Moldavia. His son, **S. II**, *Augustus* (1520-48-72), united Lithuania and the Ukraine to Poland; last of Jagiellos; his nephew, **S. III**, *Vasa* (1566-1632), son of John III of Sweden; elected Pol. kg., 1567; succ. to Swed. throne, 1592; deposed therefrom by his uncle, Chas. IX, 1604.

**Signals**, (rly.) combination of semaphore for day and coloured lights for night work, to inform engine-drivers whether line is clear. In Gt. Brit. **block s. system** compulsory; line divided into blocks, wh. only one train may enter at a time. Various devices automat. prevent signalman from making many, but not all, possible mistakes, by interlocking devices (elec. and mechanical). Purely autom. operation by various systems, in all of wh. train entering block sets signal agst. subseq. train. In elec. rlys., means employed for automat. cutting off current if train disobeys signal. **Fog. s.**, explosive



Signboards (see next page)

A) Barber B) Goldbeater C) Inn  
D) Pawnbroker E) Locksmith F) Hatter

cartridge attached to rail by hand, for use when neither semaphore nor lights can be seen. *See also* SEMAPHORE; FLASH LAMPS; FLAG and SOUND SIGNALS.

**Signature**, 1) sign, stamp; name of any pers. written with his own hand. 2) (Mus.) Flats or sharps at beginning. of composition indicatg. key or scale. 3) (Print.) Letter or fig. by wh. sheets of book or pamphlet are disting. and their order designated.

**Sign-boards**, boards or banners hung outside a bldg. to indicate nature of occupn. pursued there, or status of family owning it. Date from anc. Grk. and Rom. times. S.-bds. usu. bear some descriptive emblem, e.g., the bush for a tavern (anc. Rome); cross for a Christian house; sun or moon as pagan symbols. Later, coats of arms of nobility adapted and popularised, e.g., Chequers, White Hart, etc. In Eng. S.-bds. now confined almost entirely to inns, barbers' shops (pole), pawnbrokers' shops (3 balls), and tobacco-nists' shops (roll of twist). (Ill. prev. page).

**Signet**: see SEAL.

**Signorelli**, Luca (1450-1523), Ital. painter; mural paintings (Orvieto).

**Sikhs**, monotheistic Hindu sect in Punjab; fanatic warriors.

**Si-kiang**, riv. (900 m.) S. China, rises in Yunnan, flows into the S. China Sea, nr. Macao.

**Sikkim**, Indian State (Brit. protectorate since 1890), E. Himalayas, betw. Nepal and Bhutan; 2,800 sq.m.; pop., 109,700; surface mountainous and wooded; grain, fruit, wool-lens; cap., Gangtok.

**Silage**, (agric.) fodder (pulse, cereals, maize) packed green in a silo (q.v.) or pit, for preservation.

**Silas** (N.T.), companion of Paul on first two missionary journeys.

**Silchester**, vill., Hants, Eng., on site of Roman *Calleva Atrebatum*, on Icknield Way; plan of tn., incldg. early Basilican ch., recovered by excavation.

**Silenus**, (Gr. myth.) satyr who was the tutor and companion of Dionysus; often represtd. as a drunken old man.

**Silesia**, region, centr. Europe, comprising basin of the Upper Oder and part of the Sudetes Mountains. Divided into German provs. of Lower and Upper S. and into Polish and Czechoslovak S. 1) **Lower Silesia** (*Niederschlesien*), prov. of Prussia; 10,267 sq.m.; pop., 3,200,000; agric. highly developed; orchards, vineyards; cattle-breeding; textiles; iron and glass works; cap., *Breslau*. 2) **Upper Silesia** (*Oberschlesien*), prov., S.E. Prussia, forming a salient betw. Poland and Czechoslovakia; 3,750 sq.m.; pop., 1,400,000 (mainly R. Catholic). Left bank of the Oder very fertile: wheat, oats, fruit, sugar-beet; wooded hills on rt. bank; Sudetes Mtns. in S.W. Rich coal seams; iron and steel, lead, zinc, cement; cap., *Oppeln*.

3) **Polish Silesia** (*Śląsk*), self-governing dept. of Poland; 1,633 sq.m.; pop., 1,298,900 (50% Germans); coal, iron, and zinc mines; foundries; metal, glass, and chem. works; cap., *Katowice* (*Kattowitz*). Formed out of Austr. Crownland of S. and part of German Upper Silesia. 4) **Czechoslovak Silesia** (*Slézsko*), prov. of Czechoslovakia; 1708 sq.m.; pop., 672,270 (majority Germans);

rivs., Oder and Vistula; Sudetes Mtns. in N.; agric.; cattle-breeding; coal-mines; metal and textile industry; cap., *Opava* (*Troppau*). Formed out of Austr. Crownland of S. and part of German Upper Silesia.

**HISTORY**: Inhab. by Slavs and part of kgdm. of Poland, c. A.D. 1000; duchy under dynasty of Piast, 1163; Ferdinand I of Habsburg acquired territ. on extinction of Piast dynasty, 1526. Devastated by Thirty Years' War (1618-48). Frederick the Great seized the pretext of a contract of succession to invade S., involving Prussia and Austria in the *Silesian Wars* (1741-42, 1744-45, and 1756-63, the last being the Seven Years' War). As a result, Prussia was confirmed in possession of Silesia. The plebiscite of 1921, following on the Treaty of Versailles, deprived Ger. of large sections of Upper Silesia, Poland, in particular, acquiring 66 coal-mines, many of the lead and zinc mines, and the steel foundries of Kattowitz and Königs-hütten.

**Silesian Wars**, three wars of Fred. the Great with Austria: 1) 1740-42 (battle of *Mollwitz*. Peace of *Breslau*; Pruss. acq. Silesia and Glatz). 2) 1744-5 (*Hohenfriedberg*, *Soor*, *Kesselsdorf*; Peace of *Dresden* leaves Prussia's gains untouched). 3) See SEVEN YEARS' WAR.

**Silhouette**, (Fr.) a portrait in outline or profile, usu. cut out of black paper and mounted on white ground; outline of a person or object, esp. as seen against a light background; orig. so called in mockery of E. de Silhouette, a Fr. 18th-cent. finance minister, notorious for his petty economies.

**Silica**, *silicon dioxide* ( $\text{SiO}_2$ ), quartz in a pure form, used in glass manuf. COLLOIDAL S., a gel (see COLLOIDS) used to purify gases and liquids by *adsorption* (q.v.) of traces of impurities.

**Silicates**, salts of silicic acid, are of enormous importance, limitless in number, and very complex in constitution. S. of alkali and earth metals (sodium, calcium, etc.) formed by melting silica (pure sand) with oxides or carbonates of metals; solidify to glasses (q.v.). *Sodium S.* is water-glass (q.v.), soluble in water, usually sold as syrupy solution. The earth's crust consists mainly of silicates, both volcanic and primary rocks, and many sedimentary formations (e.g., clay) being S.; the crystalline mineral silicates are innumerable and often very complex. The ceramic industries depend on clay, and portland cement is also a mixture of silicates.

**Silicic acid**, *Orthosilicic acid*,  $\text{H}_2\text{SiO}_4$ , exists, if at all, as a gelatinous mass (s. gel.)



Silhouette, Goethe and Fritz von Stein

at a certain degree of drying; same is true of **metasilicic acid**,  $H_2SiO_3$ . See **SILICATES**.

**Silicofluoric acid**, *hydro-fluosilicic acid*,  $H_2SiF_6$ ; used in dyeing and print. of textiles as fixing agent, for produc. of *sodium silico-fluoride*, and as an insecticide. Cannot be obtd. except as solution in water.

**Silicon**, (chem.) non-metallic element,



Silkworm (*Bombyx Mori*)

A) Silkworm C) Cocoon  
B) The Moth-imago D) Pupa in cocoon—opened

Si; at.wt., 28.06; sp.gr., 2.3; m.p., c.  $1415^{\circ}C$ .; commonest element in earth's crust; occurring as silica and silicates; obtd. by reduction of quartz in elec. furnaces. Pure S. used as wireless detector crystal; combined with carbon (*S. carbide*, *carborundum*) forms very hard abrasive; used in small quants. for alloys, e.g., *S. bronze*.

**Silicosis**, disease of lungs caused by inhalation of silica dust; symptoms are cough, shortness of breath and the expectoration of gritty sputum.

**Silk**, middle layer of cocoon (q.v.) of silkworm caterpillar (*S. worm*) bred in Far East on the mulberry tree. A cocoon produces abt. 800 yards of silk thread consisting of fibroin, which is reeled off and cleansed of gum (sericine). The *Grège S.* which is extracted is made heavier to increase the bulk, by impregnation in metallic salts. A wild silkworm, the Indian oak bombyx, produces *tussore S.*, difficult to bleach. S. waste is made into *Schappe silk*. See also **ARTIFICIAL SILK**. **S.-spinner**, species of moth, whose larvae produce silk for the construction of the cocoons.

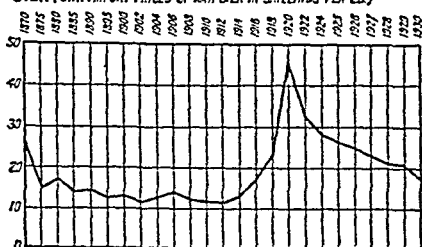
**Silo**, structure of wood or concrete, from 30-45 ft. high, from wh. air is excluded, used

for preserving fodder (see **SILAGE**) in green, compressed state.

**Siloam, Pool of**, (N.T.) at base of Mt. Zion; scene of one of Christ's miracles.

**Silundum**, steel-grey form of carborun-

**SILK (U.K. IMPORT PRICES OF RAW SILK IN SHILLINGS PER LB.)**



Enormous fall of price since war reflects in part increased competition of artif. silk fabrics.

dum, formed by action of silicon vapour on carbon in electric furnace, forming silicon carbide ( $SiC$ ).

**Silures**, anc. Brit. people, inhab. S. Wales and Monmouthsh. (cap., *Venta Silurum*); conquered A.D. 48, by Romans, who built *Isca Silurum* (mod. Caerleon).

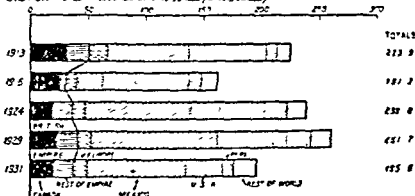
**Silurian**, stratum of rock immediately beneath the Devonian; see **GEOLOGICAL FORMATIONS**.

**Silver**, element, symb., Ag; prec. metal; sp.gr., 10.5; at.wt., 107.880; m.p.,  $960.5^{\circ}C$ .; found as metal (often alloyed with gold) and combined with chlorine or sulphur, gen. with arsenic, antimony, copper, or lead; obtd. by wet or dry process or by amalgamation. Chfly. found in Mexico, U.S.A., Peru. Used for ornaments, coins, etc.; alloy with



Antique Silver Dish

**SILVER WORLD PRODUCTION OF PURE SILVER (MILLION OUNCES)**



Production dominated by Mexico and U.S.A.; decline since 1929 of these countries being 75% of total fall; U.S.A. output 1931 about  $\frac{1}{4}$  of 1929.

$\frac{1}{10}$  to  $\frac{1}{4}$  copper generally used because harder. Of *S.-salts* most useful are *S.-chloride*, *S.-bromide*, *S.-iodide*, sensitive to light in photog.; *S.-nitrate* (*lunar caustic*), used in med. for cauterisation; *S.-potassium cyanide*

for S. plating. Silvering of mirrors is effected by a mixture of ammoniacal silver nitrate solution with a reducing solution, such as Rochelle salt (*q.v.*), which deposits metallic silver on the glass as a brilliant coating. **S. certificates**, paper currency issued by Treasury of U.S.A. from \$1 upwards; redeemable in silver; not legal tender except for taxes. **S. fox**, variety of common fox with very valuable black-and-white fur; bred on farms. **S. glance**, argentite; sulphide of silver. **S. plating**: see ELECTROPLATING. **S. standard**, customary up to middle of 19th cent. everywhere except in England. After rich Californian and Austr. gold finds (1848, 1851) gold standard became general instead of silver, except in China, Persia, Abyssinia, where S.S. still maintained (1933). **S. solder**, jewelers' solder; composed of equal parts of copper and silver; borax as flux (*q.v.*): see SOLDER.

**S. thistle**, see ACANTHUS.

**Silverfish**, 1) (entomol.) small, wingless insect of primitive type; occurs in old, damp houses; body clothed with silvery scales; rapid in movement; feeds on paste in binding of books and other starchy or sugary substances. 2) (ichthyol.) Variety of goldfish with a silver lustre; term applied to any small, bright fish.

**Silverius, St.**, Pope (536-537), incurred hatred of Theodora by opposing restoration of patriarch Anthimus; deposed and d. in exile.

**Silvertown**, dist.; E. London, N. of Riv. Thames, included in West Ham; Roy. Victoria and Albert Docks; disastrous explosion of munition factory, Jan., 1917.

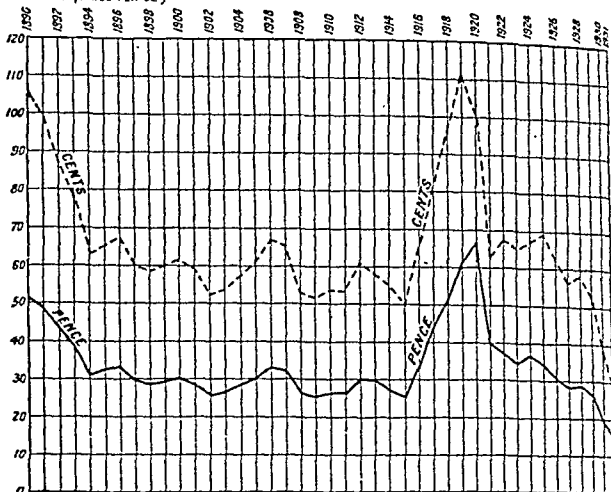
**Silvester**, name of 2 popes and 1 antipope: **S. I, St.** (314-335), said to have received *Donation of Constantine* (*q.v.*). **S. III** (1044), antipope, elected instead of Benedict IX, who expelled him 3 months later.

**Silvestrines**, order of monks under Benedictine rule, fndd., 1231, by St. Silvester Gozzolini, at Montefano; have house and mission in Ceylon.

**Simeon**, 1) (O.T.) second son of Jacob and Leah; forefather of tribe of S., later merged with that of Judah. 2) (N.T.) Holy man, recognised the Messiah in the child Jesus and recited the Nunc Dimittis

("Lord, now let thy servant depart in peace"), (Luke ii. 29). 3) **S. Stylites**, Christian hermit, b. c. 403 near Antioch; lived for 37 yrs. on pillars of gradually in-

SILVER (PRICE PER OZ.)



As S. is not, like gold, used as currency reserve, price has slumped in common with base metals. Even where, as in China, currency is based on S. the tendency is to substitute gold.



Silverfish

creasing height finally attaining 60 feet.

**Simferopol**, cap. of Crimean A.S.S.R., S. Russia; pop., 88,000. On site of anc. Tarta. tn.; cathed.; mosques. Mod. name, Akmet chet.

**Similarity**, (math.) uniformity of angle and side ratios in different sized figures and bodies; math. sign for resemblance: ~.

**Similia similibus curantur** (Lat.), like is cured by like.

**Simla**, tn., E. Punjab, India, on spur Lower Himalayas; alt. 7,000-8,000 ft.; summer residence viceroy and supreme govt.; health resort; pop., winter, 15,000; summer, 40,000.

**Simmel**, Georg (1858-1918), Ger. philos.; fndr. of modern sociology; *Philosophy of Money*; *Sociology*; *Goethe*.

**Simnel**, Lambert (fl. 16th cent.), pretender to Eng. throne, impersonated Edw. Plantagenet, Earl of Warwick, nephew of Richd. III; adherents deftd. at Stoke, 1487; captured; tradit. employed as kg.'s turnspit.

**Simois**, (anc. geogr.) small riv., Troad, Asia Minor, often mentioned in Homer's *Iliad*.



Simla

**Simon**, 1) Maccabean leader (c. 145-135 B.C.). 2) Brother of Jesus (Mark vii). 3) **S. of Cyrene**, Hellenistic Jew; carried Christ's cross on way to Calvary. 4) **S. the Canaanite**, one of the 12 Apos.; a zealot. 5) **S. Magus**, sorcerer; pseudo-Messiah; sought to buy from Apos. power of conferring Holy Ghost (Acts viii); see SIMONY. 6) **S. the Leper**, cured by Jesus. 7) **S. the Tanner**, Christian convert at Joppa, with whom Peter lodged. 8) **S. Peter**; see PETER.

**Simon**, Sir John Allsebrook (1873- ), Brit. lawyer and statesman; Att.-Gen., 1913-15; Sec. for Home Affairs, 1915-16; chmn. Indian Statutory Comm., 1928; Sec. Foreign Affairs, 1931.

**Simon de Montfort**: see MONTFORT.

**Simonides**, Gr. lyric poet (c. 500 B.C.).

**Simon's Town**, port and naval station, Cape Prov., S. Africa, on False Bay; pop., 5,000 (2,600 whites).

**Si monumentum requiris, circumspice** (Lat.), if you seek for his monument, look round you), inscription on interior of N. door of St. Paul's Cathedral, London, with reference to Sir C. Wren (q.v.).

**Simony**, traffic in spiritual things for purposes of profit; esp., eccles. offence of corruptly presenting a person to an eccles. benefice for money, gift, or reward; so called after Simon Magus (q.v.).

**Simoom**, hot, very dry, desert wind of Arabia and N. Africa, usu. accompanied by clouds of dust and sand.

**Simplex munditiis** (Lat.), "simple in neatness"; modestly adorned.

**Simplicissimus**, title of Ger. satir. periodical publ. in Munich since 1896; name taken from *The Adventures of S.*, by Christoph von Grimmelshausen (1625-76).

**Simplicius**, St., Pope (468-483); failed to settle Monophysite dispute.

**Simplon**, pass (6,592 ft., 20 m. long) over the Lepontine Alps, betw. Switzerland (Rhône vall.) and Italy (Tosa vall.); hospice in charge of the Austin Canons. **Simplon Tunnel**, rly. tunnel 12½ m. long (1905; track doubled, 1922), betw. Brig (Switzerland) and Iselle (It.); longest in Alps.



Sir John Simon



Simplicissimus  
Title-page of First Edition,  
1668

**Sims**, Charles (1873-1928), Brit. artist; first exhib. R. Acad., 1894; R.A., 1916; Keeper of R. Acad., 1920-26; trustee of Tate Gall., 1920; *Childhood*, 1896, Luxembourg; *The Fountain and the Wood beyond the World*, Tate Gallery, etc. **S., Geo. Robt.** (1847-1922), Eng. journal. and dramat., chfly. remembered as *Dagonet* of the *Referee*; play, *The Lights of London*. **S., Wm. Sowden** (1858- ), Amer. Adml.; com. U.S.A. fleet in Eurpn. waters, 1917-18.

**Sin**, transgression of divine law in thought, word, or deed; spiritual wickedness, moral depravity, also specific act of this nature. R.C.Ch. distinguishes **mortal s.** (deliberate, agst. the very end of divine law, deserving of eternal punishment) and **venial s.** (not annihilating friendship of the soul with God; see PURGATORY).

**Seven Deadly Sins**, pride, covetousness, lust, anger, gluttony, envy, sloth. **S. against Holy Ghost** (Mark iii, 29), gen. understood to mean attribution of God's operations to power of evil. **S.-eater**, one who professed, according to an old Eng. and Scots custom, to take upon himself, for a small fee, the sins of a dead person, by consuming food and drink in the presence of the corpse.

**Sin.**, abbr. sine.

**Sinai**, 1) (O.T.) mtn. in wilderness of S. on wh. Moses received decalogue from Yahveh (Ex. xix). 2) (Geog.), penins. betw. gulfs of Suez and Akaba, with *Sinai Mtns.* (8,530 ft.) and *S. Monastery* at E. foot. *S. Desert*, part of Arab. desert, E. of Suez Canal.

**Sinanthropus Pekinensis** (*Pekin Man*), name given to skull found at Choukoutien, nr. Peking, in 1929; referred to same era as *Pithecanthropus erectus*. Later discovery that Peking man used fire and chipped flints, proved that he was human.

**Sinclair**, Upton (1878- ), Amer. novel.; *The Jungle* (1906); *Oil* (1927).

**Sind**, N. prov., Bombay, India; 46,500 sq.m.; pop., 3,885,300; watered by Riv. Indus (mouth on Arabian Sea), which irrigates land otherwise desert; climate hot and dry; agriculture, cattle-breeding; cap., and port, *Karachi*.

**Sinding**, Christian (1856- ), Norw. composer; piano and songs; his bro., **Stephen** (1836-1922), sculptor: *The Kiss*.

**Sine**: see TRIGONOMETRY.

**Sinecure** (Lat.), without care; term applied to a remunerative position involving little or no work.

**Sine die** (Lat.), without a day; without fixing a date for resumption of proceedings; **sine dubio**, without doubt; **sine quâ non**, without which, not; essential condition.

**Singapore**, 1) Brit. isl., separated from S. extremity Malay Penins. (Johore) by strait, 2 m. wide (causeway and rly. to

Bangkok); 225 sq.m.; pop., 557,800. 2) Cap. of isl. and of Straits Settlements (*q.v.*) on S.E. coast; pop., 445,800 (340,000 Chinese); gov.'s res., Ang. and R.C. catheds., mosques; fortified; construction of naval base, estimated to cost £9,000,000, suspended 1925; air-base for Australian route; coaling station;



Singapore Harbour

docks; free port; port of call for ships to and from Far E.; chf. commercial centre S.E. Asia; exports: rubber, tin, fruit, tapioca. Dependencies: Christmas Isl. and Cocos-Keeling Isl. (*qq.v.*). Orig. port and fishing village ceded by treaty to E. India Co., 1819; (see RAFFLES, SIR STAMFORD); incorptd. in Straits Settlements, 1826.

**Singaraja:** see BALI.

**Singara nut,** water chestnut, floating water plant, *Trapa natans*.

**Singer,** Isaac Merritt (1811-75), Amer. inventor; produced 1st practicable sewing machine, 1851; formed partnership with Edw. Clarke, 1852, wh. merged into corporation, *Singer Manufacturing Co.* (N.Y., 1863; N.J., 1873); introd. electric sewing machine, 1889.

**Single chamber system,** parliamentary system in wh. legis. is not divided into 2 or more houses or chambers. Preferred by some advocates of reform as acting more quickly, but (partly for this reason) not usu. adopted in larger States. See TWO-CHAMBER SYSTEM.

**Single-stick,** ash-stick with basket-work hilt used in a form of fencing (*q.v.*).

**Single tax,** proposed levy by the State of all economic rent (*q.v.*), *i.e.*, the rent arising from favourable position of land; based on the theory that rent-value of land so situated is incrd. by social activity rather than by efforts of landowner and should therefore be passed on to the community. The tax is called *single* because its orig. proposer (Henry George, 1839-87) believed that the resulting revenue would be so great that no other State taxation would be necessary.

**Sing-Sing,** New York State prison, sit. near Ossining, 30 m. N. of N.Y. City. Name from the Sin Sinck Indians formerly located here.

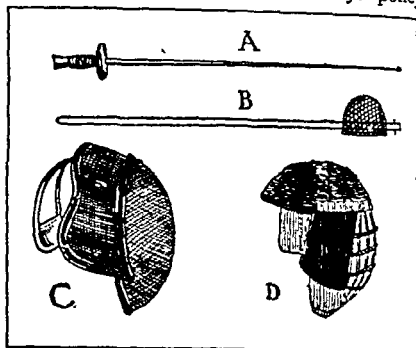
**Sinhalese:** see CINGALESE.

**Sink,** (geol.) marsh, or hole in rock, through wh. water drains or percolates away and disappears; characteristic of Karsts (*q.v.*).

**Sin-kiang,** Chin. dependency; see TURKISTAN.

**Sinking fund,** (finan.) sums set aside out of income, forming fund for systematic repayment of debts, bonds, etc.

**Sinn Féin** (Gaelic, we ourselves), nat. movement in Ire. started in 1900. Orig. under Griffith and Pearse largely devoted to revival of Gaelic, etc.; revolnary. policy



A Foil  
B Single-stick  
C Foil mask  
D Single-stick mask  
Fencing and Single-stick

grew during World War, respon. for insurrection of 1916 and civil war 1918-1922; split over treaty founding Irish Free State (*q.v.*).

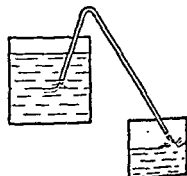
**Sinology,** study of Chin. lang. and culture.

**Sinter,** designation of certain mineral deposits from natural springs; either siliceous or calcareous; latter variety occurs in "petrifying springs" in limestone districts which form an incrustation upon objects exposed to their action. Also, term applied to the partial fusion together of certain substances.

**Sion,** 1) cap., canton of Valais, Switzerland, nr. confluence of the Sionne and the Rhone; pop., 7,000. 2) Same as ZION 1) (*q.v.*).

**Sioux,** N. Amer. Ind. group of tribes from upper Mississippi, *c.* 44,000 in number; chf. tribe: Dakota; culturally and linguistically varied. **S. City,** tn., Iowa, U.S.A.; pop., 79,200; R.C. bpric.; iron works, meat-packing, electrical supplies; airport; former Indian camping ground. **S. Falls,** largest tn., S. Dakota, U.S.A., on Big Sioux Riv.; pop., 33,350; R.C. and Prot. Episc. bprics.; machinery, tools.

**Siphon,** appar. for withdrawing fluid by means of air-pressure. Tube bent in shape of U or V, short leg dipping into liquid; open end of long leg must be below level of liquid to be drawn off. (See ILLUS.) **S. recorder,** (teleg.) receiver for cable telegraphy; moving-coil galvanometer, with capillary ink-siphon



Siphon

as pointer, writing on paper tape; invtd. by Lord Kelvin (*q.v.*), 1867.

**Siphonophora**, free swimming stocks (colonies) of Hydrozoa, of which the Portuguese-man-of-war (*q.v.*) is a familiar example.

**Sippar**, anc. city, Mesopotamia, formerly on the Euphrates; excavated. Sepharvaim of the O.T. (II Kings xvii. 31), whose inhab. sacrificed their children to Moloch.

**Sirach**, Jesus, son of: *see* ECCLESIASTICUS.

**Sirdar**, title given to native Indian nobles, and officially to the c-in-c. of the Egypt. Army before declaration of Egypt. independence; **S. Bahadur**, title of ceremony in India.

**Siren**, 1) (tech.) appar. for prod. (loud) signals; most usual *perforated S.*: air is blown agst. holes of a rotating disc; pitch of sound prod. depends on number of perforations and speed of rotation. 2) Sea-nymph in Homer's *Odyssey*; lured mariners to destruction with their song. 3) (Zool.) or *Mud-eel*, Amer. batrachian, c. 3 ft. long, black, eel-like, marsh-dwelling, with beak-like jaws and no hind limbs.

**Siricius**, St., Pope (384-398), showed little favour to St. Jerome, who left Rome; last attempt to revive paganism in Rome during his pontificate.

**Sirius**, brightest star in heavens, of very white colour; the dog-star; A in constell. Canis Major (*q.v.*).

**Sirocco**, hot wind, blowing over N. Mediter. coasts from Libyan desert; dry or moist, acc. to season.

**Sir Roger de Coverley**, O. Eng. figure-dance for any number; named from the courtly old Eng. gentleman depicted in Steele and Addison's *Spectator* (*q.v.*).

**Sirvente**, satirical song of 12th-13th cent. trouvères and troubadours.

**Sisal hemp**, valuable fibre obtained from the leaves of several var. of agave (Mexican and Centr. Amer. aloes).



Sisal Hemp Plantation

**Sisera**, (O.T.) general of Canaanite Kg. Jabin, defeated by Deborah and Barak; slain by Jael (Judges iv).

**Sisinnius**, Pope (708), succeeded Jn. VII.

**Siskin**, a small yellow-green finch, allied to, and resembling in habit, the goldfinch (*q.v.*); distribtd. over temperate regions of the Old and New Worlds; winter visitor to Brit. Isles.



Siskin

**Sismondi**, Jean Charles de (1773-1842), pseudon. of J. C. Simonde, Swiss pol. econ. and histor.; *New Rules of Political Economy*, 1819; *Hist. Ital. Repubs.*, 1807-18.

**Sistine Chapel**, built in Vatican (1473) for Pope Sixtus IV, with celebrated wall and roof frescoes by Michelangelo and others. **S. Madonna**, by Raphael, painted for monks of San Sisto in Piacenza (now in Dresden).



Sistine Madonna, after Raphael

**Sistrum**, in anc. Egy., percussive instr.; a kind of rattle. *See* ISIS.

**Sisyphus**, (Gr. myth.) indr. of Corinth and of the Isthmian Games; in Underworld compelled for his evil deeds to perform labour of S., i.e., to roll up a hill a rock wh. continually rolled back.

**Sitka**, nat. park (1910) in Alaska, N. Amer., 57 acres; scene of massacre of Russians by Indians, 1802; contains 16 totem poles.



Sisyphus

**Sittingbourne and Milton**, urb. dist., Kent; pop., 20,200; in fruit-growing dist.; paper mills, cement, bricks.

**Sitwell, Edith** (1871- ), Eng. poetess;

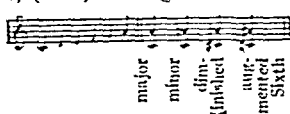
*The Mother*; her bro., **Osbert** (1892- ), writer and poet: *Triple Fugue* (1924); her bro., **Sacheverell** (1900- ), writer and poet: *Southern Baroque Art* (1924).

**Siva**, member of Hindu Trinity; *see* BRAHMA; VISHNU.

**Si vis pacem, para bellum** (Lat.), if you wish for peace, prepare for war.

**Siwa**, oasis, N. Libyan Desert, Egy.; c. 22 sq.m.; pop., 5,000 (Berbers); remains of temple of Ammon (oracle).

**Sixth**, (mus.) 6th degree of the scale and



corresponding interval.

**Sixtus**, name of 5 popes, of whom the most important, historically, are: **S. II** (257-58), restored relations with African and Eastern Chs.; martyred under Valerian. **S. IV** (1471-84), unsuccessful expd. agnst. Turks; attempted reunion of Russ. Ch. with



Bronze Figure of Siva Nataraja, 16th century



Roman Sec; patron of arts; blt. Sistine Chapel. **S. V** (1585-90), blt. dome of St. Peter's, loggia of Sixtus in Lateran, etc.

**Sizar**, undergraduate of small means at Cambridge Univ. or Trinity Coll., Dublin, selected by examination to receive pecuniary assistance while in residence.

**Size**, (tech.) material used for stopping pores of cloth, paper, wood, etc. Generally glue (*q.v.*) or other forms of gelatine, with much water.

**S.J.**, abbr. *Societatis Iesu* (Lat.), Society of Jesus: Order of Jesuits.

**Skagen**, northernmost tn., Denmark, on N. extremity of Jutland; pop., 3,945; sea bathing; some of the Brit. and Ger. sailors killed at battle of Jutland are buried in the churchyard.

**Skagerak**, arm of N. Sea, betw. Jutland and Norway; c. 150 by 75 m.; communicates by Kattegat with Baltic. **Battle of S.**, Ger. name of battle of Jutland.

**Skåne**, S. part of Sweden, comprising provs. of Kristianstad and Malmöhus; 4,320 sq.m.; pop., 755,000.

**Skat**, Ger. card-game for 3 players with pack of 32 cards in 4 suits.

**Skate**, marine fish of several species, of the ray fam.; esp. *Raia batis*, gen. distinguished from the ray by long, pointed snout, large size, and long tail; edible except in breeding season.

**Skates**, implements with a steel blade,



Sixtus IV



Skate



Skate



Roller Skate

or castors (*roller S.*), attachable to the boots, enabling the wearer to glide over ice, or polished floor (*roller-skating*).

**Skating**, sport of travelling over ice on skates. World record for 1 mile is 2 m. 12½ sec. (T. Donaghue, Hudson Riv., 1887); for 5,000 metres (3m. 188 yd.), 8 m. 21½ sec. (I. Ballingrud, Davos, 1930).

**Skating-rink**, stretch of ice for skating, or floor for roller-skating.

**Skat**, Walter Wm. (1835-1912), Eng. etymologist; one of first to examine language methodically and scientifically; *Etym. Dict. of Eng. Lang.*, 1879-81; *Principles of Eng.*

*Etym.*, 1887; etc.; ed. many publications of Early English Text Society.

**Skegness**, tn. and seaside resort, Lincs. Eng.; pop., 9,100.

**Skein**, Brit. linear meas., 120 yds.; used of cotton and silk.

**Skelth** (agric.), *rolling coulter*, sharp steel disk attached to plough (*q.v.*) instead of blades.

**Skeleton**, bony framework of human or animal body; esp. body from wh. all soft tissues have decayed or been removed. In adult man, S. consists of some 200 distinct bones, exclus. of teeth and small bones of middle ear (*see* INCUS). *See also* PLATE. Name applied to any framework, e.g., of a leaf, a building, etc. **S. key**, hook-shaped wire for pickg. locks; used by thieves.

**Skelton**, John (c. 1460-1529), Eng. poet; witty eccentric; rector of Diss, Norfolk; *Colin Clout* (satire on clergy); *Why Come Ye Not to Court?* (satire on Wolsey); etc.

**Skelton and Brotton**, urb. dist., N. Riding, Yorks, in Cleveland ironstone dist.; pop., 13,700.

**Skewbald**, colour of horse; white with irreg. patches of some colour other than black; *see* PIEBALD.

**Skewers**, short, round sticks of metal or wood with sharp point; for holding meat or birds together while cooking.

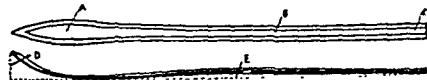
**Skew gearing**, (machin.) device for connecting two shafts which are not parallel and wh. do not intersect.

**Skewness**, 1) (statistical) term denoting that an average characteristic (e.g., height) is nearer to one of the extremes than to the other. 2) (Archit.) Peculiar structural form, as arch with eccentric apex.

**Ski**, narrow wooden snow-shoe of Scand. origin. **S.-jump**, long jump made on skis.



- A) Iron toe-pieces
- B) Strap for holding toe of boot in position
- C) Iron and heel-strap
- D) Sole



Ski

Length of ski—7 ft. 4.8 in.  
Width at A—4.2 in.  
Width at B—3 in.  
Width at C—3.3 in.  
Height of bend at D—5 in.  
Height of bend at E—½ in.

Measurements for a ski for a man about 6 ft. tall

*See also* CHRISTIANIA TURNS; STEM TURN; TELEMAR.

**Skibbereen**, mkt. tn., Co. Cork, I.F.S., on Riv. Ilan; pop., 2,600; agric., fisheries.

**Skid**, a side-slip: 1) (Aeron.), when aero-

plane has banked too little on a turn, it tends to slip sideways and outwards owing to centrifugal force; 2) in road vehicles, S. is caused by insufficient friction betw. wheels and road.

**Skiddaw**, mt., Cumb. Lake Dist., Eng., overlooking Keswick; alt. 3,054 feet.

**Skiff**, long narrow sculling-boat for one rower.

**Skin**, skin of man is composed of two parts, epidermis or cuticle, and dermis or *cutis vera*; the epidermis is superficial to the dermis. S. contains hairs, sweat-glands, and sebaceous glands. The chief functions of the skin are protection, regulation of temperature, and secretion of sweat. **S.-effect**, (elec.) tend-

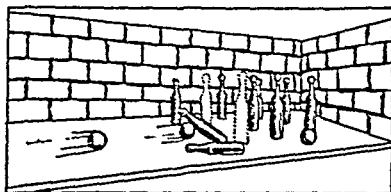


Skiff

2) (Colloq.) Name for college servant at Trinity Coll., Dublin. 3) (Sport) Captain of a team at bowls or curling (*qq.v.*).

**Skipton**, urb. dist., W. Riding, Yorks, and cap. of Craven (*q.v.*), on the upper Aire; pop., 12,400; ruined 11th-cent. cas., prominent in Civil War; grammar school, 1548.

**Skittles**, game of anc. origin, in wh. the players try to knock down a number of wooden "pins" (usu. 9 in. Eng.) with a



Skittles

weighty wooden missile termed the "cheese" from a distance of 21 ft.; object, to overturn all the pins with the fewest shots.

**Skiver**, cheap leather made from split sheepskin, used for bindings, linings, etc.

**Skodra**: see SCUTARI.

**Skoplye**, **Uskub**, cap., Yugoslav. dist. of Vardar, Macedonia, on Vardar Riv.; pop., 40,670; three bprcs.; opium, fruits, olive oil; rly. junc.; headqrs. Serbian govt. after capture of Belgrade in Dec., 1914.

**Skoptsî**, (Russ. cutters) relig. sect of Russian dissenters who practise self-mutilation. do not observe Sunday, and reject doctrine of Resurrection of Body.

**Skua**, family of sea-birds, *Stercorariidae*, allied to the gulls; characterised by beak with cere at base and hook at tip of upper half, and by strong, hooked claws. Some species visit northern Britain.

**Skull**, (anat.) cranium, or bony framework of head; see SKELETON.

**Skunk**, carnivorous mammal of N. Amer., allied to the weasels and badgers; about size of a large cat, easily recognised by its black fur, relieved on back by broad, longitudinal stripes of white, and bushy, black-and-white tail carried over back; has special anal glands for secretion of evil-smelling fluid to wh. it owes its scientific (*Mephitis*) and popular names. Nocturnal in habit and omnivorous feeder.

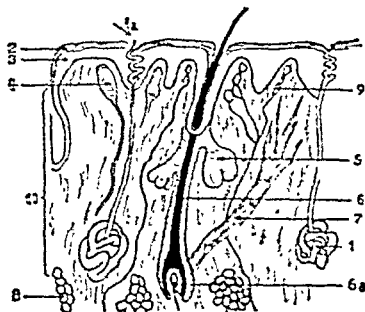


Skunk

**Skupshtina**, the Chamber of Deputies of Yugoslavia; elected by manhood suffrage in proportion of one member to every 50,000 inhabitants; max. period of office, 4 years.



Skye Terrier



Section of Skin, magnified

- 1) Sweat glands
- 2) Opening of sweat gland
- 3) Horny layer of outer skin
- 4) Malpighian layer of outer skin
- 5) Tactile corpuscles
- 6) Sebaceous glands opening into hair follicle
- 7) Hair-sheath
- 8) Hair-root (papilla)
- 9) Hair-follicle muscle
- 10) Subcutaneous fat
- 11) Capillaries (finest blood-vessels)
- 12) Connective tissue of skin

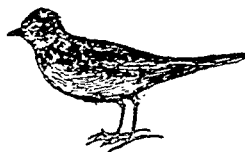
ency of an alternating current to seek the surface of a conductor. High-frequency currents (wireless, lightning in rod) hardly penetrate at all into conductors.

**Skink**, small burrowing lizard: inhabits countries bordering Red Sea and Sahara Desert; burrowing in the soil and feeding on insects. Species are found throughout the Orient, Australia, Pacific Isls., and Africa.

**Skip**, 1) (mining) iron bucket for hoisting coal; also, small truck on rails. **S.-hoist**, two Ss. attached to one another by rope passing over pulley; slide on parallel rails so that they move up and down alternately.

**Skye**, largest isl. of Inner Hebrides, Scot.; famous sheep farms; area, 643 sq.m.; rugged and mountainous interior (the *Coolins*, 3,309 ft.); pop., c. 14,000; cap., *Portree*. **S. terrier**, small short-legged breed of dog, with long body and long silky coat. (Ill. prev. page).

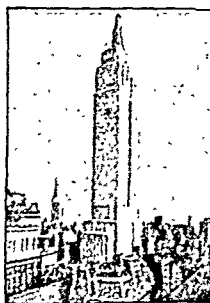
**Skylark**, common lark (*q.v.*) of open fields and downs (*Alauda arvensis*), nesting on ground; noted for its song and perpendicular ascent into air.



Skylark

**Skyscraper**, (archit.) prodigiously tall building or tower, erected in steel or concrete, with many stories (practically confined to N.Y. and large cities of U.S.A.); the summit of the Empire State Building, New York (102 stories) is 1,248 ft. above the footway. (Eiffel Tower, 984 ft.).

**Slade**, Felix (1790-1868), Eng. patron of art and collector; bequeathed greater part of collection of books, engravings, and glass to Brit. Mus.; endowed S. professorships in art at Oxford, Cambridge, and Uni. Coll., London.

Skyscraper  
Empire State Building  
New York

**Slag**, in furnace operations, gen. consists of a mixture of silicates of the alkali and earth metals, with other constituents; *furnace S.* is used to make cement, esp. for constructions under water; *S. stone* for plastering; *S. hair* or wool, for heat insulation. The *basic* or *open hearth* steel process yields a S. containing phosphoric acid, wh. is finely ground and used as manure.

**Slake**, (bldg.) to slacken lime with water for making mortar.

**Slalom**, (ski-ing) short down-hill race on winding course betw. flags set in pairs.

**Slam**, (cards) staking all the tricks in a hand (*Grand S.*), or all but one (*Little Slam*).

**Slander**, (legal) defamation of character uttered by word of mouth, but not in writing. Cf. **LIBEL**.

**Slaney**, riv., Leinster, I.F.S.; length, 60 m.; rises in *Wicklow Mtns.*, flows into Wexford Harpou; salmon fisheries.

**Slask**: see **SILESIA**, 3).

**S. Lat.**, abbr. South Latitude.

**Slate**, (geol.) hard, grey or greenish-grey shaly rock which splits easily into thin, flat layers; a plate of this used as a roofing tile; a sheet of this used for writing on, esp. formerly in schools. **S.-club**, a voluntary, unofficial benefit or thrift society to which

small sums are paid in weekly or at other regular intervals; often has a public-house for headquarters. **S.-pencil**, thin pencil of soft S., used for writing on slates.

**Slatin**, Sir Rudolf Carl von (1857-1932), Anglo-Austrian soldier; administrator in Sudan; captured by Mahdists, 1884; head of Austrian Red Cross during World War, *Fire and Sword in the Sudan*, 1896.

**Slaughter houses**, establmts. for slaughtering and cutting up cattle, pigs., etc., licensed by local authorities and subject to inspection. See **ABATTOIR**.

**Slave**, human being legally another's property, usu. protected by law but without rights. In anc. world freq. result of defeat in war, as also in Asia and Afr. until 20th cent. Among modern peoples of Eur. origin, slaves chfly. Negroes imported from Afr. Status now abolished in civilised world. **S. Coast**, stretch of coast, Upper Guinea, W. Africa, betw. the rivs. Volta and Niger. **S. Lakes**: see **GREAT SLAVE LAKE**. **S. River**: see **MACKENZIE RIVER**.

**Slavery**, state of dependence of a slave on his owner. Econ. system of olden times built up on slavery, the Ss. being usu. prisoners of war or members of subject races. Many revolts (slave wars) in conseq. of bad treatment. With the progress of econ. development in Mid. Ages came the introd. of Slave Trade from East: Negroes sold to Amer. for working in sugar and cotton plantations. Slave trade forbidden in Brit. possessions, 1807 (slaves emancipated, 1833); in Fr. possessions, 1848. Civil War in Amer. (1861-64) over the slave question (see **SECESSION**, **WAR OF**); S. abol. Jan., 1864 by decision in Congress. Campaign agst. slave traffic now directed by League of Nations.

**Slavonia**, part of Jugoslavia, betw. rivs. Danube and Save.

**Slavonians**: see **SLAVS**.

**Slavonic**: see **LANGUAGE SURVEY**, *Indo Ger. B* group.

**Slavophil**, a supporter of nat. aspirations of the Slavs; also, in Russ., Panславistic Nationalist.

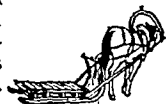
**Slavs**, Indo-Germ. race; **E. Slavs**: Russians, White Russ.; **W. Slavs**: Poles, Czechs, Slovaks, Little Russ., etc.; **S. Slavs**: Bulgarians, Serbs (Gr.-Cath.), Croats, Slavonians, Slovenes; c. 160 mill.; to them belong also the Protestant Wends (*q.v.*).

**Sleaford**, mkt. tn., Lincs, Eng.; admin. hq. Kesteven (*q.v.*); agric. centre; pop., 7,000.

**Sledge**, vehicle, moving on runners, for travel over snow, usually horse-drawn, but in Northern countries reindeer and dogs are used. See also **SLEIGH**.

**Sleeper**, (rly.) cross-pieces or ties of steel or wood to wh. rly. lines are secured by chairs (*q.v.*) or spikes.

**Sleeping car**, rly. compartment fitted with sleeping berths, for which extra charge is made. **S. partner**: see PARTNER. **S. sickness**, *Trypanosomiasis*, parasitic disease occurring in Africa, transmitted by *Trypanosoma gambiense* through bite of tsetse fly; results in sleepiness. Not to be confused with encephalitis lethargica (*q.v.*), colloq. "sleepy sickness."



Sleigh

**Sleigh, sled, sledge**, vehicle on runners, for travelling over snow or ice. **Hand-s.**, see TOBOGGAN.

**Slesvig**, S. prov. of Denmark, adjoining Schleswig-Holstein (*q.v.*); area, 154 sq.m.; pop., 166,348.

**Slezsko**: see SILESIA, 4).

**Slice**, (golf) to strike ball so that it curves to the right.

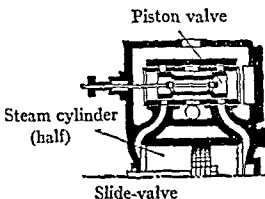
**Slide rest**, (tech.) adjustable apparatus on turning lathe for holding tool; enabling latter to be moved by hand in any reqd. direction, and also coupled to the lead-screw (see SCREW), wh. causes tool to travel uni-



Slide-rule

formly for screw-cutting. **S. rule** (math.), appar. for rapid calculation of products or quotients of numbers, and powers and roots; worked by using slider and rule (marked with logarithmic scale), wh. are moved up and down in contrary direction.

**S.-valve**, (tech.) sliding V. operating admission and exhaust of fluid; to cylinder (*e.g.*, steam in steam engine, water in pump). Often in form of circular piston (piston valve).



Piston valve

Steam cylinder (half)

Slide-valve

**Sliding scale**, schedule for automatic variation of wages, etc., in propor. to fluctuations in cost of living. Esp. important in iron and steel indus. of Great Britain. See TAXATION. **S. seat**, in racing boats; a seat sliding in grooves with motions of rower. **S. tariff**, scale of railway transport charges varying according to distance; opposite of mileage tariff. S.T. cheapens transport of produce to distant markets.

**Slieve Bloom Mountains**, range border Offaly and Leix, I.F.S.; greatest height 1,733 feet.

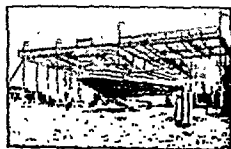
**Sligo**, 1) maritime co., Munster, I.F.S.; area, 693 sq.m.; pop., 71,400; surface varied,

with wooded hills, lakes, and bogs; grazing, fisheries. 2) Cap., Co. S., on Sligo Bay; pop., 11,000; seapt.; ruined abbey.

**Slimes**, in wet treatment of minerals, suspensions containing the mineral in finest state of division, as opposed to the "sands," or coarser pulp.

**Slip, slipway**, 1) (naut.) inclined plane for launching ships; also a marine rly. on wh. operates a structure that can haul ships out of the water; see SHIPYARD. 2) (Hydro-dynam.) Loss in drive of a propeller due to fact that the air or water gives way.

In elec. motors (multiphase), diff. betw. actual speed and synchronous speed of rotor. 3) (Ceramics.) Thin mixture of clay, glaze material, etc., and water. **S.-ring**, in elec. machines, insulated rotating metal ring on wh. a brush or brushes bear, carrying current to or from the rotating part.



Slipway

**Sliver**, (text.) rope-like product of carding and similar textile machines, consisting of fibres smoothed out and laid parallel.

**Slivovitz**, liqueur made of plums distilled in spirit.

**Sloane**, Sir Hans (1660-1753), Brit. physician and naturalist; library bequeathed to nation (nucleus of Brit. Mus. libr.).

**Sloe, blackthorn**, *Prunus spinosa*, thorny shrub, with white blossom, grows in hedges; fruit used in cordials. **S. gin**, liqueur made from juice of sloe (fruit of blackthorn), mixed with gin.

**Sloop**, small auxiliary vessel with oars and sail (one-masted); also vessel for coastal navig., up to 40 tons.

**Sloths**, a small family of Edentates, ind. in S. and Centr. Amer.; entirely arboreal in habit, hanging back-downward from branches of forest trees, on which they dwell. Long, slender limbs covered with greyish-brown, shaggy fur, and terminating in huge hook-like claws. The hair is often entirely covered by a growth of microscopic green alga (Protooccus), which helps to increase resemblance of the animal, when at rest, to a mossy-covered growth or swelling of the tree branch.



Sloth

**Slough**, urb. dist., Berks, Eng.; engineering and motorcar works; nurseries and mkt.-gardens; pop., 33,500.

**Slovakia**, E. prov. of Czechoslovakia; 8,908 sq.m.; pop., 3,331,000 (Slovaks, Ruthenians, Poles, c. 700,000 Magyars, c. 150,000 Germans); mountainous, flat only in S.W. (valls. of the lower Waag, Nitra,

Danube); much forest; minerals include gold, silver, petroleum, iron, lead; numerous mineral springs; grain, maize, hemp, fruit, wine, tobacco; cattle breeding; cap., *Bratislava*.

**Slovaks:** see SLAVS.

**Slovene:** see SLAVS and LANGUAGE SURVEY, *Slavonic*.

**Slow-loris:** see LORIS.

**Slub,** (textiles) drawn-out string of loosely laid fibres ready for spinning.

**Slug,** 1) (zool.) name for several species of gastropod molluscs without external shell; exudes a slimy mucus and feeds on garden plants, etc.; see GASTROPODA; MOLLUSC. 2) Small, roughly shaped lead bullet, used in old shotguns, toy pistols, etc. 3) (Typog.) Line of type produced by linotype or similar composing machine.

**Sluice,** 1) valve for regulating flow of liquids in open channels; slides or gates operated by screws, levers, etc. 2) Inclined trough used for washing gold, etc., from ore.

**Slump,** (Stk. Exch.) sharp fall in prices and volume of business. Ant.: boom.

**Sluys,** small tn. Zeeland, Holland, on Belg. frontier; former port (roadstd. silted up); scene of defeat of Fr. fleet by British, 1340.

**Sm,** (chem.) symbol of samarium.

**Smack,** (naut.) small fishing-boat, usu. sloop-rigged.

**Smaland,** region of S. Swed., including Jönköping, Kronoberg, and Kalmar; 11,960 sq.m.; pop., 600,000.

**Small-arms,** firearms that can be carried: rifle, carbine, pistol, revolver, etc.

**Small-holding,** plot of land let on spec. terms to agric. worker for cultivation and exploitation. Existed in Eng. in Mid. Ages; revived in 19th century. *S.H.Act* (1892) empowered county councils to purchase land, to be re-purchased in small plots (not exceeding 50 acres) on instalment system. *Acts* of 1916-18 provided for S.Hs. for ex-Service men, and encouraged establishment of "colonies" where holders could work in co-operation. See also ALLOTMENT. **S.-pox,** highly dangerous and infectious disease, in wh. pustules are formed on skin, wh. leave a deep, permanent scar. Rarely occurs in countries where vaccination (*q.v.*) is compulsory.

**Smalt,** deep blue pigment produced by fine grinding of glass coloured by cobalt.

**Smart,** Sir George Thomas (1776-1867), Eng. composer and conductor. Appointed composer to Chapel Royal, 1838.

**Smelling salts,** usu. solid ammonium carbonate, covd. with volatile oils dissolved in ammonia; or sponge impregnated with perfumed ammonia or acetic acid.

**Smelt,** small esturine fish of the salmon family, rarely exceeding 12 in. in length; light olive green on back, silvery iridescent colours on sides and belly. Frequents the mouths of rivers in N. Europe and N. America. Spawns in spring, ascending river to near limit of the rise of the tide.



Smelt

**Smelting,** (metal) recovery of metals from their compounds (dressed ores) by use of heat and reducing agents, gen. carbon in form of coke, wood, charcoal, etc. *See* FURNACE; ORE-DRESSING; ROASTING.

**Smetana,** Friedrich (1824-84), Czech composer. Opera, *The Bartered Bride*; Nat. Festival Tableau, *Libuse*; Cycle of Symphonies, *My Fatherland* (inclds. *Vltava*).

**Smethwick,** co. bor., Staffs, suburb of Birmingham, pop., 84,400; manuf. glass, iron, machinery, safes.

**Smilax,** 1) see SARSAPARILLA. 2) S. African vine, cultivated in Eur. for its beautiful foliage.

**Smiles,** Samuel (1812-1904), Scot. journalist, biographer, and social reformer; *Self-help*, 1859.

**Smillie,** Robt. (1857- ), Brit. polit. and Labour leader; pres. of Scot. Mineworkers Assoc., 1894-1918; 1921- ; pres. of Miners' Federation of Gt. Brit., 1912-21; conducted coal-strike, 1912, securing national minimum wage; member of Sankey mines commission, 1919; M.P., 1923-29; *My Life for Labour*, 1924.

**Smirke,** Sir Robt. (1781-1867), Eng. archit.; R.A., 1811; designed Brit. Mus. reblt. Covent Garden, 1809; erected dining hall and library, Inner Temple; restored York Minster.

**Smith, Adam** (1723-90), Eng. pol. econ. and moral philos.; pubd. lectures, etc., and *The Wealth of Nations* (1766). *S., F. E.* see BIRKENHEAD, LORD.

**S., John** (1580-1631), Brit. adventurer and colonist; served as mercenary soldier on Continent, 1596-1605; joined in expedn. to found Virginia, 1606; taken prisoner by Indians and released 1607 (see POCAHONTAS); head of Virginian Colony, 1608; explored Virginian hinterland and coastline, 1608-14; pub. *Travels*, 1630; etc.

**S., Joseph** (1805-44), Amer. fndr. of Mormonism; pub. *Book of Mormon*, wh. he claimed to have miraculously discovered and translated; organised Church of Jesus Christ of Latter Day Saints (*q.v.*); shot by mob while imprisoned at Carthage, Illinois. *S., Sydney* (1771-1845), Eng. divine; joint-fndr., and 1st ed. of *Edinburgh Review*; lecturer on moral



Adam Smith

philosophy, Roy. Instit.; canon of St. Paul's, 1831; *Letters of Peter Plymley*, on Catholic Emancipation and Parliamentary reform, 1807-08; *Will and Wisdom*, 1856. **S., Wm. Hy.** (1825-91), Eng. Cons. polit.; 1st Ld. of Admiralty, 1877-80; Sec. for War, 1885-86; 1886-87; 1st Ld. of Treasury and leader of Hse. of Com., 1887-91; partner of newspaper-distributing firm of W. H. Smith and Son. **S., Wm. Robertson** (1846-94), Scot. Biblical scholar and orientalist; Hebrew prof. at Free Church Coll., Aberdeen, 1870, but removed after trial for heresy as result of his views on Biblical criticism; one of O. T. revisers, 1875; joint-ed. of *Encyclopædia Britannica*, 1881, ed. 1887; prof. of Arabic, Camb., 1883-86, 1889-94; Univ. librarian, 1886-89; pubd. *Old Testament in the Jewish Church*, 1881; *Kinship and Marriage in Early Arabia*, 1885; *Religion of the Semites*, 1889.

**Smith-Dorrien**, Sir Horace Lockwood (1858-1930), Brit. gen.; com. II Army, 1914 (Mons Retreat, Le Cateau); c-in-c. Ger. E. Africa campaign, 1915; Gov. and c-in-c. Gibraltar, 1918-23.

**Smithfield**, dist. in City of London, site of former St. Bartholomew's Fair (q.v.); scene of mediaeval tournaments and of Cath. and Prot. Martyrdoms ("Fires of S.") in 16th cent. London Central Markets (coverg. c. 6 ac.) erected 1855, princ. of wh. is Meat Market. See ST. BARTHOLOMEW'S HOSPITAL.

**Smith's Forge**, open fire with forced draught from bellows or compressed-air supply, develops intense heat; used for heating iron to be forged, esp. by blacksmith.

**Smithsonian Institution**, Washington, U.S.A., fndd. 1846 for the "increase and diffusion of knowledge" by bequest of James Smithson (1765-1829). Has inspired many of the chief national scient. enterprises in U.S.A.

**Smith Sound**, Strait betw. Prudhoe Land, Greenland and Ellesmere Isl., leading into Baffin Bay.

**Smoke**, solid or liquid matter dispersed in very fine particles through a gas; analogous to colloidal solution. Particles show Brownian movement (q.v.) and are gen. electrically charged. Smoke scatters light, the more the shorter its wave-length; hence light-source appears red or yellow to eye, while beam observed from side appears blue. Particles of solid s. act as nuclei for condensation of vapour; hence London fog is formed by drops of water condensed on s. particles. *S. prevention* in towns has made much progress, in spite of continued use of domestic open fire. City of London now receives nearly 3 times as much sunshine as 40 years ago, but still only half that at Kew. **S. in warfare**, conceals movement of troops, ships, guns, etc., by means of *S.-screens*. **S. helmet**, protective head-dress worn by firemen; air supply obtd. from a vessel carried on

the back. **S.-screen**, artificial, protec. measure in warfare; positions, troops, or ships rendered invis. by dense chemical smoke.

**Smokeless powder**, explosive which generates much less smoke in burning than black powder. Gun-cotton is dissolved in acetone or ethyl acetate, and solvent driven off, leaving substance wh. explodes much more slowly than gun-cotton. See CORDITE; MELINITE.

**Smoky quartz, S. topaz**: see CAIRNGORM.

**Smolensk**, cap. of prov. S., Europ. Russia (c. 22,150 sq.m.; pop., 2,358,705), on Riv. Dnieper; pop., 78,500; airt. French victory, 1812.

**Smollett**, Tobias George (1721-71), Eng. humorous novelist: *Roderick Random*, 1748; *Peregrine Pickle*, 1751.

**Smuggling**, successful evasion of customs duties or prohibition laws by clandestine import or export of goods amenable to such duties or laws (see CONTRABAND). Rife in Eng. in 18th and early 19th centuries.

**Smut**, (agric.) species of fungi with black spores; attacks cereals and other grasses.

**Smuts**, Jan Christiaan (1870- ), S. African statesm., gen., and philos.; com. Boer forces in 2nd Boer War; Brit. forces in E. Africa, 1916; rep. S. Africa at Imp. War Confer., 1917 (declar. on Brit. Commonwealth of Nations); Union Pr. Min., 1919-24; deleg. to World Monetary Conference, 1933; *Holism and Evolution*, 1926.

**Smyrna, Izmir**, Turk. vilay. (4,830 sq.m.; pop., 532,000), Asia Minor, and seapt. on Gulf of S., in the Aegean Sea; pop., 154,000; trading centre of the Levant. Partially destroyed by fire in 1922 and by earthquake in 1928. Important city since colon. by Aeolians in 7th cent. B.C. Turkish since 1424, except for Greek occupation, 1919-22.

**Smyth**, Dame Ethel Mary (1858- ),



Smollett



General Smuts



Smyrna Harbour



Dame Ethel Smyth

Eng. composer; operas: *The Wreckers*, 1909; *The Boatswain's Mate*, 1916.

**Sn**, (chem.) symbol of tin (Lat. stannum).

**Snaefell**, mtn., highest point Isle of Man (2,034 ft.); elec. railway.

**Snail**, air-breathing shelled mollusc, mainly of vegetarian habit; terrestrial and aquatic; eyes on end of retractile tentacles in many species. Vast number of forms with almost world-wide distribution, of which the Garden *S.* (*Helix*) is typical; the **Vineyard S.** and **Roman S.** are edible.



Snail

**Snake**, scaly reptile crawling without the aid of limbs, though certain species (the Boas) retain vestiges of hind-legs in the shape of two spur-like projections in the region of the vent; lives on ground, among branches of trees, and in water; carnivorous, killing its prey by crushing (pythons and boa constrictors) or by poison injected into victims by act of biting or striking with poison fangs (adder, rattlesnake, cobra, etc.). May be viviparous or oviparous. World-wide distribution attaining maximum development, both in size and numbers, in humid tropical zones. See SEA-SNAKES; VENOMOUS SNAKES; VIPER; WHIP-SNAKE, etc. **S.-root**, popular name for various plants, roots of wh. are believed to be antidotes for snakebites; esp. mungoose plant (*Ophiophriza mangora*) of E. Indies, and Virginian (or Red River), seneca and black snake-roots.

**Snake River**, left trib. (940 m.) of Columbia Riv., flows from Yellowstone Park, through Idaho.

**Snapdragon**, 1) garden plant of genus *Antirrhinum*. 2) Christmas game in wh. raisins are snatched from a bowl of burning spirit.



**Snell**, Willebrord (1591-1626), known as Snellius, Dut. astron. and mathematician; disc. law of refraction, 1621.

**Snider**, first breech-loading rifle used in Brit. Army, 1866-70. Hinged breech-block, cal., .577 in.

**Snipe**, small, wading bird of the order *Limicolae*, common among bogs and marshes throughout Gt. Brit. and Ireland, whole of Europe and Asia. In spring bird produces a curious bleating or drumming sound, which is apparently caused by two stiff, peculiarly-shaped, outer tail-feathers as the bird swoops through the air in courtship display flight.



Snipe

**Snooker, Snooker's pool**, combination of pool (*q.v.*) and pyramids (*q.v.*); 6 pool balls of diff. colours are used, with

pyramid of 15 reds; these are pocketed by means of the white ball.

**Snorri Sturlason** (1178-1241), Icelandic histor.; *Edda*; *Heimskringla*.

**Snow**, ice-crystals formed out of the water-vapour of the air in temperatures below 32° F., and uniting to form snowflakes.

**Snowball tree**: see GUELDER ROSE. **S.-berry**, *Symphoricarpos racemosus*, ornamental shrub from N. Amer., with small, reddish bell-flowers and white berries.

**Snow-blindness**, temporary blindness which occurs through the harmful effect of ultra-violet rays of sun reflected from snow on to the eyes. Prevented by the use of spectacles with coloured or darkened lenses.

**S.-bunting**, bird of finch family, breeding in Polar regions and frequenting northern and mountainous regions of Europe, Asia, and America. **S. chains**, chains placed round rubber tyres of a car, to prevent skidding on ice-bound roads. **S.-drift**, heap or bank of snow, drifted or blown together by the wind. **S.-drop**, *Galanthus*, especially *G. nivalis*, bulbous plant with small, white bell-like flowers.

**S.-ice**, unsafe, frozen crust of snow and slush. **S.-insect**, a small, wingless insect of primitive type; able to exist in high, snow-covered altitudes. **S.-line**, 1)



Snowdrop

altitude above wh. snow never melts; line of perpetual snow. 2) Limit of the area N. and S. of the Equator within wh. snow never falls. **S.-plough**, implement, with wedge-shaped frames, for removing snow from roads, usually pushed or towed by mechanical means. Also in form of **S.-shovel vehicle**, centrifugal snow-machine with revolving snow-shovel or blade and centrifugal bellows. **S.-shoe**, wooden frame laced with strips of leather, attached to feet for walking over snow; cf. SKI.

**Snowden**, Philip, 1st visct. (1864- ), Brit. statesm.; chmn. Ind. Lab. Party, 1903, '17; Chanc. of Exch., 1924, '29, '31 (Nat. Govt. from Aug.-Nov.); Lord Privy Seal and Viscountcy, Nov., 1931.



Snowden

**Snowdon**, group of mtns., N. Wales; Y *Wyddfa* (3,560 ft.), highest peak in Eng. and Wales; 10 m. E. of Carnarvon (mountain rly. from Llanberis). Dist. known as *Snowdonia*.

**Snuff**, tobacco finely ground, fermented, and made aromatic by various admixtures; inhaled thr. the nose.

**Snyders**, Frans (1579-1657), Flem. painter; collab. with Rubens; *Stag-Hunt*.

**Soane**, Sir John (1753-1837), Eng. architect, designed, Bank of England; R.A., 1802, and Prof. of Archit. to Acad., 1806. **S.'s Museum**, London, collection of books,

Italians, resulting in grant of franchise to all Italy S. of Po.

**Socialism**, political-economic theory, advocating total or partial abolition of privately owned capital and competitive industry, in favour of ownership by centr. democratic authority (*State S.*), or by the workers (*syndicalism*), of all instruments of production (land and capital), as a means to more equitable distribution of wealth. **HISTORY:** Theory of S. is as old as Plato's *Republic* (4th cent. B.C.), but name was first used in 1827, esp. of theories of Robt. Owen, who with C. Hall (Eng.), Saint-Simon, Fourier, Proudhon, and Blanc (Fr.) developed theory of S. during 1st half of 19th century. Modern *scientific S.* dates from pub. of Marx's *Communist Manifesto* (1847) and *Capital* (1867) (see **MARXIAN THEORY**). *Mod. developments—England:* Social Democratic Fed. (Marxian), 1884; Fabian Society (constitutional), 1884; I.L.P. for propagation of S. among trade unionists, 1893; first soc. M.P. (Keir Hardie), 1892; Labour party, fndd. 1900, officially adopted S., 1914; 1st Lab. Govt. (without indep. maj.), 1924–26; 2nd, 1929–31. *Germany:* Soc. Democratic party fndd. 1875, fl. despite Bismarckian policy; adopted Marxian programme (Erfurt), 1891; assumed power after revol. of 1918, but were unable to carry out full S. programme. *France:* Rival Socialist parties coalesced, 1905, and adopted Marxian programme, but trade unions remained syndicalist in policy. *Russia:* see **BOLSHEVISM**. *Other European Countries:* Organised S. has gen. adopted the Marxian programme. *U.S.A.:* Soc. Lab. party (1877) superseded by Soc. Dem. party, 1898 (called Socialist p. since 1901); S. is weaker in U.S.A. than in any other indust. country, owing largely to opposition of trade unions organised in Amer. Fedn. of Labour. *Australia:* Aust. Lab. Fed. formed, 1890; Labour Party held office in Commonwealth Parlt. 1904 and 1908; S. has achieved more polit. success in Austr. than in any other country. See **BOLSHEVISM**; **COMMUNISM**; **FABIAN SOCIETY**; **GUILD SOCIALISM**; **MARXIAN THEORY**; **SYNDICALISM**.

**Socialisation:** see **NATIONALISATION**.

**Société anonyme**, abbr. S.A., Fr. designation for joint-stock company (*g.v.*). **S. Générale**, Fr. bank, fndd. 1864, "pour favoriser le développement du Commerce et de l'industrie en France"; liabilities (28 Feb., 1933), fr. 12,508,418,767.

**Society**, 1) system of organised communities formed for purposes of mutual protection, govt., etc. 2) A partic. grade or stratum of a community characterised by similarity of aims, mental culture, manners, etc., gen. applied to that section distinguished by birth, educ., refinement, and wealth; 3) group of persons forming an association united for

a definite purpose, e.g. scientific or artistic advancement, relig. propaganda, etc.

**Society Islands, Tahiti Isls.**, archipelago, Polynesia, S. Pacific, belonging to France; 636 sq.m.; pop., 25,575 (3,358 Eur.); mountainous (7,340 ft.); largest isl. *Tahiti*; cap., *Papeete* (on Tahiti); exports copra, phosphates, tortoise-shell.

**Society of Jesus:** see **JESUITS**.

**Sociology**, study of nature and comparative history of human society. Studied by Plato and Aristotle (4th cent. B.C.), S. was revived in 17th and 18th cents. by Hobbes, Locke, Rousseau, etc., but first took rank as a science in late 19th cent. with *Positivism* of Comte, *Utilitarianism* of Bentham and Mill, and *evolutionary system* of Spencer, wh. regards Society as an organism evolving towards higher efficiency through "natural selection."

**Socotra**, isl., Indian Ocean, Brit. since 1886; 1,520 sq.m.; pop., c. 12,000; adm. by Aden.

**Socrates** (c. 469–399 B.C.), Athenian philos. and teacher; his doctrines preserved by Plato (*Dialogues*) and Xenophon (*Memorabilia*). Condemned to death on political charge. **Socratic method**, argument and proof by means of question and answer. **Socratic irony**, assumption of ignorance by questioner, the questioned being thereby led into contradictions and display of his own ignorance.

**Soda**, see **SODIUM**. **S-water**, aerated or carbonated (carbon dioxide under pressure) table-water; may contain a little sodium bicarbonate.

**Sodalite**, (min.)  $\text{Na}_4(\text{AlCl-Al}_2(\text{SiO}_4)_3$ , occurs as colourless crystals on Mt. Vesuvius.

**Soddy**, Frederick (1877– ), Eng. chemist; esp. research in radio-activity; Nobel Prize (Chem.), 1921; *Cartesian Economics*, 1922; *Inversion of Science*, 1924.

**Söderblom**, Nathan (1861–1931), Swed. theolog.; Abp. of Uppsala, 1914; leader of Universal Church Confer., Stockholm, 1925; Nobel Peace Prize, 1930; *Religions of the World*.

**Sodium**, (chem.) element, sym. Na, a.t. wt., 22.997; sp.gr., 0.978; m.p., 97.8°C. White, soft alkali metal, found only in combn., e.g., as chloride in sea and salt deposits and as nitrate in



Socrates



Sir F. Soddy



Söderblom



Chile saltpetre (*q.v.*); obt'd. by electrolysis of fused caustic soda (NaOH); decomposes water with evolution of hydrogen gas and formation of NaOH. Chf. compounds: *Chloride* (NaCl), common, or rock salt; *carbonate* (Na<sub>2</sub>CO<sub>3</sub>), washing soda, formerly made by the Leblanc process, now by the Solvay method, in wh. brine is saturated with ammonia and carbon dioxide, forming *S. bicarbonate* (NaHCO<sub>3</sub>), wh. is heated to form normal carbonate, used for scouring and soap manuf.; *bicarbonate* used in med. as antacid for indigestion; *caustic soda*, hydroxide, used in soapmaking; *S. sulphate* (Na<sub>2</sub>SO<sub>4</sub>) occurs nat. in small quant. and is made by double decomposition of S. chloride and magnesium sulphate; known as *Glauber's Salt* and used in med. as a purge; *S. thiosulphate* (Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> "hypo") used in photog. as fixing agent; *S. perborate* (NaBO<sub>3</sub>) yields oxygen with water; used in bleaching. **S. Iodide**, NaI, compound of iodine and sodium used in medicine; added in propor. of 1 in 100,000 to common salt to prevent goitre in districts so poor in iodine that insufficient quantity is obt'd. by the human body.

**Sodoma**, Bazzi, or Razzi, II (1477-1549), Ital. painter; *Scouring of Christ* (Siena); others in Nat. Gall., London.

**Sodom and Gomorrah**, (O.T.) two cities of Plain in neighbd. of Dead Sea; prob. inhabd. by Canaanites; destroyed owing to homosexual practices of inhabitants (Gen. xix).

**Sodor and Man**, Ch. of Eng. bpric., incl. Isle of Man and adjoining isls.; until 1334 included Hebrides.

**Soffit**, (bldg.) underside of an arch, recessed window-opening, or gallery.

**Sofia**, cap. of Bulgaria, at S. foot of Mt. Vitos; pop., 223,000; cathed.; mosques; museums, univ.; rly. centre.

**Soft soap**, (med.) *sapo mollis*, prep. from olive oil, potassium hydroxide, and water. Used in prep. of liniments and shampoos. See OPODELDOC.

**Sogne Fjord**, inlet of the Atlantic, W. coast of Norway; 85 m. long; rocky sides (very steep) to 3,900 ft.

**Soho**, London, foreign quarter, S. of Oxford St.; noted for restaurants and "night clubs."

**Soi-disant** (Fr.), self-styled.

**Soil pipe**, (bldg.) pipe to carry away foul water in drainage.

**Soirée** (Fr.), evening gathering, party.

**Soissons**, city, Fr., dépt. Aisne, on Riv. Aisne; pop., 17,900; 12th-cent. cathed.; fortifications; Rom. remains; iron-foundries, oil mills. **Battle of S.**, victory of Clovis over the last Rom. gov., Syagrius, A.D. 486. In 751 the last Merovingian kg. was deposed at S. in favour of Pippin the Short. During World War, S., being close to the battlefield

of *Chemin des Dames*, was severely damaged. Brit. nat. memorial to 3,987 missing.

**Sol**, 1) (Rom. myth.) sun-god, sun. (Gr., *Helios*). 2) See COLLOID.

**Solanaceae**, widely distributed fam. of plants, embracing many hundreds of var., the nightshades (*q.v.*). *Solanum tuberosum*, the potato.

**Solan goose**, name for the gannet (*q.v.*).

**Solar constant**, (phys.) total energy of heat and light radiation reaching the earth from the sun p. sq. centim. p. min.; abt. 2 small calories (*q.v.*); on earth's surface it is less owing to absorption of heat by atmosphere. **S. cycle**: see CYCLE. **S. plexus**, network of nerves situated behind the stomach; a blow over the region of the S.P. causes shock to entire nervous system.

**Solar prominences**, flames rising to height of hundreds of thousands of miles above surface of sun; visible at eclipse of sun and by means of spectroscopy; classified as *eruptive* and *quiescent*. **S. System**, system of planets, incldg. earth, satellites, comets, etc., of wh. sun is centre. See SUN; also ASTRONOMY; PLANET; SOLSTICES. **S. time**, *mean time*, computation of time based on a day of constant length consisting of 24 equal hours and indicated by clocks; *apparent s.t.*, based on actual time from one transit of sun across given meridian to the next, as shown by sundial; length of mean and apparent solar day may differ by as much as 16 minutes. Cf. EQUATION OF TIME.

**Solario**, Antonio (1382-1455), called "Zingaro"; Neapolitan painter; orig. a blacksmith; *Venetian Senator*, and others in Nat. Gall., London.

**Solder**, (tech.) cert. metal alloys: **soft S.** = lead and zinc, **hard s.** = copper and zinc, **silver s.** = silver, zinc and copper; used in *soldering* (joining metals). Heating of the metal surfaces and of S. is done with *soldering bits* or *lamps* in the case of soft S.; or with a blowpipe in the case of hard solder. *Flux* (*q.v.*) used to dissolve dirt and oxide from surface of metal; chloride of zinc, rosin, etc., for soft S., borax for hard.

**Sole**, genus of edible marine flat-fishes, *Solea*, characterised by separation of median fins and ctenoid scales; common S., *Solea vulgaris*, distinguished according to place of capture, e.g., Dover, Brixham. The *lemon sole* (*q.v.*) is variety of plaice.

**Sole Bay**: see SOUTHWOLD.

**Solenoid**, cylindrical coil of insulated wire with hollow centre; often with movable iron rod wh. is sucked in when elec. current is passed thr. coil.

**Solent**, strait, S. Eng., sep. N.W. Isle of



Sole

Wight from Hants; width 2-5 m.; yachting.

**Solfatara**, volcanic outlet of sulphurous gases; see FUMAROLE.

**Solfeggio**, (mus.) singing exercise on sol-fa syllables.

**Solferino**, vill., prov. of Mantua, It., on L. Garda; pop., 1,600. Victory of Fr. and Piedmontese over Austrians, 1859.

**Solicitor**, lower branch of legal prof., transacting gen. legal business and having rt. of audience in county crts. and police courts. See BARRISTER; WRITER TO SIGNET. **S.-general**, second legal adviser to govt. in Eng.; also in Scot. Title sim. used in other Eng.-speaking countries. See ATTORNEY-GENERAL; ADVOCATE.

**Soliloquy**, speech delivered by character repres. alone on stage, purporting to be thoughts or meditations spoken aloud as though alone.

**Soliman**: see SULEIMAN.

**Solingen**, mfg. tn., Rhine Prov., Prussia, on Riv. Wupper; pop., 140,250; iron and steel; cutlery centre.

**Solipsism**, theory that the individual mind cannot know anything beyond its own series of sensations and ideas, and that there can be no legitimate inference from these to an external world.

**Solitaire**, game for one player in which 32 marbles are moved about on a board with 33 holes; object being to leave only 1 marble on board.

**Solnhofen**, Bavarian vill., famous for quarry of lithographic stone, and for the fossil *Archaeopteryx* (q.v.) found there.

**Solo**, alone; mus. comp. for one voice or one instr.; solo performance. **Soloist**, single player or singer as opposed to *ensemble* choir and orchestra. **S. whist**, card-game for 4 players in wh. the object is either to make 8 tricks with a partner, 5 or 9 out of own hand, or to avoid making any tricks ("misère").

**Sologub**, Feodor (1863-1927), pseudon. of F. Kuzmich Tchernikov, Russ. author: *The Little Demon*, 1907.

**Solomon**, (O.T.) son of David and Bathsheba, Kg. of Israel (c. 970-33 B.C.); court famous for its magnificence; erected Temple and many other bldgs.; renowned for his wisdom. Great part of wisdom lit. of Bible attrib. to S.; *Song of S.*: see CANTICLES. **S.'s seal**, (bot.) *Polygonatum multiflorum*, member of lily family; grows c. 2 ft. high, with small clusters of white drooping flowers.

**Solomon**, Solomon Joseph (1860-1927), Brit. artist; portraits and historical paintings; A.R.A., 1896; R.A., 1908; pres. Royal Soc. Brit. Artists, 1918.



Solomon's Seal

**Solomon Islands**, volcanic group in New Guinea.

**Brit. S. Isls.**,

15,000 sq.m.;

pop., 90,700

(Papuan and

Malays; 500

whites). *Buka*

and *Bougain-*

*ville*, two north-

ernmost isls.;

4,100 sq.m.;

pop., 60,000; (c.

1899-1914; under

Austral. mandate

1921.

**Solon** (c. 600 B.C.), Athenian statesman and legislator; introd. econ., social, and constitutional reforms.

**Solothurn**, canton N.W. Switzerland; 305 sq.m.; pop., 143,000; crossed by *Sura* *Altns.*; drained by Riv. Aar; v. densely populated; agric., dairy-farming, watches, textiles; has belonged to Swiss confederacy since 1481; cap., *Solothurn*, on Riv. Aar; pop., 14,000; watch-making.

**Solstices**, the 2 points on the ecliptic at wh. the sun appears to stand still before it reverses its motion in declination (g.e.); middle pts. of N. (summer) and S. (winter) sections of ecliptic with reference to celestial equator; through wh. sun passes c. June 22nd and December 22nd.

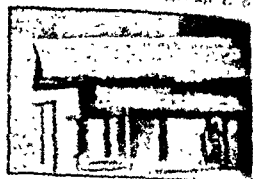
**Solution**, distrib. of 1 matl. in another in molecular subdivision, esp. of a solid in a liquid (called the *solvent*); but also of two solids, e.g., metal in metal (alloy), or of two liquids (e.g., oil in alcohol) or a gas in a liquid. Normally, if a given liquid is brought into thorough and continual contact with a solid, liquid, or gas, it takes up a limited amount only of the substance; this amount is called the *solubility* of the substance, and usually increases with temperature in the case of solids and liquids, and decreases with gases. Solid solutions usu. have similar limit, but liquids and solids may also be miscible in all proportions, as alcohol and water, or solid mercuric bromide and iodide. The freezing point of a soltn. is lower, and b.p. higher, than pure liquid (Raoult's Law); hence sea-water, and glycerine and water (in car radiators), freeze at lower temp. than pure water.

**Solutré**, cave nr. Mâcon, Fr., dépt. Saône-et-Loire; discoveries here of characteristic flint implements have given name to **Solutrian Period**, a divn. of Upper (Later) Palaeolithic Period (q.v.); betw. Aurignacian and Magdalenian periods (qq.v.).

**Solvay**, Ernest (1838-1922), Belg. chemist; inv. *Solvay process* for making *soda* (q.v.).

**Solvitur ambulando** (Lat.), the problem is solved by walking; the difficulty will settle itself when put to a practical test.

**Solway Firth**, inlet of Irish Sea, separates S.W. Scot. from N.W. Eng.; length, 50 m.;



Native House, Solomon Is.

width, 2-33 m.; coasts flat (except nr. Criffel); bays include Nith estuary, Morecambe and Allonby bays; rivs. Nith, Annan, Esk, Sark (frontier riv.), Eden, Derwent; dangerous tides.

**Solyman** the *Magnificent*: see **SULEYMAN**.

**Somali**, Hamitic inhab. of Somali Penins., E. Afr.; c. 2 mill., cattle-breeders, nomads. **Somali**land, E. penins., Africa, betw. Gulf of Aden and Ind. Ocean; desert plateau (3,500 ft.); divided into **Brit. S.** (68,000 sq.m.; pop., 335,000; cap., *Berbera*) and **Fr. S.** (q.v.), in N., on Gulf of Aden; and **Ital. S.** (with Jubaland; 220,000 sq.m.; pop., 900,000; cap., *Mogadishu*), on E. coast. In the interior is Abyssinia (q.v.).

**Somatic**, pertaining to the body, physical; *Ant.: mental, psychical*. **Somatology**, study of the bodily structure of individuals, races, etc.

**Sombart**, Werner (1863- ), Ger. pol. econ., sociolog., and histor.; *Modern Capitalism*, 1902.

**Sombor**, tn., Voivodina, Jugoslavia; pop., 32,000; flour-milling.

**Sombrero**, wide-brimmed hat, gen. made of felt. Worn in Sp. and Span. S. America.

**Somersby**, vill., E. Lincs, 6 m. N.E. of Horncastle; b.-place Tennyson.

**Somerset**, Earls and Dukes of, titles in peerage of England: **John Beaufort**, 1st E. of John of Gaunt and Catherine Swinford, s. of E. (c. 1373-1410), succ. in turn by 3 sons: **Henry**, (d. 1418); **John** (1404-44), cr. E. of Kendal, and Duke of S., 1443, these titles dying with him, and **Edmund**, 4th E. (1404-55), cr. 2nd duke, 1448; his s., **Henry**, 3rd duke (1436-64), exec. by Edw. IV, after battle of Hexham; his bro. **Edmund**, 4th duke (c. 1438-71), exec. after battle of Tewkesbury, when hse. of Beaufort became extinct. **Edward Seymour** (c. 1506-52), s. of Sir John, who claimed descent from a Seymour, or St. Maur, a follower of William I, cr. Duke of S. and Protector, 1547; in same yr. defeated Scots at Pinkie; exec. at instigation of Duke of Northumberland; his g.g.s. **William**, (1588-1660), restored to title at *Restoration*, a few weeks before his death; his g.s. **William**, 3rd duke (1651-71), was succ. by **John Seymour** (c. 1628-75), youngest s. of 2nd duke; shot by Genoese named Botti; succ. by his cousin **Francis Seymour**, 5th duke (1658-78); his bro., **Charles**, 6th duke (1662-1748), m. Elizabeth Percy, heiress of duke of Northumberland; master of horse, 1702; supporter of William of Orange, and of Hanov. Successn.; his s. **Algernon**, 7th duke (1684-1750), d. without issue; dukedom passed to distant cousin, **Sir Edward Seymour**, Bt. (1695-1757), of Berry Pomeroy, Devonsh., descendant of Protector; his g.s. **Edward Adolphus**, 11th duke (1775-1855), mathematician and scientist; his s. **Edward**

**Adolphus**, 12th duke (1804-85), 1st. Ld. of Admiralty, 1859-66; cr. Earl St. Maur of Berry Pomeroy; his bro. **Algernon**, 14th duke (1813-94), was succ. by his s. **Algernon** (1846-1923), and he by his cousin, **Edward**, 16th duke (1860- ), Inspector of Army Ordnance Service, 1918-20.

**Somerset**, Isabella Caroline (1851-1921), Eng. philanthropist; m. Ld. Hy. Somerset, 1873; pres. of National Brit. Women's Temperance Assoc.; fndd. *Woman's Signal*, 1894; estab. industrial colony for inebriate women at Duxhurst, Surrey.

**Somerset House**, Strand, London, Eng., offices of Registrar-Gen. of Births, Marriages, and Deaths and of Board of Inland Revenue; repository of wills; eastern wing houses King's College. Blt. 1776-86 by Sir. Wm. Chambers on site of palace of the Protector Somerset; the Roy. Soc. (1780-1856) and Roy. Acad. (1771-1837) had rooms here. Façade on R. Thames, 600 ft.

**Somersetshire**, or **Somerset**, co. S.W. Eng.; area 1,630 sq.m.; pop., 475,100. Surface very varied: flat in centre; *Mendip Hills* (1,068 ft.), with Cheddar Gorge in N.E., *Quantock Hills* (1,261 ft.), *Brendon Hills* (1,391 ft.) and *Exmoor* (Dunkery Beacon, 1,707 ft.) in N.W. Principal riv. the Avon. Famous cathed. at Wells; abbey at Glastonbury; fine orchards (renowned cider); dairy-farming (cheddar cheese); agric., cattle-raising; coal mines in the Mendips; quarries of lime- and free-stone; glove-making at Yeovil; hot springs at Bath, the largest town; co. tn. is *Taunton*.

**Somerville College**, Oxford Univ.; women's coll., fndd. 1879, as a hall, in honour of Mary Somerville; incorp. as coll. 1881 and 1926.

**Somme**, 1) riv. (152 m.), Fr.; rises dépt. Aisne; flows past Amiens and Abbeville into Eng. Channel betw. Dieppe and Boulogne. Scene of intense fighting in World War: *First* (1916) and *Second* (1918) *battles of the Somme*. 2) Dépt., Fr., watered by Riv. Somme; 2,443 sq.m.; pop., 466,600; cap., *Amiens*.

**Somnambulism**, trance state in wh. the subject walks and is unconsciously active during sleep and in normal waking state has no recollection of such activities. Most frequent in psychopathic or hysterical cases.

**Somnus**, (Rom. myth.) god of Sleep (Gr., *Hypnos*).

**Sonata**, (mus.) comp. in several movements for piano alone or piano and one instr.; shorter, lighter sonata, sonatina.

**Song-koi**, riv. prov. of Tong-king, Fr. Indo-China; flows from S. China Mtns. to Gulf of Tong-king; navigable.

**Sonnet**, poem of fixed form; 14 lines variously rhymed, prob. based orig. on Ghazal (q.v.); 1st. became great lit. form in hands of

Petrarch (*q.v.*); **Petrarchan S.**, octave + sestet, both rhymed on 2 rhymes, with idea of poem taking new turn in sestet; introd. to Eng. by Wyatt (*q.v.*) and Surrey (*q.v.*) in new form, 3 quatrains + final couplet; **Shakespearean S.**, 3 quatrains + couplet with 2 rhymes to each quatrain and 1 to final couplet; **Miltonic S.**, octave on 2 rhymes, sestet on 2 or 3.

**Sonnino**, Sidney, Bn. (1847-1922), Ital. statesm.; For. Min., 1914-19.

**Sophia** (1630-1714), dau. of Eliz., dau. of James I of Eng.; m. Ernest Augustus, Elector of Hanover, 1658; mother of Geo. I, Kg. of Eng. **S. Dorothea** (1666-1726), m. Geo. I, Kg. of Eng.; mother of Geo. II; divorced 1694, and imprisoned 12 years.

**Sophism, Sophistry**, 1) conclusion arrived at by designedly false arguments. 2) Form or method of argument practised by the Gr. Sophists (*q.v.*).

**Sophister**, student of Cambridge Univ. or Trinity Coll., Dublin, who has completed his 1st year's studies.

**Sophists**, in anc. Gr., advocates of philos. teaching known as Sophistry; *Protagoras* (480-410 B.C.) taught that man is the measure of things (*see SOLIPSISM*); *Gorgias* (c. 483-375 B.C.), that if a man knows anything he cannot communicate it to others (*see SCEPTICISM*). Gradually degenerated to rhetorical prevarication, and art of designedly sham proofs.

**Sophocles** (496-406 B.C.), Gr. tragic poet; *Oedipus Rex*; *Oedipus Coloneus*; *Antigone*; *Electra*; *Ajax*.

**Sophomore**, in U.S.A., equiv. of sophister (*q.v.*).

**Soprano**, high female voice.

**Sopron, Odenburg**, Hung. co. (694 sq. m.; pop., 138,770) and tn. (pop., 35,250), on the Austr. frontier; schools of forestry and mining; textiles, carpets.

**Sorabji**, Cornelia (1866- ), Ind. lawyer and writer: *Sun Babies*, 1904; *Purdahnashin*, 1917; *Therefore*, 1924.

**Sorbet**, water ice flav. with fruit juice, sometimes with add. of liqueur; served in middle of a banquet or ceremonious dinner.

**Sorbonne**, coll. fndd. in 1252 by Rob. de Sorbon, for teaching theology in Univ. of Paris; since 1808, seat of *Académie* of Paris.

**Sorbus**, fam. of trees and bushes with white inflorescence and usu. red fruit (like berries), e.g. mountain ash, rowan, and service-tree (*q.v.*).

**Sordello** (c. 1180-c. 1255), Ital. troubadour, in service of Ct. of San Bonifazio, chf. of Guelph party, and of Raymon Berenger, Ct. of Provence; abt. 30 of his Provençal poems still extant; mentioned in

Dante's *Purgatorio*; subject of poem by R. Browning (1840).

**Sordino**: *see* MUTE.

**Sorghum**, (bot.) type of tall, cereal grass including Indian millet (*Sorgo vulgare*) and Chinese sugar-cane (*S. saccharatum*). *See* MILLET (1840).

**Sorption**, (phys.) retention of gases and vapours by porous substances, such as charcoal, silica, etc.

**Sorrel**, 1) *Rumex acetosa*, common sorrel; perennial herb; leaves may be used in salad or cooked as a veg.; in herbal med. a diuretic. 2) Sorrel Any species of *oxalis*, e.g., wood sorrel or clover sorrel.

3) Colour of horse; bright chestnut.

**Sorrento**, seaside tn. on S. side Bay of Naples, It.; abric.; pop., 11,000.

**Sorrows of Werther**, sentimental semi-autobiographical novel in letter-form by Goethe, 1774.

**S O S**, wireless signal for help used by ships in danger at sea. Morse sign: . . . . . Letters were selected at Internat. Radiotelegraph Conference (1912) on acct. of simplicity of message, and have no significance as initials.

**Sosnowiec**, tn., Poland, N.W. of Cracow; pop., 103,000; coal, iron, textiles.

**Sostenuto**, (mus.) sustained.

**Soter, St.**, Pope (168-176); letter to Corinth perhaps to be identified as 2nd so-called *Epistle of Clement to Corinthians*.

**Sotheby's**, Eng. firm of auctioneers and dealers in books, prints, pictures, antiques, etc. Fndd. in 18th cent.; conducted many important sales including that of the famous Britwell Crt. library (1916-27) wh. realised over £612,000.

**Sothic Period**, in anc. Egypt. chronology, a period of 1,461 years, during which the year of 365 days, owing to its coming short of the true solar year, passed through all the seasons.

**Sotnia** (Russ.), Cossack squadron.

**Soto**, Fernando de (c. 1496-1542), Span. explorer; accomp. d'Avila to Darien, 1519; explored coast of Guatemala and Yucatan, 1528; joined Pizarro in Peru, 1532; took part in conquest of Inca kgdm.; Gov. of Cuba and Florida, 1537; explored country betw. Atlantic and Lower Mississippi.

**Sotto voce** (Ital.), in a low voice.

**Sou**, Fr. copper coin,  $\frac{1}{20}$  of a franc.

**Soubise, Benjamin de Rohan**, Duc de (1583-1642), Huguenot leader, 1621-29;



Sea-front, Sorrento



Sophocles

and S., Malay Penins. to W.; max. depth, 16,400 feet.

**Southcott**, Joanna (1750-1814), Eng. religious fanatic; orig. domestic servant; dictated doggerel prophecies; announced she was to be mother of *Shiloh*; her box, to be unlocked in time of national crisis, was opened in 1928; contained a horse-pistol and unimportant papers.

**South Dakota** ("Coyote," "Sunshine"), State, U.S.A.; 77,615 sq.m.; pop., 691,000; watered by Missouri Riv.; wide prairies (corn-growing and cattle-breeding); gold and silver deposits in Black Hills; dairy-produce; flour; cap., *Pierre*.

**Southend-on-Sea**, co. bor. and seaside resort, Essex, on Thames estuary; pop., 120,100.

**Southern Cross**: see CRUX AUSTRALIS. **S. Crown**: see CORONA AUSTRALIS. **S. Fish**: see PISCIS AUSTRALIS. **S. Lights**: see AURORA POLARIS.

**Southern Pacific System**, railroad in U.S.A. operating over large area betw. the Mississippi Riv. and the Pacific coast; 14,285 miles.

**S. Railway**, rly., S. England; serves S. coast; formed, under Rlys. Act (1921) by amalgmt. of London and S.W., L. Brighton and S. Coast, S. Eastern, London Chatham and Dover Railways; mileage 2,194. **S. Railway**, U.S.A., operates in S.E. States; 6,731 miles. **S. wood, old man, lad's love**, *Artemisia abrotanum*, bushy garden plant; leaves have lemon-like smell; used in herb beers and folk med. as stim. and anthelmintic.

**Southey**, Robt. (1774-1843), Eng. poet and prose writer; poet laureate, 1813; *Life of Nelson*, 1813; most pop. poem: *After Blenheim*.

**Southgate**, urb. dist., Middx., Eng., N. residential suburb of London; pop., 55,600.

**South Georgia**, Brit. isl., S. Atlantic, dependency (800 m. E.S.E.) of Falkland Isls.; mountainous (7,000 ft.); 1,500 sq.m.; pop., 560; whaling settlement. Shackleton's (*q.v.*) bur.-place.

**South Polar Region**: see ARCTIC AND ANTARCTIC CIRCLES.

**Southport**, co. bor., Lancs, Eng.; pop., 78,900; seaside resort.

**South Sandwich Islands**, Brit. group, Antarctic, W. of S. Georgia Isl.; snow- and ice-bound; uninhabited; since 1919 dependency of Falkland Islands.

**Southsea**, residential quarter of Portsmouth (*q.v.*); seaside resort.

**South Sea Company** (South Sea Bubble), formed in 1710 and granted a monopoly of trade to Span. S. Amer. on condition that it made itself answerable for the Public Debt amounting to £10,000,000. The company apparently flourished until 1720, when it proposed to take over the National Debt of 32 mill. There was a great rush for shares, and £100 shares rose to £1,000; but a crash

followed, and in a month £1,000 had fallen to £175. A terrible panic was the consequence; the shares became valueless, and thousands of people were ruined.

**South Shields**, co. bor., Durham, Eng., at mouth Riv. Tyne; coal trade; shipb.; pop., 113,500.

**South Victoria Land**, coastal region W. of the Ross Sea; mountainous (up to 13,000 feet).

**Southwark**, met. bor., S. London, Eng., on S. bank Riv. Thames; 13th cent. cathed., restored 1896; Guy's Hospital; pop., 171,700.

**Southwell**, city, Notts, Eng., 12 m. N.E. Nottingham; cathed.; pop., 3,100.

**South-West Africa**, formerly *Ger. S.W. Africa*; maritime terr., S. Africa, bounded N. by Angola and N. Rhodesia, E. Bechuanaland and Cape Prov., S. by Cape Prov.; 322,400 sq.m.; pop., 275,500 (Herreros, Bushmen, Ovambos, Hottentots; 31,600 whites). Admin. under mandate by Union of S. Africa; terr. of Walvis Bay (*q.v.*) included. Healthy sub-tropical climate. Interior undulating plateau; Kalahari Desert in E.; few rivers (Orange Riv. on S. border); cattle-raising; exports diamonds, copper, lead tin, skins, and hides; cap., *Windhoek*; port, Walvis Bay.

**Southwold**, mkt. tn., seapt., and summer resort, Suffolk, Eng.; pop., 2,800. At *Southwold* or *Sole Bay* were fought 2 naval battles: 1) 1665, Eng. under D. of York deftd. Dutch; 2) 1672, Eng. and Fr. fleets repulsed attack by Dutch.

**Sou'wester**, waterproof hat with brim protecting back of neck; worn by sailors and fishermen.

**Sovereign**, standard of Brit. coinage containing 123.2447 grains troy of gold 11/12 fine; see POUND.

**Soviet**, workers' council, forming basis of govt. in Russia under *Bolshevism* (*q.v.*). Each vill., factory, workshop, etc., elects its own S., which appoints delegates to a larger congress, and so on up to the *All-Russia Congr. of Soviets*, which delegates power to Centr. Exec. Committee.

**Sowerby**, Leo (1895- ), Amer. composer and pianist; appointed as 1st Amer. composer to Prix de Rome, 1921; *Comes Autumn Time*; *Three British Folk-Tune Settings*; *From Northland*.

**Sow-thistle**, *Sonchus oleraceus*, weed with milky juice; yellow flowers.

**Soya bean**, bean of an Asiatic leguminous plant, yielding rich oil, used in making margarine, and oil-cake for feeding cattle. Plant used in Europe and U.S.A. as a green manure.

**Soyer**, Alexis Benoit (1809-58), Fr. cook; chef at Reform Club, London, 1837-50; apptd. by govt. to organise kitchens in Dublin, 1847; re-organised provisioning of

hospitals, Scutari, 1855; pub. *History of Food in All Ages*, etc.

**Spa.** 1) tn., prov. of Liège, Belgium; pop., 8,200; watering-place since 16th century. Ger. General Headquarters in 1918. *Spa Conference* (5th-16th July, 1920), betw. Allied powers and Ger., dealt with disarmament and reparations. 2) A health resort possessing natural medicinal springs, where organised treatment of disease is given. At the better-known and more popular spas, elaborate bathing establishments have been constructed, at which many varieties of treatment are administered. There is hardly a disease for which some form of spa treatment has not been devised. In the majority of cases which are benefited by spa treatment, the mild discipline, regular hours, balanced diets, and exercise are as important as the water-drinking and bathing. Many of the waters are bottled for export, but except in the case of the less concentrated waters and those specially put up for table purposes, they should not be used except under med. advice. Characteristics of some of the more important springs and diseases for which they are recommended are as follows:—  
**Aix-les-Bains** (Savoy), sulphurous: Rheumatism.

**Bath** (Eng.) thermal, radio-active, saline: Rheumatism, gout, skin affections, debility.

**Buxton** (Eng.), saline: Stomach, kidney, and liver disorders, gout, rheumatism.

**Carlsbad** (*Karlovy Vary*, Czechoslov.), alkaline, lithiated: Obesity, stomach, liver and kidney disorders.

**Cheltenham** (Eng.), saline: Rheumatism, etc., kidney and liver.

**Contrexéville** (Fr.), alkaline: Gout, rheumatism, kidney, liver, and stomach.

**Droitwich** (Eng.), saline and radio-active: Liver and gastric troubles.

**Ems** (Ger.), alkaline, saline, warm: Gout, indigestion.

**Évian-les-Bains** (Fr.), alkaline: Liver, intestinal, bladder.

**Harrogate** (Eng.), sulphurous: Skin affections, rheumatism, anaemia.

**Leamington** (Eng.), saline: Gout, sciatica, dyspepsia.

**Mariensbad** (*Marianské Lázně*, Czechoslov.), alkaline, saline, chalybeate: Gout, gastric disorders, obesity.

**Přístany** (Czechoslov.), thermal mud: Rheumatism, sciatica.

**Plombières** (Fr.), saline: Neurasthenia, dyspepsia, gastric troubles, rheumatism.

**Royal** (Fr.), saline, arsenated, lithiated: Rheumatism, debility, dyspepsia.

**Spa** (Belgium), ferruginous: Anaemia, rheumatism, and gout.

**Vichy** (Fr.), alkaline: Rheumatism, gout, gastric and urinary troubles.

**Vittel** (Fr.), alkaline: Urinary disorders.

**Space**, 1) in class. philos., three-dimensional frame (*Euclidian S.*) in wh. matter exists and moves; in Kantian System, a form of perception. In modern physics, universe is a four-dimensional manifold, with space-like and timelike dimensions, space without matter being a meaningless abstraction. Real space-time is finite in extent. See RELATIVITY. Mod. mathematics treats of space of any number of dimensions (Gauss, Bolyai, Lobatchewsky, Riemann). 2) Philosoph. concept of expansion and juxtaposition. In *Idealism* (q.v.), the *a priori* or ideal form given by the mind to all sensuous objects; in *Realism* (q.v.), objective appearance of reality in wh. real beings exist and move; in *materialist* and *agnostic philos.*, the inexplicable and irrational impression made by things upon the mind.

**Spahi**, Fr. native cavalry regiments in Tunis and Algeria. See also SEPOY.

**Spahlinger**, Henry (1882- ), Swiss bacteriologist; produced tuberculosis serum, 1912; manufactured tetanus serum during World War; reproduced anti-tuberculous serum from 1919.

**Spain**, repub., occupying most of Iberian Penins., bounded N. by Bay of Biscay and Pyrenees (S. France), E. by Mediterranean, S. by Str. of Gibraltar (southernmost point of Europe, Cape Tarifa), S.W. by Gulf of Cadiz, and W. by Portugal and Atlantic. Excludes Gibraltar, but includes Ceuta and other possns. (other than Span. Morocco) on Moroccan coast, and Balearic and Canary Isls.; 195,040 sq.m.; pop., 22,760,000. Coast-line varies (rock-bound indentations or *rias* in N.W., sand-dunes in S.W. alternately rocky and flat in E.); interior mainly a plateau (*meseta*), 2,000-3,000 ft. abv. sea-lvl., with grassy plains (sheep-breeding), bounded N. by *Cantabrian Mtns.*, W. by *Sierra Morena* (4,250 ft.); in extreme S. is *Sierra Nevada* (up to 11,421 feet). Plateau divided by centr. cordillera into Old Castile (N.) and New Castile (S.). Scarp towards Mediterranean has irrigated valls. (*Iniertas*), growing vines, oranges, olives, sugar-cane, cotton. Riv. valls. fertile when irrigated; chf. rivs., Ebro (separating plateau from Pyrenees) and Júcar (into Mediterranean), Guadalquivir and Guadiana (into Gulf of Cadiz), Tagus and Douro through Portugal, and Minho, on Port. frontier, into Atlantic. Quicksilver mines in Almadén, copper in Rio Tinto region, lead in Cartagena, iron in Bilbao; main crops wheat, barley, oats, rye; fisheries (sardines, cod, tunny); manuf. cotton goods (Catalonia), paper, glass, automobiles. Rlys., 10,100 miles. Exports fruits, wine, olive oil, cork, ores, cotton. Chf. tns., Madrid (cap.), Barcelona, Valencia, Seville,

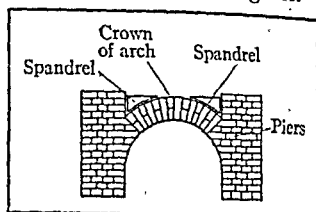


Malaga. Overseas possessions include Rio de Oro (W. Sahara), Ifni, Span. Morocco, Span. Guinea.

**HISTORY:** In antiquity occupied by Iberians, Celts, Phoenicians, Romans, Visigoths; captured by Saracens 711. Arabic culture. War of Christianity against Islam ended with capture of Granada, 1492; Inquisition, *autos-da-fé*. Christian States: Castile, Aragon, Navarre. By marriage of Ferdinand of Aragon with Isabella of Castile, kgdm. of Spain created, 1479. Charles V of Habsburg, 1517, also German Emperor, consolidated power after final conquest of Moors. Great extension of kingdom. Discovery of America 1492 by Columbus, Mexico 1519, California 1535, by Fernando Cortez, gave Spn. mastery of seas and peak period of trade and industry. Philip II, leader of Counter Reformation in W. Europe. Span. Armada (q.v.) destroyed, 1588. Netherlands War of Liberation, 1568-1648. Decayed under last Habsburgs, who died out 1700. War of Span. Succession until 1714. Prosperity under later Bourbons. Charles III (1759-1788), Aranda's reforms. In 1808, Napoleon's bro., Joseph, made Kg. of Spain; Peninsular War, 1808-14; Fr. expelled. Liberal constitution, 1812, overthrown by Ferdinand VII, 1814. Reaction; Carlist War over succession of a woman; 1824, secession of Amer. colonies. Qn. Isabella driven from throne, 1868; another Bourbon dynasty, 1875; Span.-Amer. War, leading to loss of Cuba, etc., 1898. Primo de Rivera dictator, 1926; republic, 1931. Presdt., Zamora; premier, Azaña; partial autonomy granted to "generalidad" of Catalonia, 1932.

**Spalato:** see SPLIT.  
**Spalding**, mkt. tn., Lincs, Eng., on Riv. Welland, in agric. dist.; pop., 12,600.  
**Span**, 1) distance betw. tip of thumb and tip of little finger when fully extended. 2) (Archit.) distance betw. the supports of an arch or similar structure. 3) Anc. Hebr. meas.; 9 in. (3 palms or  $\frac{1}{2}$  cubit).  
**Spandau**, W. suburb of Berlin, at confluence of rivs. Spree and Havel; former milit. hdqrs.; contained Imperial war treasure (£6,000,000 gold), part of war indemnity paid by France in 1871.  
**Spandrels**, (archit.) the 2 three-sided spaces formed by intersection of an arch with a horiz. plane above it, when built up solid; often decorated or carved.

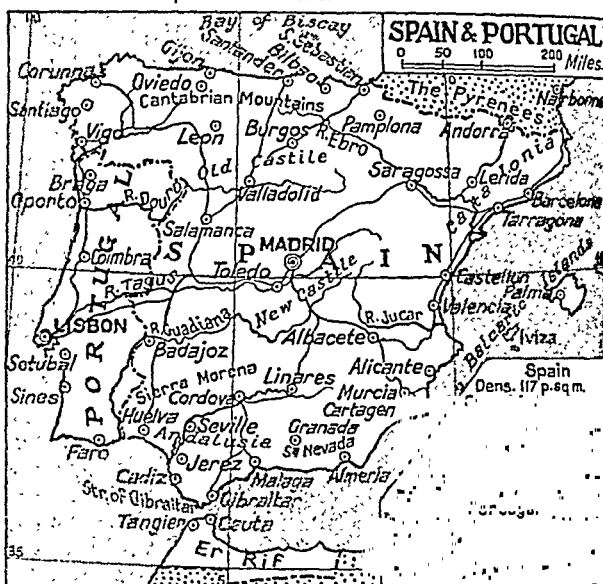
**Spaniel**, small strongly built sporting dog, trained to flush and retrieve game. Vari-



Spandrels

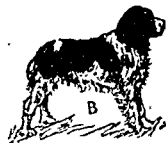
ties: *Field S.* (Clumber, Springer, Cocker, etc.); *Water S.*, *Toy S.* (King Charles, Blenheim).

**Spaniole Jews**, descend. of Jews exiled from Sp. who settled in Balkan Penins. and in the Levant.



**Spanish:** see LANGUAGE SURVEY, *Romance Languages*.

**Spanish America**, collective name for



- A) Clumber
- B) Springer
- C) Cocker

Types of Spaniel

Centr. and South Amer., orig. colon. by Sp. and Portug. and in wh. Span. and Portug. are the usual languages. **S. chestnut:** see

**CHESTNUT.** *S. fly*, *Cantharis vesicatoria*, insect used medic. in plaster form, its active princ., cantharidin, acting as vesicatory. **S. Guinea**, Span. colony on Gulf of Guinea, inclg. dists. of Fernando Po (volcanic island; 770 sq.m.) Rio Muni and Elobey; combined area, 10,250 sq.m.; pop., 120,800 (3,500 whites). Chf. exports: cocoa, palm oil, ivory, timber, ground nuts, rubber, copra; cap., *Santa Isabel* on Fernando Po. **S. Morocco**: see MOROCCO. **S. Succession, War of** (1701-14), betw. Fr. and Austr., and Eng. and Holland in alliance. Pr. Eugène and Marlborough victorious at Blenheim, Ramillies, Oudenarde and Malplaquet; Peace of Utrecht, Peace of Rastatt. Philip V of Sp. renounced right to Fr. throne; Austr. received Sp. Netherlands and Sp. territories in It.; Gt. Brit. acq. Newfoundland, Nova Scotia, Gibraltar, Minorca, and W. Indian Islands. Prot. Succession in Gt. Brit. acknowledged by France. **S. Town**, in., S. coast, Jamaica; pop., 8,700; rly. junction.



Spanish Fly

**Spanner**, tool for tightening or loosening nuts.



Double Spanner

**Adjustable S.**, monkey wrench, screw-hammer, similar tool, span of wh. can be altered to various sizes.

**Spar**, 1) (naut.) long beam; general term for mast, yard, boom, gaff. 2) (Mineral.) One of various kinds of crystalline mineral; e.g., *fluor-spar*, calcium fluoride; *Greenland S.*, cryolite (*q.v.*); *Iceland S.*, transparent calcium carbonate used in making optical instruments.

**Spark**, (elec.) brief flash accompanying elec. discharge; results when voltage betw. two conductors in air or gas at considerable pressure (too high for steady discharge) reaches *ionising potential*; the few ions (*q.v.*) in gas acquire sufficient velocity to ionise gas by collision; the process is cumulative, until sudden discharge passes; usually oscillating. If potential is maintained, arc results.

**Sparkling plug**, (tech.) plug made of hard insulating material, set in screw socket for fitting to cylinder of internal combustion engine (*q.v.*), and carrying 2 points of tungsten, betw. wh. spark for igniting mixture is produced.



Sparrow-hawk

**Sparring**, practice or exhibition boxing. **S.-partner**, assistant to boxer in training.

**Sparrow-hawk**, small bird of prey with greyish-brown plumage; breeds in Brit. and throughout Europe; in Asia, ranges as far as Japan.

**Sparta**, 1) anc. cap. of Lacedaemon (Laconia), Peloponnesus, Greece, on Riv. Eurotas. Traditionally fndd. by immigrant Dorians, c. 1100 B.C. Under the inspiration of the royal lawgiver Lycurgus (? 9th cent. B.C.), who gave the Lacedaemonians their militaristic orientation, S. became the foremost state in Peloponnesus. Conquered Messenia 7th cent. B.C., turning the inhab. into helots. By time of Persian Wars (490 and 480 B.C.) acknowledged leader of the Greeks, but as a result of those wars leadership passed to Athens. S. defeated the Athenians in the Peloponnesian War (431-401 B.C.), but was herself defeated and disgraced by the Thebans under Epaminondas at Leuctra in 371 B.C. City destroyed by Alaric A.D. 396. In 13th cent. city of *Mistra* fndd. 3 m. W., replacing mediaeval Lacedaemon. 2) Cap. of prov. of Laconia, on site of anc. city; pop., 5,800.



Modern Sparta

**Spartacus**, Thracian slave, led Gladiatorial War agnst. Rome, 73-71 B.C.; deft. and killed.

**Spartakusbund**, extreme Soc. orgn. fndd. during World War in Ger. by K. Liebknecht and Rosa Luxembourg; led revolt, 1919; leaders killed after arrest; remnants absorbed by Communist party.

**Spartel Cape**, promontory (lighthouse), N.W. Morocco, opposite Gibraltar.

**Spartivento, Cape**, promontory, S. Italy.

**Spasms**, convulsive movements of one or more muscles; the involuntary muscles of intestines and blood vessels may also go into spasms.

**Spat**, spawn (*q.v.*) of shellfish, esp. oysters; also young oyster bef. it takes up fixed position.

**Spathic iron ore**, dark brown mineral, carbonate of iron.

**Spavin**, (vet.) disease of hock-joint in horses; **bog s.**, distension of joint with lymph; **bone s.**, stiffening of joint caused by morbid body deposit.

**Spawn**, eggs of fish, frogs, newts, and other aquatic vertebrate animals. Cf. SPAT.

**Speaker**, presiding official in Brit. Hse. of Com., Hse. of Representatives in U.S.A., and corres. chamber in Brit. Dominions.

**Speaking tube**, tube enabling conversatn. to be held betw. persons at distance fm. each other in separate rooms, e.g., speaking tube connectg. bridge of ship with engine room.

**Spear**, thrusting or missile weapon; a long, pointed shaft.

**Spearmint**: see MINT.



**Special constable**, member of voluntary civilian body enrolled to assist and relieve regular police in times of emergency; performed important duties during World War and in General Strike (1926).

**Specie points**: see GOLD STANDARD.

**Species**, class or sub-division of a genus.

**Specification** (bldg., etc.), itemised description of work to be done, and materials used, in erecting buildings, machinery, etc.

**Specific gravity**, in C.G.S. system (*q.v.*), weight in grammes of a cubic centimetre of any body. Relative sp. gr. (density), weight as compared with equal bulk of some other body (usu. water for solids and liquids, air for gases). Water in England taken at 62° F.; on Continent of Eur. and for all scientific purposes at 4° Centigrade. **S. heat**, (phys.) amt. of heat (in gramme-calories) wh. raises one gramme of substance one degree of temp.; accd. to *Dulong and Petit's Law*, atomic heat (at. wt.  $\times$  S.h.) of all solid elements is nearly the same (c. 6). **S. inductive capacity**: see DIELECTRIC CONSTANT.

**S. performance**, right enforced by equity for actual accomplishment of things stipulated in a contract, whereas Common Law gives damages only for breach of agreement.

**S. volume**, (phys.) volume of unit wt. of a substance, reciprocal of sp. gravity. V. of solids of irreg. shape measured by observing diff. betw. wt. in air and in water or other liquid; V. of powders, by enclosing them in chamber and observing change of pressure of air in chamber with given change of volume.

**Spectacles**, eye-glasses for correction of short sight (concave lenses), long sight (convex lenses), and astigmatism (cylindrical lenses); S. also used as protection agst. draught, dust, intense light. Periscopic S. with glasses so ground as to give correct vision sideways without turning head.

**Spectator**, *The*, Eng. periodical, publ. every week-day from 1 March, 1711, to 6 Dec., 1712; reached 555 numbers, of wh. Addison contrib. 274 (*Sir Roger de Coverley* papers, critical essays on *Paradise Lost*, etc.), Steele 236, Pope 1 (*The Messiah*, No. 378), Hughes 19. Revived 1714. Pres. Eng. weekly polit. and literary journal of this name fndd. 1828.

**Spectrometer**, instr. for measuring wave-length of lines in spectrum (*q.v.*).

**Spectroscope**, instr. for direct observation of spectrum.

**Spectrum**, (phys.) band of rays of diff. wave-lengths and colours into wh. light from a luminous body is split by a prism, or diffraction grating. Projected on a screen or ex-

amined through a telescope, continuous S. (from a white-hot solid) is seen as a continuous band of light of var. colours. Sequence of colours in S. of a ray of sunlight: red, orange, yellow, green, blue, violet. Beyond the red and violet rays there are invisible rays, *infra red* and *ultra violet*. Red is least, violet most, bent or refracted by prism; inverse sequence in diffraction S.; spectra of gases consist of single lines (*line S.*); that of liquid and solid bodies is a continuous S., colours all shading into one another; both are called *Emission spectra*. In some continuous spectra dark lines are seen (*Fraunhofer's lines*), showing that light of certain colours has been absorbed by gas surrounding sun and other heavenly bodies. These *absorption spectra*, like *emission spectra*, are of use in S. Analysis (*q.v.*). Every vapour absorbs the wave-lengths wh. it emits. **S. analysis**, *spectroscopy*, methods devised by Kirchhoff and Bunsen (1859), to determine chem. composition of a body by means of the S. emitted by its glowing vapour. Each chem. element emits a no. of characteristic coloured lines. Used in chem. anal., and in determination of composition of stars and sun. See MOSELEY'S LAW.

**Speculation**, 1) (philos.), process of apprehension through purely intellectual means or thought; ant.: *empiricism*. 2) (Econom.) Transaction with object of obtaining profit out of variation in prices (esp. on Stock Exchange).

**Speculator**, one who hazards on uncertain prospects of success, esp. in Stk. Exch., Foreign Exch. and Produce Exch. business, and in real estate.

**Speculum**, funnel-shaped surg. instr. for viewing interior of cavities of body, e.g., vagina, aural passages, etc.

**Spee**, Maximilian, Ct. von (1861-1914), Ger. adm.; won battle of Coronel; deftd. and drowned at battle of Falkland Isls. (8 Dec., 1914).

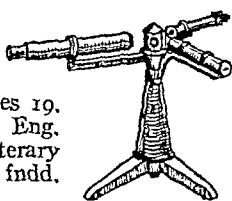
**Speedway** (or "Dirt-track") racing, motorcycle racing on curved unbanked tracks; introd. to Eng. from Australia, 1928.

**Speedwell**: see VERONICA.

**Speke**, John Hanning (1827-64), Eng. explorer; discovered source of Nile; Admiral von Spee served in milit. and scientific capacity in India; accomp. Sir F. Burton's expedn. 1858, to Centr. Africa; disc. L. Victoria Nyanza; with Grant, led 2nd expedn. from Zanzibar, down Nile to Egypt, 1860-63.

**Spelt**, *Dinkel*, variety of wheat (*q.v.*), resembling both wheat and barley; grown in mountain districts of Switzerland, S. Ger., and Spain.

**Spelter**, trade name for metallic zinc



Spectroscope



(*q.v.*); also for easily fusible brass used for hard soldering.

**Spēnborough**, urb. dist., W. Riding, Yorks, Eng., 6 m. S.E. Bradford; woollens; pop., 31,000.

**Spēncēr**, **Herbert** (1820-1903), Eng. philos. and sociolog.; propounded theory of evolution; *Synthetic Philosophy*.

**S.**, **John Poyntz Spēncēr**, 5th E. (1835-1910), Eng. Lib. statesm.; Lt.-Lieut. of Ireland, 1868-74, 1882; Lt. Pres. of Council, 1880-82, 1886; 1st Lt. of Admty., 1892-95; leader of Hse. of Lds., 1902-05.

**Spēnglēr**, **Oswald** (1880-), Ger. histor. and philos.; *Decline of the West*, 1922.

**Spēnsēr**, **Edmund** (1522-1599), Eng. poet; *The Faërie Queene*; *Shepherd's Calendar*, 1579. **Spēnsērīan stanza**, stanza form invented by Spēnsēr (*q.v.*) in adapt. of Ital. *ottava rima* (*q.v.*), in *Faërie Queene*; 8 decasyll. lines + alexandrine (*q.v.*), rhymed on 3 rhymes ababbcbcc; used by Thomson in *Castle of Indolence*, and Byron in *Childe Harold*.

**Spermācētī**, fat-like, white substance from skull of sperm whale; used for candles, ointments.

**Spermatic cord**, in man, nerve fibre containing the *vas deferens* (*q.v.*), blood-vessels, lymphatics, and nerves; passes from the testicle through the inguinal canal to the internal abdominal ring (the opening into abdomen).

**Spermatozoa** (Gametes), the male fertilising elements present in semen. Fertilisation occurs on union of a spermatozoa with an ovum.

**Sperm whale**, largest of toothed whales or *Odontoceti*, attaining length of 60 feet. Migrates from ocean to ocean, feeding mainly on giant squids. Head of enormous size, c.  $\frac{1}{4}$  total length of animal. Rapidly approaching extinction owing to being hunted for oil and spermaceti (*q.v.*) and for a yellowish intestinal secretion, ambergris (*q.v.*).

**Sperrin Mountains**, range Co. Tyrone, N. Ire.; *Sawel*, 2,240 feet.

**Spey**, riv. N.E. Scot.; rises near Loch Lochy (Caledonian Canal), flows through Inverness-sh. and on border Moray and Banffsh. into Moray Firth; length 110 m.; salmon fishing.

**Speyer**, **Spīres**, cap. Bavarian Palatinate, Ger., on the Rhine; pop., 27,000; 11th-cent. cathed. with tombs of emperors; Palatinate Museum; cotton, machinery, tobacco.

**Spezia**, tn., dept. Genoa, It., on the Gulf



Herbert Spencer

Spherical calotte



Spherical triangle



zone

Segment

Cone with spherical base

Sphere

of S.; pop., 110,500; fortified naval base; docks; shipyards; seaside resort.

**Sphagnum**: see BOG-MOSS.

**Sphenodon**: see TUATARA.

**Sphere** 1) (astron.) one of the heavenly bodies, e.g., Earth. **Celestial s.**, concave spherical surface on which the heavenly bodies appear to be set. 2) (Geom.) Body with evenly curved endless surface, all points of wh. are equidistant from the centre (radius = half diam.). Surface of a sph. =  $4\pi r^2$ ; volume =  $\frac{4}{3}\pi r^3$  ( $\pi = 3.1416$ ). **S.**

**of Influence**, territory wh. by consent or formal agreement betw. the Powers is recogd. as under spec. adminis. of one Power; this territory usu. a weaker State. Expression also used to define territorial limits of a business firm's activities.

**Spheroid**, a solid formed by revolution of an ellipse abt. one of its axes; either *oblate* (for minor axis) or *prolate* (for major axis).

**Spheroidal state**, (phys.) condition under wh. drops of water on a very hot metal surface roll about without boiling; the drops do not touch the metal, but rest on a layer of steam. When the heat has penetrated thr. layer of steam, explosive evap. takes place.

**Spherometer**, instrument with micrometer screw for accurate measurement of lamellae and the curvature of curved surfaces, as of lenses.

**Sphincter**, (anat.) a band of muscle that contracts or shuts any orifice (e.g., anus.) or tube (e.g., the alimentary canal). Cf. PYLORUS.

**Sphinx**, in Egy., stone fig. representing a lion with head of a man or ram; *S.* of Gizeh represtd. Kg. Khafre, also regarded as form of the Sun-god. In Gr. myth. female monster who set a riddle to the Thebans, destroying those who failed to ans. it; Oedipus (*q.v.*) solved it, whereupon the *S.* destroyed herself.



Sphinx of Gizeh

**Sphygmograph**, apparatus by which the human pulse is caused to give a trace (as scratch on smoked glass, or ink on paper) of its variation in pressure.



Tomb of Emperor Rudolf of Habsburg, Speyer

**Spica**, 1st magn. star,  $\alpha$  in constell. Virgo (q.v.).

**Spice**, aromatic flavouring for food, gen. manuf. from tropical plants, such as nutmeg, mace, cloves, cinnamon, ginger, turmeric, etc.

**Spice Islands**: see MOLUCCAS.

**Spider**, arthropod which, with the sea-spider and mite, forms the class Arachnida. Ss. have head and thorax fused and are provided with four pairs of legs; can inflict a poisonous bite; spin (with silk from spinnerets) webs in which the prey is caught. Webs vary considerably, some being frameless, others wheel-like, e.g., that of *garden S.* (q.v.). Many large and small forms, a few being hunters, producing little or no silk. Eggs contained in silken cocoon. See TARANTULA.

**S.-crab**, long-legged, more or less oval-bodied crab, with slender claws. Many species attach living seaweeds and sponges to their bodies and limbs, to render themselves indistinguishable from their surroundings. **S.-monkey**, *S. Amer.* monkey, with long arms and a prehensile tail so remarkably sensitive that it serves the purpose of a "fifth hand"; almost entirely arboreal in habit, frequenting forests from Mexico to Paraguay.

**Spiegeleisen**, hard, brittle, white cast-iron, containing manganese; used in making steel by *Bessemer process*; also called *mirror iron* and, when containing over 25% manganese, *ferromanganese*.

**Spikenard** 1) *Aralia racemosa*, root of wh. is used in folk med. as alterative and diaphoretic. 2) *E. Ind.* valerian, from wh. *S.* of ancients (fragrant ointment) is supposed to have been derived.

**Spinach**, 1) *Spinacia oleracea*, herb cultivated for its leaves; used as vegetable. 2) Any veg. resembling above and used for same purpose.

**Spinal cord**, *Medulla spinalis*, cord wh. emerges from brain and passes down inside the spinal column; *S. C.* is covered by membranes and encloses a centr. canal wh. contains cerebro-spinal fluid; it contains nerve tracts and nerve centres (see CENTRAL NERVOUS SYSTEM) and ends in a bundle of nerves known as the *horse's tail*. Disease of the spine: see TABES DORSALIS.

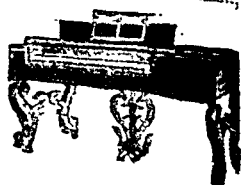
**Spindle**, 1) (text.) Revolving rod on which the threads are taken up in spinning. 2) (Machinery) Any rod which turns on its own axis. 3) Brit. linear meas., 18 hanks or 15,120 yds. (cotton and silk); 4 hasps or 14,400 yds. (linen). **S. tree**, *Euonymus*, small evergreen tree found in Europe and N. Amer.; its tough wood was form. used for making spindles



Spider

**Spine**, (anat.) vertebral column; see Plate, MAN.

**Spinel**, a vitreous magnesium aluminate, either transparent or nearly opaque, of various colours; red transparent variety known as *spinel ruby*.



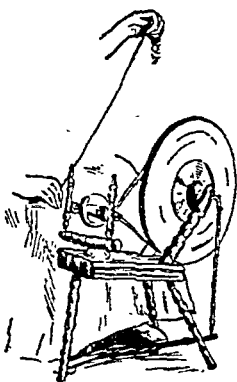
Spinet

**Spinet**, fore-runner of the pianoforte; each note had one string, which was plucked by a quill when the key was struck.

**Spinneret**, 1) (tech.) nozzle pierced with a large number of fine holes, through which artificial silk, in the liquid state, is forced into the coagulating liquid, thus spinning a thread. 2) (Zool.) See SPIDER.

**Spinning**, 1) (textile) process by which yarn or thread is made from loose fibre (cotton, silk, wool, etc.) Fibres are *teased* and *carded*, eliminating lumps and impurities, and a *sliver* or continuous loose rope of fibre is obtained; this passes to *draw-frame*, which pulls out sliver and renders fibres more parallel and uniform. It then passes to *comber*, which continues process of pulling-out and combing. *Flyer frames* extend fibre further and put in some *twist*, and it then passes to *S.-machines*. Chief types: *ring S.-machines*, and *mules* (q.v.). *Worsted yarn* is spun from long fibres; *carded yarn*, from short, strongly carded material. 2) (Metal.) Process by which sheet metal is pressed, while being spun in a lathe, against wooden shapes so as to form hollow objects: cups, bowls, reflectors for lamps, etc., also bottle-like objects, e.g., "sparklet" bulbs.

3) (Angling) For pike, etc., with small dead or artificial fish as bait, which is caused to revolve rapidly while drawn through the water. **S.-wheel**, instrument for separating and twisting raw fibres into thread, operated by foot and hand.



Spinning wheel

**Spinoza**, Baruch or Benedictus (1632-1677), Dut. philos.; excom. by Jewish community for heresy; *Ethics*; *Tractatus Theologico-Politicus*; *Political Treatise*.

**Spion Kop**, battle of, in 2nd Boer War; dft. of Brit. under Sir R. Buller, 24 Jan., 1900.

**Spiraea**, graceful garden and greenhouse plants (*Rosaceae*) mostly white-flowered; *S. Ulmaria*, meadow-sweet; grows wild.

**Spiral**, (geom.) even curve starting from a point and extending to infinity in ever-widening curves; often confused with screw, e.g., spiral-drill, spiral-spring, etc.

**Spirant**, (phon.), *fri-*calice sound, as s, f, th, sh, ch (as in *loch*), uttered with perceptible expulsion of breath.

**Spire**, (architectural) acutely pointed upper termination of a tower, usually of a church.

**Spires**, Bavaria: see SPEYER.

**Spirit**, purified ethyl alcohol (*q.v.*) in med. solution of an essential oil in alcohol, e.g., *S.* of peppermint. See also PROOF SPIRIT.

**S-gum**, solution of gum mastic in alcohol, used in theatrical make-up (*q.v.*). **S-level**, (phys.) sealed tube or circ. glass vessel filled with spirit cntg. an air bubble wh. takes up position in centre when tube or vessel is horizontal. **Spirits of salt**: see HYDROCHLORIC ACID. **Ss. of wine**: see ALCOHOL.

**Spiritualism**, 1) belief that communication with spirits of the dead can be, and is, established through instrumentality of a "medium," or person possessing peculiar psychic powers. Since c. 1850, has spread widely as an organised cult in Europe and Amer., both within and without existing Christian bodies. 2) Name given to those systems of philosophy which are opposed to materialism or sensationalism (*qq.v.*).

**Spirituals**, Negro relig. songs or hymns.

**Spirochæta**, spiral bacteria, e.g., *S. pallida*, germ of syphilis.

**Spirometer**, (med.) instr. for measuring amount of air expired after forcible inspiration and expiration.

**Spitalfields**, district of N.E. London in bor. of Shoreditch; formerly headquarters of weaving and silk trades introd. by Huguenots who fled from France after revocation of Edict of Nantes (1685); name taken from anc. ch. of St. Mary Spital, built 1197, demolished at dissolution of monasteries (c. 1540); here, in an open-air pulpit, the *Spital Sermon* was preached (14th-17th cent.) on Tues. and Wed. after Easter; this sermon now preached in Christ Ch., Newgate St., before Lord Mayor and Aldermen.

**Spithead**, strait, S. Eng., sep. N.E. Isle of Wight from Hants; width 1½-4 miles.

**Spitteler**, Carl (1845-1924), Sw. poet; *Spring on Olympus*, 1900-05; novel: *Imago*, 1906; *Ballads*; Nobel Prize (Lit.), 1919.

**Spitz** (dog): see POMERANIAN.

**Spitzbergen**, Svalbard, group of three



Spinoza

large and several small isls. in Arctic Ocean to N. of Norway; area, 25,000 sq.m.; pop., c. 1,200; mountainous (max. alt. 5,000 ft.); many glaciers; coal mines. Largest settlement Longyear City on King's Bay. Discovered by Dut. in 1596; Norwegian since 1925.

**Spleen**, (anat.) abdominal organ containing lymphoid tissue; has very good blood supply; plays an important part in function of red and white blood corpuscles.

**Spleenwort**, name given to several varieties of ferns, incl. maidenhair (*q.v.*), lady fern, bird's-nest fern, etc.; several cultivated for ornament.

**Splendide mendax** (Lat.), nobly lying; gloriously false.

**Splice**, union of 2 ends of rope by weaving strands together.

**Spline**, (woodwork) small, flat piece of wood embedded in each of two larger pieces for the purpose of holding them together (e.g., at the corners of a frame).

**Splinterproof glass**: see GLASS.

**Splints**, (surg.) appliances for keeping parts of the body at rest, e.g., a fractured bone.

**Split**, **Spalato**, seapt. tn., Dalmatia, Jugoslavia; pop., 31,600; ruins of palace of Diocletian; sulphur springs; naval dépôt and trading centre.

**Split pin**, (tech.) metal pin formed of wire of semi-circular section bent double and thrust thr. a hole, the ends being turned over. Used to prevent a nut working loose, or to secure a pin or rod in a pivot.

**Splits**, acrob. exer. in wh. the body is kept upright and legs are stretched apart until they touch ground for their complete length.

**Spilügen**, Alpine pass (6,945 ft.), from vall. of Hinter Rhein (Grisons, Switzerland) to Chiavenna (Italy).

**Spode**, soft-glazed, highly decorated china named from Josiah Spode, who began its manuf. at Stoke-on-Trent, Staffs, in 1770; frequently imitates Japanese patterns.

**Spohr**, Ludwig (1784-1859), Ger. violinist and composer; operas, *Jessonda*, 1823; oratorios.

**Spoils system**, political system, esp. in U.S.A., by wh. successful party disposes of paid appts., public contracts, etc.

**Spokane**, tn., E. Washington, U.S.A., on Spokane Riv.; pop., 115,500; lumber, flour mills, fruit, livestock; airport.

**Spokes**, rigid supports of a wheel, radiating betw. hub and rim, that absorb pressure.

**Spoleto**, tn., prov. of Perugia, It.; pop., 27,500; abprie; Rom. remains.

**Spolia opima** (Lat.), richest spoils (of victory).

**Spondee**, met. foot of two long syllables (— —).

**Sponge**, *Porifera*, marine animal with fibrous skeleton, without tentacles; usu. fnd. clinging to rock. The absorbent network remaining after soft, living matter has been removed, used for cleansing purposes. Fnd. esp. on coast of Asia Minor and W. Indies. **S.-crab**, crustacean of Mediterranean and Atlantic oceans, having last two pairs of legs turned backwards, to hold a living sponge in place.



Sponge-crab

**Spontaneous combustion**, (phys.) combustion of easily oxidised materials without, or with very little, supply of exterior warmth, by means of S. ignition; gen. caused by too compact a storage or by intrusion of damp, e.g., in coal, hay, metal shavings, and cotton waste. **S. generation**, (biol.) or *abiogenesis*, production of living organisms from lifeless matter. Until recent times (Pasteur), it was believed that simple living organisms, and even worms, came into existence in suitable conditions from non-living matter. This is now believed to be false, but many scientists hold that life may have arisen from dead matter in early geological times although others deny the possibility.

**Sponte sua** (Lat.), of one's own accord.

**Spoon**, or **baffy**, short wooden golf-club with laid-back face, for lofting.

**Spoonbill**, large, white-plumaged bird of aquatic habit, with spatulate termination of bill; once nesting regularly in Norfolk and Suffolk, now an occasional migrant in spring and autumn. In summer, frequents centr. and S. Europe; in winter, Centr. Africa and India.

**Spoonerism**, involuntary transposition of the initial letters of 2 adjacent words, from Rev. Wm. A. Spooner, Warden of New Coll., Oxon. (1844-1930), who is said to have originated many examples e.g., "shoving leopard" for "loving shepherd."

**Spoor**, animal's track.

**Sporades**, two isl. groups in Aegean Sea; *N. Sporades* (Gr.), off E. coast of Greece; *S. Sporades* (mainly Ital.), off S.W. coast of Asia Minor; include Dodecanese (*q.v.*).

**Spore**, highly specialised reproductive cell of plants.

**Sport**, GENERAL SURVEY: *Antiquity*: Athletic exercises practised in Asia and Egy., and esp. in Gr. (see OLYMPIC GAMES), where ideal of physical fitness was highly developed. Under Rom. Emp. gladiatorial combats, etc., were more pop. than athletic displays, wh. were left to Gr. professional athletes. *Chariot racing* was very pop., esp. in Byzant. Emp.; Celtic and Teutonic races practised athletics as training for hunting and war. *Middle Ages*: Nobility indulged in hunting, jousting, warlike exercises, while people had run-

ning, ball-games, quarter-staff, etc., and (esp. in Eng.) archery. *Modern Development*: Therapeutic and educat. value of phys. training realised early in 19th cent. thr. efforts of Guts-Muths (Ger.), Ling (Swed.), etc. *Athletics*, as an organised sport, devel. during 19th cent. (1st Ox. v. Camb. sports, 1850; 1st A.A.A. championship, 1866; revival of Olymp. Games, 1895). *Boxing* became pop. in 18th and early 19th cents. under "Prize-ring" rules; mod. boxing dates from 1866, when "Queensberry" rules were drawn up. *Wrestling* has always been pop. locally, but little pub. interest was taken in it bef. late 19th cent. *Rowing*, as a sport, developed early in 19th cent. (1st Ox. and Camb. boat-race, 1829; held ann. since 1856; Henley Regatta fndd. 1839). *Swimming*: Princ. recent develop. intro. of "trudgen," 1873, and "crawl," 1902, for short races; long-distance swim. encouraged by efforts to swim Eng. Channel (see CHANNEL-SWIMMING). *Skating*: Common as sport since 12th cent.; first Am. Champ., 1880; London Skating Club fndd. 1830. *Horse-racing*: Known in England since 12th cent., was regulated in 17th and 18th cents., when "Classic" races were founded. *Greyhound-racing*: First regularised in Eng., 1926. *Cycling*: First practical bicycle made about 1865, but the sport did not become pop. before the invention of pneumatic tyres, about 1890. *Motoring*: First trial held, 1894; Gordon Bennett Cup pres., 1901; first "Grand Prix" race, 1906; 1st "Tourist Trophy" race, 1923; first track, Brooklands, 1907. *Motor-cycling*: 1st "Tourist Trophy" race held, 1907 (see MOTOR-RACING). *Mountaineering*: As systematic sport, dates from 1854; Alpine Club fndd. 1857. *Ball Games*: *Cricket*: became pop. in 18th cent.; Hambledon Club fndd. 1750; M.C.C., 1787. *County Championship* began 1873; 1st Test Match with Australia, 1877 (Aust.), 1880 (England). *Football (Association)*: F.A. Cup 1st played for, 1871; F. League fndd. 1888; 1st internat. match, 1872; (*Rugby*) R. Union fndd. 1871; 1st internat. with Scot., 1871; Ireland, 1875; Wales, 1880; France, 1906. Northern Union broke away from R.U. on ques. of professionalism, 1895. *Golf*: Known in Scot. since 15th cent.; R. and A.G.C., St. Andrews, fndd. 1754; 1st Engl. club, at Westward Ho, 1864; 1st Open Championship, 1860; Amateur, 1886; Ladies, 1893. *Hockey*: became pop. in 2nd half of 19th cent.; H. Assn. fndd. 1875; first internat., 1895. *Lacrosse*: N.-Amer.-Indian game, adopted as nat. game of Canada, 1867; Engl. L. Assn. fndd., 1868. *Tennis*: Played since 14th cent.; first Am. championship held at Queen's Club, 1889. *Lawn Tennis*: Mod. devel. of tennis, invented, 1874, now most univ. of ball-games; championships held at Wimbledon since 1877; Davis Cup pres. for internat.

comp., 1900. *Polo*: Earliest records of P. are Persian; known in India, 16th cent.; revived there, 1863; intro. in Eng., 1869; Hurlingham Club fndd. 1873. *Yachting*: Y.-racing dates from early 19th cent.; R.Y. Squad. fndd. 1812; "America Cup" (q.v.), 1851; internat. rules adopted 1906.

**Sports and Games associations**: organisations for the control of various branches of sport. Leading assocns. in Gt. Brit. are: *Archery*, Royal Toxophilite Society, 1781; *Athletics*, Amateur Athletic Assocn., 1880; *Badminton*, Badminton Assocn., 1895; *Billiards*, Billiard Assocn. and Billiards Control Club (amalg., 1919); *Bowls*, Eng. Bowling Assocn., 1903; *Boxing*, Amateur Boxing Assocn., 1884, and Boxing Board of Control, 1919; *Chess*, British Chess Federation, 1904; *Coursing*, Nat. Coursing Club, 1858; *Cricket*, Marylebone Cricket Club, 1787; *Croquet*, Croquet Assocn., 1896; *Curling*, Roy. Canadian Curling Club, 1838; *Cycling*, Nat. Cyclists' Union, 1878; *Football*, Football Assocn., 1863, Rugby Football Union, 1871, Northern Union 1895; *Gliding*, Brit. Gliding Assocn., 1930; *Golf*, Royal and Ancient Golf Club of St. Andrews, 1754; *Greyhound Racing*, Nat. Greyhound Racing Club, 1928; British Greyhound Tracks Control Socy., 1932; *Hockey*, Hockey Assocn., 1875; *Horse-racing*, Jockey Club, 1750; *Lacrosse*, Eng. Lacrosse Union, 1868; *Lawn Tennis*, Lawn Tennis Assocn., 1888; *Motoring*, Automobile Assocn., 1905, Royal Automobile Club, 1897; *Polo*, Hurlingham Polo Club, 1874; *Rifle-shooting*, Nat. Rifle Assocn., 1860; *Rowing*, Amateur Rowing Association, 1882; *Skating*, Nat. Skating Assocn. of Gt. Britain, 1879; *Steeple-chasing*, Nat. Hunt Committee, 1866; *Swimming*, Amateur Swimming Assocn., 1870; *Yachting*, Roy. Yacht Squadron, 1815.

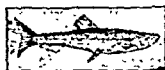
**Spot business**, in wh. immed. delivery falls due, goods must be tangibly on the spot. Ant.: *forward business* (q.v.). **Spotted fever**, 1) cerebro-spinal meningitis, a form of meningitis (q.v.) wh. is accompanied by a skin rash. 2) Another name for typhus (q.v.).

**S.P.Q.R.**, abbr. *Senatus Populusque Romanus* (Lat.), the Senate and People of Rome.

**Sprain**, the stretching or tearing of ligaments of a joint.

**Spranger**, Ed. (1882- ), Ger. educationist; *Psychology of Adolescence*.

**Sprat**, small, silvery fish of herring family, averaging 4 to 5 in. in length. Found all round British and Irish coasts, extending from N. coast of Europe to Mediterranean.



Sprat

**Spree**, trib. (247 m., navig. 100 m.) of Riv. Havel, Prussia, Germany; rises in Ober Lausitz, passes through

Spreevald in a series of canals; flows past Berlin; joins Havel at Spandau.

**Sprengel**, Kurt (1750-1816), Ger. botanist; disc. pollination of flowers by insects.

**Spretæ injuria formæ** (Lat.), the wrong (felt) by slighted beauty, phrase orig. applied by Virgil to the anger of Juno at having been passed over in the Judgment of Paris.

**Spring**, 1) 1st season of year, betw. winter and summer, astronomically betw. March 21st (vernal equinox) and June 21st in N. hemisphere, Sept. 23rd-Dec. 21st in S. hemisphere. The season of sprouting seeds and renewal of vegetation. 2) (Geog.) Source, well, fount in ground from wh. water rises naturally; may contain various minerals of therapeutic value. See GEYSER; SPA; THERMAL WATERS. 3) (Tech.) Var. forms (spiral, flat strips, coach-spring) of metal possessing great resilience, i.e., capable of large deformation without exceeding elastic limit (q.v.) Tempered steel best; phosphor bronze, platinum, iridium, hard brass, duralumin also used.



Helical spring conical spring

Plate spring  
SPRING

**S. balance**, in many forms, measures wt. or force by action upon S. and resulting extension, compression, or torsion.

**S. steel**, high quality steel which has been hardened by quenching and then tempered to a degree suitable for springs. **S. tides**: see TIDES.

**Springbok**, small S. African antelope; remarkable for its habit of taking high leaps in the air, and for the curious erectile crest of long, stiff, white hair running down its back.



Springbok

**Springe**, snare to catch birds.

**Springfield**, 1) cap., Illinois, U.S.A.; pop., 61,100; grain trade; clock manuf.; coal mines; oil; home of Lincoln (tomb and monument in Oak Ridge Cemetery). 2) Tn., Massachusetts, U.S.A., on Connecticut Riv.; pop., 149,900; R.C. and Prot. episc. bprics.; arsenal; manuf.: motorcars, machinery, paper; flour-mills. 3) Tn., Ohio, U.S.A., on Lagonda Creek; pop., 68,750; Wittenberg Coll. (1845); manuf.: machinery, hardware; publishing centre; airport. 4) Tn., Missouri, U.S.A.; pop., 57,550; timber, dairy produce, livestock; lead and zinc mines; machinery; airport. Civil war: battle of Wilson's Creek, 1861. 4) U.S.A. milit. rifle 1st adopted 1866; 1903 model, with .30 calibre is standard service rifle of U.S.A.

**Springtail**, small wingless insect, with

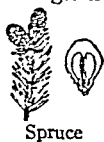
forked tail for springing; found under leaves, stones, bark of trees, etc.

**Sprinkler**, water spray for protection against fire in storerooms, warehouses, etc., set in action automat. when a certain temp. is reached. In spinning mills and textile factories sprinklers are used to keep atmos. at requisite degree of moisture. See FIRE ALARMS.

**Sprint**, short-distance race run at top-speed (usu. 100-440 yards).

**Sprocket**, projection or tooth on rim of a wheel. **S.-wheel**, one with cogs engaging in links of a chain, as in driving wheel of a bicycle.

**Spruce**, (bot.) genus of coniferous trees (*Picea*) widely distribtd. in temperate regions of N. hemisphere; distinguished from the pine (*q.v.*) by single needle-shaped leaves and pendent cones. Most important species is Norway S. (*P. abies*), wh. grows to a height of 170 ft.; yields valuable timber; also planted as ornamental tree.



Spruce

**Spur**, attachment worn by horsemen on heel of boot, to prick or goad the horse; provided with a point, or a no. of points on a revolv. wheel (rowel-s.). A Box-S. is one fitted into spring or "box" in heel of boot. *To win one's*



Types of Spur

- A Cromwellian  
B Henry VIII  
C, D Modern English

*ss.*, to merit knighthood by some gallant deed.

**Spurge**, *Euphorbia*, genus of plants with green flowers and milky acrid juice. *Irish S.* has been used for poisoning fish. See CAPER.

**Spurgeon**, Charles Haddon (1834-92), Eng. Baptist minister, famous as preacher at the Tabernacle, Newington Causeway, from 1861; his sermons (vast numbers of wh. were pubd.) caused discussion among Evangelicals through his denial of regeneration by baptism and his rejection of mod. Biblical criticism.



Spurge

**Spurn Head**, headland, E. Riding, Yorks, Eng., N. of mouth of Riv. Humber; light-house.

**Spurry**, *Spergula arvensis*, small white-flowered weed; **Sand s.**, any silenaceous (belonging to pink fam.) weed of genus *Tissa*.

**Spurs**, **Battle of the:** see COURTRAI.

**Spurt**, (racing) sudden acceleration.

**Sputum**, matter expectorated from respiratory passages; in cases of infect. disease, often carries the disease-producing microbes, e.g., in tuberculosis of lungs, inflammation of lungs, influenza, whooping cough, etc.; **S.** extremely apt to convey disease.

**Spy**, pers. of one national. who seeks to obt. by subterfuge polit., mil. or econo. information abt. another country; in time of war liable to penalty of death.

**Squadron**, 1) Naval: a division of a fleet under the command of a vice- or rear-adml., consisting of a number of fighting and reconnoitring ships. 2) Air Force: a tactical unit consisting of several aeroplanes; commanded by a sqn. leader. 3) Smallest tactical cavalry unit, c. 150 men—3-5 S.s = 1 cavalry regiment.

**Square**, 1) (math.) figure with 4 equal sides and 4 right angles; also the 2nd power (*q.v.*) of a figure. **Magic s.**, a square divided into smaller squares, with figures so arranged that every column and row and each of the two diagonal rows adds up to the same figure. 2) (Mil.) Infantry formation agst. cavalry attack; now obsolete except in savage warfare. **S. dance**, dance for 4 couples facing inward.

**S. root:** see ROOT.

**Squash racquets** form of racquets (*q.v.*) played with a hollow rubber ball.

**Squatter**, in N. Amer., pers. settlg. on land to wh. he has no title; in Australia, a sheep-farmer.

**Squaw**, N. Amer. Indian woman or girl; usu. applied to a married woman or widow.

**Squid**, family of cephalopods, conical, elongated, with triangular fins; some species as much as 10 ft. long with tentacles reaching 30 feet.

**Squill**, 1) varieties of *Scilla*, member of lily tribe. *Vernal S.*, 6 in. high, has pretty blue flower; *S. autumnalis*, somewhat larger, darker flower; *S. nutans*, known as wild hyacinth or blue-bell. 2) Bulb of *Urginea scilla*; two varieties, white and red; white used in med. for dropsy of heart and as an ingredient in expectorant cough mixtures; red, poisonous to rats.

**Squint**, *Strabismus*, deviation of one or both eyes in an outward or inward direction, caused by weakness or paralysis of the ocular muscles.

**Squire**, Sir John Collings (1884- ), Brit. poet and critic; fndd. and 1st ed. of *London Mercury*, 1919; *The Grub Street Nights* Entertainment, 1924.

**Squire**, abbr. of esquire; in Eng. landed proprietor, in N. Amer. also J.P.

**Squirrel**, small arboreal rodent; diff. species fnd. in Eur., Asia, and Amer. **Common s.** distribtd. over Eur. and N. Asia, varies in colouring, but is usu. red; pointed muzzle, tufted ears, thick fur and bushy tail; feeds on acorns, nuts, seeds, etc.; partly hibernating. **Grey s.**, N. Amer. species, is stronger and larger



Grey Squirrel

than common S. and since its introdtn. into Gt. Brit. threatens to exterminate the latter. See **CHIPMUNK**; **FLYING SQUIRREL**. **S.-cage motor**, elec. motor for multi- (usually 3-) phase alternating current, having rotor (rotating part) of laminated iron with slots in wh. copper bars, joined to rings at each end, are fixed.



Red Squirrel

**Squirting cucumber**, *Elaterium*, trailing plant growing in S. Eur.; dried juice of unripe fruit is a drastic cathartic.

**S.R.**, abbr. Southern Railway.

**Sr.** (chem.) symbol of strontium.

**Srinagar**, cap., Jammu and Kashmir, on Riv. Jhelum; cashmere shawls, papier-mâché, silver, and copper work; pop., 173,700.

**S.T.**, abbr. *sine tempore* (Lat.), without delay, punctually.

**St.**, abbr. sanctus (Lat.), holy, saint.

**Stabat Mater Dolorosa**, "There stood the Mother Desolate," 1st line of 13th-cent. Lat. hymn to the B. V. Mary; among modern settings are those by Haydn, Rossini, Verdi, Dvorak and Stanford.

**Stabilisation**, (finan.) creation of fixed ratio of value to gold or other standard, e.g., Ger. mark was stabilised (Nov., 1923) on basis of \$1 = 4.2 million marks; sim. S. in reg. to currencies in various Europ. States during period of post-war inflation.

**Stable-fly** (*Stomoxys calcitrans*), large fly that comes into houses in summer and autumn in wet weather; bites sharply; sim. to house-fly, but greyer in colour. Disease carrier; eggs deposited on, and larvae feed upon, decaying vegetable matter.



Stable-fly

**Staccato**, (mus.) abbr. *stacc.*, detached; to be played with each note sharply distinct; indicated by a dot over each note.

**Stack of wood**, (Brit. meas.) 108 cu. feet.

**Stade**, **Stadion**, **Stadium**, or Gr. *furlong*, anc. Gr. linear meas., 600 Gr. ft., derived from length of foot-race track (stadion, stadium), 177.42 metres or 194.02 yds.; 9 Gr. furlongs (1,746 yds.) almost equal to 8 Eng. furlongs (1,760 yds.). The exceptional Olympic stade (197.27 metres or 210.26 yds.) not used as linear measure. **Rom. furlong**, 202.1 yds.; 8 Rom. f. = 1 Rom. mile.

**Stadium**, **Stadion**, anc. Gr. foot-race

track, e.g., at Olympia; now applied to bldg. in amphitheatre (g.r.) form. with tiers of seats for spectators and arena for athl. sports. 2) (meas.) see **STADE**.



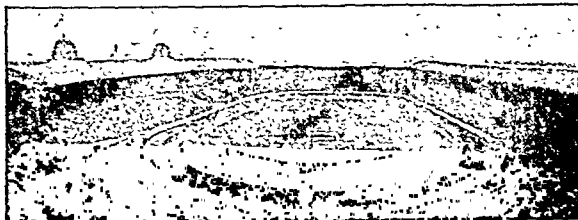
Stadium, Athens

**Stadtholder**, title of chief

magistrate of the Netherlands, as formed by the union of seven States in 1579; see **UNITED PROVINCES**.

**Staël**, Madame de, Anne Louise Germaine Necker, Baronne de Staël-Holstein (1766-1817). Fr. writer; retired to Engl., 1793; returned to Paris, 1795; banished by Napoleon; *Delphine*, 1802; *Corinne*, 1807; *Considerations on the French Revolution*, 1818.

**Staff**, 1) (milit.) group of officers of a formation higher than a battalion, or equivalent, engaged in admin. or executive duties. In Brit. Army divided into *General Staff* (G), under chf. of imperial gen. staff; *Adjutant-General's Branch* (A), under adjutant-general; and *Quartermaster-General's Branch* (Q), under qr.-mr.-general; all members (with Master-General of the Ordnance) of the Army Council. Each branch normally divided into two or more *Directorates*, the director usu. holding rank of major-general; his subordinates are in three grades, e.g., Gen. Staff Officer, 1st, 2nd, and 3rd grade; Asst. Adjt.-Gen., Deputy Assistant Adjt.-Gen., Staff Capt. A.; Asst. Qr.-Mr.-Gen., Deputy Asst. Qr.-Mr.-Gen., and Staff Capt. Q. In some formations functions of A. and Q. are combined, e.g., A.A. and Q.M.G.; infantry brigades have a Brigade Major and Staff Captain. Rank of officers holding staff appointments is immaterial, but customary for 1st-grade staff officers to be lieut.-cols. or cols., for 2nd grade to be majors or lieut.-cols., and



Stadium, Wembley, London

for 3rd grade to be captains. The adjutant and quartermaster of an infantry batt. perform staff duties of the batt., but do not count as staff officers. 2) Commerce, body of employees in an office or organisation. **S. College**, establmt. for instruction and



training of officers for General S. In Gt. Brit. at Camberley (q.v.).

**Staffa**, small uninhabited isl., Inner Hebrides, with famous basalt caves, notably Fingal's Cave.

**Staffordshire** (abbr., Staffs), midland co., Eng.; area, 1,1070 sq.m.; pop., 1,431,200. Surface generally flat or undulating (hilly in N.E.); watered by Riv. Trent. Important coalfields in N. (Potteries) and S. ("Black Country"; many ironworks); agric. (oats); beer-brewing at Burton-upon-Trent. **Stafford**, co. tn.; pop., 29,500; manuf. boots and shoes; brine baths.

**Stag**, 1) male of the red deer; freq. applied to any male deer. 2) (Stk. Exch.) Person who applies for shares issued with the intention of selling them upon allotment at a higher price. **Stagging** is common in Eng. where new issues are distribd. direct to public. **S.-beetle** (*Lucanus cervus*), large species of beetle; mandibles of the male are prolonged into antler-like processes; larva feeds on decaying wood for four to five years; widely distribtd. in Europe. **S.-hound**, large shaggy breed of hound. **S.-hunting**, pursuit of red deer with a pack of stag- or deer-hounds, in Eng. chfly. on Exmoor and the Quantocks; season: Aug. 12th-Oct. 8th, and Mar. 25th-May 10th; hind-hunting from end Oct. till Christmas.



Stag-beetle

**Stage loft**, platform above the stage (see THEATRE) for accommodating and operating scenery. **S. manager**: see PRODUCER.

**Stagger**, (mechan.) to set objects (wheel spokes, pins, teeth, etc.) inclined alternately to right and left.

**Stahlhelm** (Steel Helmet), extreme Right orgn. of Ger. ex-servicemen, fndd. 1918; armed, drilled, and using violence; support of Nationalist Party; absorbed by Nazis, 1933.

**Stainer**, Sir John (1840-1901), Eng. composer; oratorios, Ch. music.

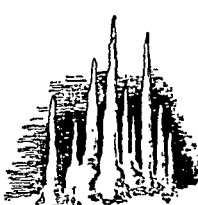
**Staines**, urb. dist. and mkt. tn., Middx.; on Riv. Thames; pop., 7,800; brewing, linoleum manufacturing.

**Stains**, discolourations on fabrics, the hands; etc.; best removed when fresh by rubbing gently the fabric or hands with a suitable solvent; fabrics should be rubbed, when poss., in direction of threads. The foll. solvents should be used for the stains specified, the articles being washed with water after treatment: **Blood**: wash with warm water and ammonia; if old, use soapsuds. **Coffee**: borax or glycerin, strong hot soda water. **Fruit** (e.g., strawberry): solution of ammonium persulphate and sal ammoniac, of each  $\frac{1}{2}$  oz. in a pint of water; dilute oxalic acid. **Ink**: solution of oxalic acid, 1 oz. in a pint of water, rinse and follow by hydrogen (10 vols.) and again use oxalic acid

solution. If the ink contained lampblack, treat with turpentine, wash with soap and water and finally rinse with benzene. **Iron mould**: oxalic acid solution (1 oz. to 1 pint of water). **Nicotine** (on the fingers): rub first with solution of potassium permanganate and aftwds. with sulphurous acid. **Oil**: benzene, petrol, or carbon tetrachloride. **Dyes**: weak dilution of hydrochloric acid (spirits of salt) will freqtly. remove. **Mildew** (if fresh): soap and water; if old, oxalic acid solution (1 oz. to 1 pint). **Milk and cream**: wash with warm water, dry and sponge with carbon tetrachloride. **Paint and varnish** (oil paints): carbon tetrachloride or turpentine; for cellulose paints, a mixture of acetone and amyl acetate, equal parts. **Indelible pencil**: sponge first with methylated spirits, then with hydrochloric acid (10%), and bleach with potassium permanganate, followed by sulphurous acid. **Perspiration**: bleach with hydrogen peroxide. **Scorch**: dilute hydrogen peroxide. **Iodine**: warm solution of hypo. **Tar**: remove with turpentine or benzene. (Note that oxalic acid is very poisonous; benzene, acetone, and amyl acetate are very inflammable.) **Staining**, colouring of wood by means of brown or black tar dyes dissolved in spirit. **Stainless steel**, alloy of chromium, nickel, and iron in var. propor., accdg. to purpose; some are soft and malleable, and others extremely hard.

**Stalactite**, long, tapering or cylindrical calcareous formation, resembling an icicle in form, hanging from roof of cavern, etc., produced by continuous deposits of limy matter dissolved in the water which percolates through.

**Stalagmite**, formation analogous to stalactite, but formed from below, by limy matter deposited on floor of cavern by water dropping from roof; often becomes united into a continuous column with stalactite forming from above.



Stalactite and Stalagmite

**Stalin**, Jugashvili, Joseph Vissarionovich (1879- ), Russ. Soviet statesman; gen. Sec. of Communist party, 1920; succ. Lenin as director of Russ. policy. Introduced Five Year Plan (q.v.).

**Stalin**, *Yuzovka*, tn. in Ukrainian S.S.R., in Donetz Basin; pop., 106,860; steel, cast iron, and rolled-iron industry (begun by Briton, Hughes, 1870); coal-mining.

**Stalin Canal**: see WHITE SEA.

**Stalingrad**, *Tsarisin*, chf. tn., S. prov.,

Eur. Russia (c. 32,890 sq.m.; pop., 1,507,938), on Riv. Volga; pop., 400,000; important timber market in Volga dist.; tractor factory; Volga-Don Canal (31 m.) under construction.

**Stalinsk, Kuznetsk**, tn., Siberian Area, Russ. S.F.S.R., on Riv. Tom; pop., 4,115. S. coal basin, c. 5,000 sq.m.; metallurgical works.

**Stalling**, (aeronaut.) loss of speed to such an extent when flying that the aeroplane ceases to be under control.

**Stallion**, uncastrated male horse; esp. sire for breeding.

**Stalybridge**, munic. bor. and mkt. tn., Cheshire; pop., 24,800; iron indries.; woollen manufacture.



Stalin

**Stamboul**: see CONSTANTINOPLE.

**Stambuliski**, Alexander (1878-1923), Bulg. statesm.; leader of Agrarian party, 1908; led army agst. Sofia and secured abdic. and flight of Kg. Ferdinand, 1918; Pr. Min., 1919. Agrarian party under his guidance ruled country, condemning to death mins. who involved Bulg. in war. Murdered when Agrarians overthrown by mil. faction.



Stamen

**Stamen**, (bot.) pollen-bearing organ of a flower.

**Stamford**, 1) Munic. bor., Kesteven, Lincs, Eng., on Riv. Welland; ruins of Norman cas.; pop., 9,900. 2) Tn., Conn., U.S.A., on Long Island Sound; pop., 46,300.

**Stamford Bridge**, 1) battle of, victory of Harold of England over Harald Hardrada of Norway, 1066; named after bridge over Riv. Derwent, Yorks, Eng., 9 m. N.E. York. 2) Famous athletic ground, Chelsea, London, opened 1878; hdqrs. of Chelsea F.C.; accom. for 80,000 spectators.

**Stamp**, Sir Josiah (1880- ), Brit. pol. econ. and writer; Dir. Bank of England; Chmn. L. M. S. Rly.; *The National Income*.



Sir Josiah Stamp

**Stamp**, 1) appliance for multiple reproduc. of a pattern by printg. or sealg. 2) Offic. receipt for payment, generally of revenue or postage; usually perforated and gummed on one side, face showing amount paid and name of country. 3) (Weights and Measures Act, 1878) Casting, engraving, etching, branding, or otherwise indelible marking. **S. battery**, for breaking up stone or ore; the *stamping hammers* are lifted by cams and fall rhythmically on the ore; the material, when crushed sufficiently, passes thr. screen. **S. duties**, duties levied by means

of stamps on various legal, financial, and commercial documents, such as agreements, leases, mortgages, share transfers, etc.

**Stampings**, small metal parts made from sheet-metal, by means of steel punch suitably shaped and forced by press through sheet into die, into wh. it fits exactly.

**Stanchion**, (bldg.) steel or iron main pillar; vertical bar in a window.

**Standard**, 1) that wh. is establd. by authority (basis of measurement of weight, quantity, value, etc.). 2) (Heraldry) Orig. emblem carried on a staff, e.g., Rom. Imp. Eagle; later, large flag (see ROYAL STANDARD). 3) Timber measure = 165 cu. feet. 4) (Bot.) Plant growing with upright, tree-like stem, or from a bud grafted upon an upright stem. **S. candle**, standard of light strength, adopted under Brit. Metropolitan Gas Act (1860). Replaced by international unit, represented by 1/10th power of Harcourt pentane lamp, and by Hefner (q.v.) lamp. **S. deviation**, (statist.) measure of dispersion of frequency distribution. S.D. of a group is square root of average of squares of deviations of items from their arith. mean. Equal to square root of second moment; see MOMENT

(Statist.) Written  $\sqrt{\frac{\sum d_s^2}{n}}$  where  $\sum$  = sum of,

$d_s$  = deviation of 5th item from arith. mean and  $n$  = total no. of items. **S. fineness of coinage**, proportion of fine gold or silver in coins of a country fixed by law; U.K. standard gold is 11/12th gold and 1/12th alloy, or 916.6. Silver must be  $\frac{1}{2}$  silver and  $\frac{1}{2}$  alloy, or 500. **S. weight of coinage**, weight of metal in coinage of a State, fixed by law. In U.K., sovereign (q.v.) = 7.98805 metric grams; shilling = 5.65518 met. grams; penny = 9.44984 met. grams.

**Standard, Battle of the**: see NORTHALLERTON.

**Standardisation**, process of putting up to standards, establishing uniformity of size and design for products or parts thereof. *British Engineering Standards Assoc.*, organistn., formed 1904, for S. of forms and dimensions in steel-construction; elec. specifctns., aeroplane construction, etc. *Bureau of Standards* (U.S.A.), office of Dept. of Commerce charged with duty of keeping weights and measures and testing them for public use; corresponds somewhat to *National Physical Laboratory* (q.v.) in England.

**Standish**, Miles (c. 1584-1656), one of Pilgrim Fathers; apptd. capt. of "Mayflower," 1620; commanded numerous expedtns. agnst. Indians; agent in England for New England Colony, 1625-26; see Longfellow's poem, *The Courtship of Miles Standish*.

**Standstill agreement**, made by several creditors for the purpose of granting respite

to debtor in payments due; granted by creditors instead of formal moratorium (*q.v.*). Ger. banks made S.A. on acceptance and other short-term credits with Eng. and Amer. banks in summer of 1931.

**Stane Street**, Rom. road from Chichester to Dorking and London.

**Stanford**, Sir Charles Villiers (1852-1924), Irish composer; operas incl. *Shamus O'Brien*, 1896; *Songs of the Fleet*; compositions very numerous in all forms.

**Stanhope**, 1) Chas. S., 3rd earl of (1753-1816), Eng. statesm. and scientist; M.P., 1786-86; defended Fr. Revln.; invented S. printing-press and lens; experimented in steam navig., 1795-97; pubd. *Principles of Electricity*, 1779. 2) His dau. **Lady Hester S.** (1776-1839), niece and sec. of Wm. Pitt (1803-10); on his death she settled on Mt. Lebanon, gaining great authority over local tribes; *Memoirs*, 1845. 3) His g.-son **Philip Hy. S.** (1805-75), 5th E., Eng. histor. and politic.; pubd. *History of England from Peace of Utrecht to the Peace of Versailles*, 1836-54; lives of Condé, Wm. Pitt, etc.; better known as Lord Mahon.

**Stanislaus, St.** (1030-79), patron St. of Poland; Bp. of Cracow, 1071; killed by Kg. Boleslaus.

**Stanislas**, name of 2 kgs. of Poland: **S. I.**, *Lesczinski* (1677-1766), elected under pressure by Chas. XII of Sweden, 1704; expelled after battle of Poltava, 1709; father-in-law of Louis XV of France. **S. II**, *Augustus Poniatowski* (1732-98), elected kg. through influence of Catherine II, 1764; agreed to 3rd partition of Poland; forced to abdicate, 1795; last Kg. of Poland.

**Stanislavski**, Constantine (1863- ), stage name of Constantine Sergievich Alexiev, Russ. actor and theat. producer; fndd. Moscow Art Theatre, 1898. *My Life in Art*, 1924.

**Stanley, Arthur Penrhyn** (1815-81), Eng. divine and historian; leader of Broad Church party; prof. of Eccles. History, Oxford, 1856-63; Dean of Westminster, 1864; travelled in Egy. and Palestine, 1852-53, and with Pr. of Wales, 1862; pubd. *History of the Jewish Church*, 1862-65; *Commentary on Epistle to the Corinthians*, 1855; *Life of Thos. Arnold*, 1844.

**S., Sir Henry Morton** (1841-1904), Eng. explorer; exped. to find David Livingstone, 1871; investigated Ls. Victoria Nyanza and Tanganyika; disc. L. Edward and course of Congo. *In Darkest Africa*, 1890.

**Stannaries**, tin mines, specif. those in Devon and Cornwall; the tanners were sub-

ject to harsh *Stannary Courts* (abolished 1896) and held "parliaments" at Crocker Tor (Dartmoor) and Truro (one of the *Stannary Towns*) until 1752. Stannary prisons at Lydford (*q.v.*) and at Lostwithiel. Name survives in Lord Warden of the S. (member of Pr. of Wales's council).

**Stannite**, grey or black mineral compound of tin, copper, iron, and sulphur.

**Stannous and stannic compounds**, chem. compounds of tin (*q.v.*).

**Stanza**, one of several sets of lines each reproducg. exact metre, rhyme scheme, and arrangement of others; see OTTAVA RIMA.

**Stapelia**, succulent leafless African herb of *Asclepiad* fam.; flower of *S. gigantea* more than 1 ft. across and has carrion-like odour.

**Stapes** (anat.): see INCUS.

**Staphylococci**, round bacteria, growing in clusters; cause the formation of pus.

**Staple**, 1) one of chief or staple commodities of trade: metals, hides, textile fibres, etc. 2) (Text.) Length of raw fibre to be spun. **S.**, **Statute of the** (1354), providing that wool, leather, and other commodities were only to be sold at certain staple towns. Modified 1363, when Eng. staple was transferred from Flanders to Calais. **S. goods**, princ. commodity or productn. of country or dist.; raw material.

**Staple Inn**, two small quadrangles behind thoroughfare of Holborn, London; formerly one of the 9 Inns of Chancery. Holborn frontage consists of a row of Elizabethan timbered houses (c. 1586); houses in quadrangles chfly. 18th cent.; hall (built 1581) has fine hammer-beam roof, timbered screen, and 16th- and 17th-cent. stained glass.

**Star**, celest. body similar to the sun (*q.v.*) vastly distant from earth; classified according to *magnitude*, i.e., apparent brightness; ratio of brightness is 2.512, i.e., 1st magn. S. is 2.512 times brighter than 2nd magn. S., etc.; c. 6,000 Ss. (magn. 1 to 6) visible to naked eye; faintest S. photographed, magn. 21; nearest star to sun, *Proxima Centauri* (c. 4.3 light years); farthest from sun, stars of Milky Way (c. 100,000 light years); diameters of Ss. range from  $\frac{1}{2}$  to 480 times that of sun; Ss. classified according to 10 types of spectra, representing degrees of temperature. *Variable Ss.* not of constant magnitude. **Star Clusters**, close groups of Ss., classified as: 1) *globular*, regular in shape; 2) *open*, irregular with density outwards; 3) *scattered*, isolated groups. Ss. only apparently *fixed*, and have own proper motion. See also DOUBLE STAR; NOVA.



Stapelia;



Sir H. M. Stanley

**Star catalogue**, list of names, positions in right ascension and declination, and proper motions of fixed stars. First S.C. of over 1,000 stars made by Hipparchus (q.v.), notable later ones by Boss, Argelander, and Schönfeld. Some 500,000 stars have been catalogued. **S. Chamber**, Eng. court of special jurisdiction, est. 1487, and abol. on account of abuses, 1641. **S. of Bethlehem**, pretty, bulbous plant (*Liliaceae*) of genus *Ornithogalum*; usu. white-flowered; cultivated in gardens. **S. of India**, Order of, fndd. 1861 for Ind. princes and chiefs and for Brit. subjects in Ind. Service; comprises the Sovereign, Grand Master (Viceroy of India), Knights Grand Commanders (G.C.S.I.), Knights Commanders (K.C.S.I.), Companions (C.S.I.); ribbon: sky-blue edged white. **S., 1914**, decoration awarded to all ranks of Brit. Army who served in Fr. and Belgium betw. 5 Aug. and 22-23 Nov., 1914; clasp awarded to those who served within artillery range betw. 5 Aug. and 7-8 Nov., 1914; ribbon: red, white, and blue, watered and shaded.

**Starboard**: see PORT.

**Starch**, a carbohydrate of very complex constitution, found in almost every plant; acts as reserve of nourishment, like fat in animals. Formed in green leaves from water and carbon dioxide, the chlorophyll (q.v.) and sunlight being agents. Deposited in plant in granules of characteristic shape for each plant; these burst in hot water, forming "starch paste" (used as adhesive). S. is important food of man and animals; chief food constituent of cereals, potatoes, peas, lentils, rice, etc. Heated with dilute acids becomes soluble, and then by hydrolysis (q.v.) is split up into sugars (maltose, glucose, etc.). This change is also effected by enzymes (q.v.) pres. in saliva, pancreatic juice, and malted grain. Heated dry it becomes dextrin, or British gum. Manufactured from all kinds of cereals, roots, etc., by washing S. out with water and filtering. Uses: as *food-stuff*, in cornflour, arrowroot, custard powder, macaroni, semolina, etc.; *industrial*, as adhesive and size for textiles; prep. of sugars for fermentation; for stiffening laundered clothing.

**Starfish**, member of sub-kingdom *Echinodermata*, wh. includes brittle-stars, feather-stars or crinoids, sea-urchins and sea-cucumbers. The common starfish (*Asterias rubens*), has five tapering arms or rays, its mouth being in the centre of its body, with a groove extending from vicinity of mouth to apex of each arm, containing mobile extensible tube-feet, used both for loco-



Starfish

motion and capture of prey. times injurious to oyster-fisheries, but useful as scavengers. Widely distributed in all seas.

**Starling**, widely distributed passerine bird of the Old World; plentiful in Gt. Brit. throughout year, additional migrants arriving from N. during autumn and winter. Insect feeders, beneficial to agriculture. Make untidy nests in any convenient hole in tree, cliff, wall, or thatch. Song: a mixture of chattering and flute-like notes.



Starling

**Starosta**, former Russ. headman and collector of taxes; also a former Polish "lord marshal" placed in command of a company of Cossacks.

**Starr-Bowkett societies**, a form of building society (q.v.), in which, after a special sum had accumulated, it was allotted by ballot to one of the members, to be repaid by instalments; this member often had right to sell this allotment, and often did so at a profit. They no longer exist.

**Stars and Stripes**, flag of the U.S.A., 13 red and white stripes symbolising 13 orig. States, with blue canton bearing 48 white stars for 48 present States.

**Starter**, (tech.) resistance device, for elec. motors; to prevent excess of current passing until motor has gained speed. **Motor S.**, continuous-current motor worked from an elec. battery, for setting engine of a motor-driven vehicle in motion.

**Starting-gate**, apparatus for ensuring a fair start for all the horses in a race.

**Stassfurt**, tn., Ger., on Riv. Bode; pop., 17,000; salt beds; see ABRAUM SALTS.

**State**, term for inhabs. of a defined area constitutg., with their Govt., a collective unit possessing supreme power over them as individuals. **S. banks**, loan banks estab. by law, under the control of a State and guaranteed by it. In some countries the centr. bank is a S. Bank. There are none in the U.K.; see TRUSTEE SAVINGS BANKS. S.B. in U.S.A. is governed by laws of a State of the Union as opposed to the *National banks* (q.v.). S.B. need not necessarily be members of the Federal Reserve System (q.v.). **S. guarantee**, acceptance by State of responsibility for liabilities of debts of companies or State institutions. **S. medicine**, protection of public health, as function of govt., developed in Gt. Brit. during 19th cent.; *Public Health Acts*, 1848 and 1875; *Ministry of Health* created, 1919.

**Staten Island**, isl. (56 sq.m.), New York City, at mouth Hudson Riv.; part of Greater New York; sep. from New Jersey by Kill van

Species some-

Kull and Arthur Kill; contains Richmond county; pop., 158,400.

**Stater**, anc. coin of varying value; esp. Pers. gold coin worth c. 22s.; later, silver coin, worth 4 drachmas (*q.v.*).

**States-General**, 1) Parl. of the United Netherlands from 15th cent.; sat at The Hague from 1593 to 1793. 2) Legislative assembly of Fr. before revol. (*États généraux*), cons. of deputies from nobility, clergy, and towns; not summoned after 1614 until 1789, when they transformed themselves into the National Assembly.

**States of the Church** (*Papal States*), secular dominion of the Pope, princip. in Rome and its neighbourhood; fndd. by gift of Pepin in 754, abol. by Napoleon at Fr. Revol., restored, 1815 (15,900 sq.m.; pop., over 3 mill.). United in 1870 by plebiscite with newly establd. kngdm. of Italy. In 1929 restored in very attenuated form as Vatican State (*q.v.*) by concordat betw. It. and Papacy (*q.v.*).

**Statice**, sea lavender, genus of *plumbaginaceous* plants, with evergreen leaves and pink, white, or mauve flowers; *S. armeria*, sea pink, or thrift; grows on cliffs and downs close to sea; small pink flower.

**Static electricity**, electricity present as a charge, but not in motion; produced by friction, may cause explosion or fire by sparks, e.g., in "dry" cleaning of fabrics, in washing hair with benzene or petrol.

**Statics**, science dealing with equilibrium of forces acting upon bodies.

**Stations of the Cross**, series of 14 crosses, placed around walls of a ch., generally accompanied by appropriate pictures, representing Christ's Passion from His appearance before Pilate to His burial; used as form of devotion, orig. by the Franciscans.

**Statistics**, numerical description of a group of items considered homogeneous as regards certain characteristics. *Subject of statistical method*: investigation of size and structure of mass phenomena and their representation by a few salient figures. In this the processes of analysis, classification, tabulation, and summarisation of the numerical material, together with a firm grasp of the subject, are essential. Inferences may be drawn by means of comparisons aided by the theory of probability, the results being clearly stated so as not to admit of misinterpretation. *Errors*: the chief sources lie in faulty collection of the raw material and inadequate attention given to definitions. *Use of S.*: to cast light on economic affairs and social phenomena of all kinds and to act as subsidiary method of investigation in most branches of science, especially natural sciences.

**Statius**, Publius Papinius (c. A.D. 45-96), Rom. poet; *Thebais*.

**Status** (Lat.), state, condition, financial

position. **S. quo**, the present state of things. **S. quo ante**, the state of affairs previously obtaining.

**Statute**, 1) law enacted by Parl. 2) Laws and by-laws of corporations and friendly societies. **S.-barred**, defining a right wh., owing to efflux of time or some other consideration, cannot be enforced by the Cts.; in Eng. law, recovery of debt 6 yrs. after contract to pay was (in absence of acknowledgment by debtor) S.-b by Statute of Limitations, 1623. **S. mile**: see *MILE*.

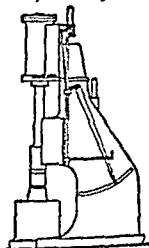
**Statutes of limitation**, laws which fix a cert. period within wh. particular actions or proceedings must be brought in courts.

**Stavanger**, seapt. and dist. cap., S.W. Norway, on Bukken Fjord; pop., 47,000; shipbuilding.

**Stay**, (naut.) large rope running from one mast-head down to another mast or to some other part of a vessel; used to support a mast and to extend a fore-and-aft sail.

**Stead**, William Thomas (1849-1912), Eng. journalist; ed. of *Northern Echo* (Darlington), 1871, and of *Pall Mall Gazette*, 1883-89; publ. *Maiden Tribute* and imprisoned (3 mths.), 1885, for actions taken to expose white slave traffic; fndr. and ed. of *Review of Reviews*, 1890; interested in spiritualism and ed. of *Borderland*, 1893-97; lost in *Titanic* disaster, 15 Apr., 1912.

**Steam**, water vapour. *Saturated S.*, steam of any pressure and corresponding temp. which is in equilibrium with liquid water. *Superheated S.*, that at temp. higher than above. 1 vol. water produces 1,675 vols. steam at boiling-point under atmospheric pressure. **S. accumulator**, serves to store S. wh. has been generated until reqd. for use: see RUTH'S S. ACCUMULATOR. **S. dome**, (engin.) extension of steam boiler upwards, from which steam is collected, thereby avoiding spray from boiling water. **S. engine**, power for mechan. work produced by expansion of steam from boiler pressure to atmospheric or vacuum (condenser) pressure, 1) by acting on piston in cylinder, 2) by impinging on vanes of wheel, in steam turbine. See also WATT, JAMES. *Piston engines* of many kinds; multiple expansion, two or more cylinders in series, steam exhausting from first after partial expansion into second, and so on. *Turbines* (*q.v.*) 2 kinds: impulse and reaction. **S. hammer**, powerful mechanical hammer operated by a piston moving up and down in a S. cylinder. Used for very large forgings. **S. navy**,

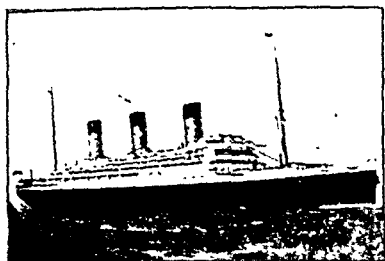


machine for excavating earth; forces lip of bucket into earth and then raises same,

dumping material in trucks or otherwise as required; *see* EXCAVATOR. **S. roller**, simple form of steam locomotive with two hind wheels and one front wheel in form of heavy roller, for rolling macadam and sim. roads. **S. superheater**, a battery of tubes, through which S. passes from the boiler; transformed into hot S. up to  $450^{\circ}$ , effects grt. saving of coal and increases efficiency.

**Steamer** (cooking), double saucepan, with lower vessel for water; and 2 or 3 upper containers having pipe thr. wh. steam passes; for cooking all kinds of food by steam.

**Steamship**, large ship driven by steam; first practicable S.S. constructed by Fulton, who used it on the Hudson Riv., U.S.A.,



White Star Liner "Majestic"

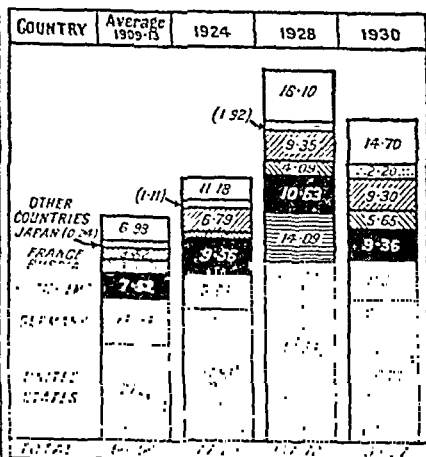
1807. Some form of prime mover depending upon generation of steam from water is nec. for propulsion of such craft; modern tendency is to use higher steam pressures, thus reducing space reqd. by machinery. Numerical zenith reached in world's mercantile fleets in immediate pre-war years; since then a steady decline in favour of motor ships (q.v.). S.S.s. still used extensively where highest powers and speeds are required.

**Stearic acid**,  $C_{18}H_{36}O_2$ , fatty acid; m.p.,  $69.3^{\circ}$ ; b. p.,  $360^{\circ}$ ; white, odourless, fatty, pearly scales; obtained from *stearin*, its compound (ester) with glycerine, chief or large constituent of harder veg. and anim. fats (cacao butter, tallow). S.A. used for candles, gen. mixed with solid paraffin wax. *Stearates* are soaps; sodium stearate, constituent of ordinary washing soap.

**Steatlite**: *see* SOAPSTONE.

**Steel, iron (q.v.)**, containing carbon or other elements, distinguished by partic. mechan. qualities; carbon content generally 1-2%. *Production*: 1) in converter; *see* BESSEMER CONVERTER; 2) by *Thomas process* (q.v.) to remove phosphorus; 3) *Siemens-Martin process* (q.v.); 4) in elec. furnace (q.v.). **Cast-s., crucible s.**, re-melted in crucible and poured. **High-speed tool s.** for cutting tools; **self-hardening s.** for same purpose; tungsten, nickel, chromium, vanadium, molybdenum S., all with spec. qualities; **stainless s.** (q.v.), iron-nickel-chromium

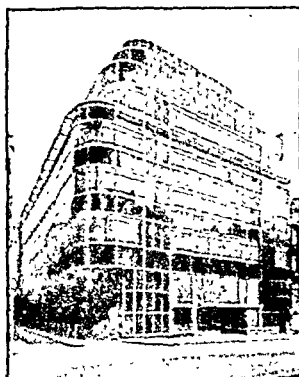
alloys of various composition. Relations betw. carbon and iron constituting carbon steel are very complicated. Constituents occurring in form of minute crystals are: *ferrite*, or pure iron; *austenite*, solid solution of carbon in iron; *cementite*, iron carbide ( $Fe_3C$ ); *pearlite*, eutectic crystals of iron and iron carbide; *martensite*, hardest and most



World production of steel increased in 1928 by two-thirds, and in 1929 by five-sixths of 1913 total; in 1933 production declined. U.S.A. largest producer, contributing normally nearly  $\frac{1}{4}$  total, and fall in U.S.A. production in 1930 is main cause for fall in world's total; in France, Russia, and Japan, little or no decline in 1930.

brittle steel, very minute crystals; *troostite*, structure of steel that has been slightly tempered or contains less carbon. Hardness of S. is due to fine structure of ferrite crystals,

and presence of carbon atoms, cementite molecules, and minute cementite crystals, which prevent sliding of iron crystals. **Air-hardening s.**, hardens simply on cooling from strong heat, and so needs no quenching. **S.-framed building**, modern type of construction, consisting of



Example of modern steel and glass construction: "Daily Express" Building, London

modern type of construction, consisting of

framework or skeleton of steel, clothed with stone, brick, or concrete.

**Steel**, Flora Annie (1847-1929), Eng. novelist; deal mainly with Anglo-Ind. life: *From the Five Rivers*, 1893; *On the Face of the Waters*, 1896; *Sovereign Remedy*, 1906.

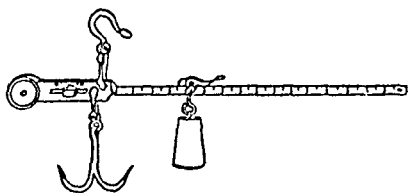
**Steele**, Sir Richard (1672-1729), Irish essayist; fndd. *Taller*, 1709, and, with Addison, *Spectator*, 1711.

**Steelyard**, very anc. apparatus for weighing; lever with variable arms, allowing object to be weighed to be balanced agst. single standard wt., the lever arm then being measured.

**Merchants of the S.**, a league of Ger. merchants estab. in London in 13th cent. who



Steele



Steelyard

played a most important part in the foreign trade of country; finally abol. in 1578. See HANSEATIC LEAGUE.

**Stein**, Jan (c. 1626-79), Dut. painter: *The Music Master*.

**Steenbok**, small S. Afr. antelope, without lateral hoofs; tawny; horns c. 4 in. long.

**Steeplechase**, horse- or foot-race, over hedges, ditches, etc. (opp. *flat-race*, q.v.). See GRAND NATIONAL, and cf. POINT TO POINT.

**Stefansson**, Vilhjalmur (1879- ), Arctic explorer; joined archaeol. expdtns. to Iceland, 1904-05; accomp. Leffingwell-Mikkelsen expdtn., Alaska, 1906-07; commdd. Canad. govt. Arctic expdtn., 1913-18, and discovered various isls.; explored Macdonnell ranges, centr. Australia, 1924; pub. *My Life with the Eskimos*, 1903; *Hunters of the Gl. North*, 1922; *Exploration*, 1929; etc.

**Stegosaur**, horned dinosaur with solid limb bones, armoured body, and series of bony plates arranged ridge-wise and vertically on back, modified into spines on tail; extinct.

**Steiermark**: see STYRIA.

**Stein, Sir (Mark) Aurel** (1862- ), Brit. archaeologist; explorations in Chinese Turkestan, 1899-1901; Centr. Asia and W. China, 1906-08; supt. of Ind. Archaeol. Survey, 1910; explored in Persia and Centr. Asia, 1913-16; identif. site of Aornus, 1926; *Chronicle of Kings of Kashmir*, 1900; *Serindia*, 1921; *The Thousand Buddhas*, 1921. **S.**, **Karl, Frh. vom und zum** (1757-1831), Ger.

a esm.; reorganised Pruss. after Jena, 1806;

emancipated serfs, 1807; granted local self-govt. to towns, 1808; fndd. *Monumenta Germaniae Historica*.

**Steinach**, Eugen (1861- ), Austr. physiol.; S.'s operation consists of the division of the *vas deferens* with the object of increasing the growth of the interstitial cells of the testicle, and thus causing *rejuvenation* (q.v.).

**Steinamanger**: see SZOMBATHELY.

**Stellen**, Karl von den (1855-1928), Ger. anthropol. and explorer; *Through Central Brazil*.

**Steiner**, Jacques (1796-1863), Swiss mathemat.; developed synthetic geometry. **S., Rudolf** (1861-1925), Ger. philos.; fndd. anthroposophy (q.v.) and doctrine of the *Threefold State*.

**Stele** (archit.), upright pillar or block of stone, sculptured or inscribed, usually as a sepulchral or other monument.

**Stellenbosch**, tn., Cape Prov., S. Africa, in fruit-growing dist.; pop., 7,000 (3,700 whites); univ.; in 2nd Boer war mil. base to which incompetent officers were returned from the front; hence, to *stellenbosch*, remove to unimportant appointment.

**Steller's sea-cow**: see SEA-COW.

**Stelvio Pass**, **Stilfser Joch**, Alpine pass (9,040 ft.), from L. Como and Val Tellina (N. Italy) to upper Adige valley.

**Stem**, *stem post* (naut.) curved piece of timber or steel to wh. the 2 sides of a ship are united at fore end.

**Stem turn**, (ski-ing) turn made on outside edge of ski (q.v.) with feet side by side.

**Stencilling**, method of executing decorative designs by cutting out in card or metal, laying on paper or fabric and applying colour, which only appears where the pattern has been cut away.

**Stendhal**, pseudon. of Henri Beyle (1783-1842); Fr. novel.: *Le Rouge et le Noir*, 1830; *La Chartreuse de Parme*, 1839; *Armance*, 1827.

**Stenography**, shorthand, simplified writing capable of extremely rapid execution, so that fastest speaker can be followed. Eng. systems most in use: Pitman's, Græig.

**Stenosis**, (med.) diminution of a body passage, e.g., of the intestine, aorta, or urethra; see STRICTURE.

**Stentor**, in Homer's *Iliad*, one of heroes of Siege of Troy; had a voice with the power of 50 men: *Stentorian Voice*.

**Step-dance**, d. with characteristic or peculiar steps, as clog-dance.

**Stephen**, (N.T.) 1st Christian martyr; Hellenistic Jew, one of 7 deacons apptd. to distrib. common fund of Christian commun-



Stendhal

ity; martyred at Jerusalem, A.D. 29 (Acts vii).

**Stephen**, name of 9 popes, of whom the most important, historically, are: **S. I, St.** (254-57), restored bps. deposed for unfaithfulness. **S. II** (752-57), created the Pontifical State. **S. III** (768-72), ordered election of popes to be only by Rom. clergy; confirmed image-worship. **S. IX** (1057-58), enforced policy of clerical celibacy.

**Stephen I** (1105-54), Kg. of Eng.; succeeded Hy. I, 1135; broke oath to secure succession of Emp. Matilda; destd. David, Kg. of Scot., Matilda's uncle, at battle of Standard, 1138; civil war, 1139-53; S. allowed to reign till his death, by Treaty of Wallingford. 2) Name of 5 kgs. of Hungary, of whom the most important are: **S. I, St.** (977-1038), assumed royal title after defeat of pagan nobles at battle of Veszprém, 998; repelled invasion of Emp. Conrad, 1030; canonised, 1083. **S. V** (1239-72), succeeded father Béla IV, 1270; invad. Bulgaria, 1286; assumed title of Kg. of Bohemia; routed Ottocar II of Bohemia, 1271.

**Stephen, Sir James** (1829-94), Eng. judge and publicist; legal member Council in India, 1869; judge of High Crt. of Justice, 1879-91; *General View of the Criminal Law of England*, 1863; *Digest of the Law of Evidence*, 1876. **S., Sir Leslie** (1832-1904), Eng. philos. and man of letters; ed. *Dict. Nat. Biogr.*, 1882-91; *Science and Ethics*, 1882; *English Literature and Society in the 18th Century*, 1904.

**Stephens, James** (1882- ), Irish poet; Nationalist; *The Crock of Gold*, 1912; *Deirdre*, 1923; *Elched in Moonlight*, 1928.

**Stephenson**, 2 Eng. engineers: 1) **George** (1781-1848), constructed 1st locomotive to draw passenger train (Stockton-Darlington Rly.), 1825; built "Rocket" for Manchester-Liverpool Rly., 1829, with the help of 2) his son, **Robert** (1803-59), who constructed rly. bridges, viaducts, etc., notably Britannia tubular bridge over Menia Strait; Berwick Viaduct, etc.

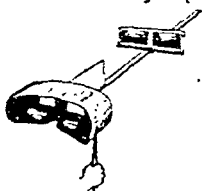
**Stepney**, met. bor., E. London, Eng., N. bank Riv. Thames; working-class dist., containing Limehouse, Mile End, and Whitechapel (q.v.); pop., 225,200.

**Steppe**, treeless, barren plain, esp. of Russia and Siberia.

**Stere** (metric system), 1) meas. of capacity, 1,000 cu. decimetres. 2) Wt., 10 quintals (1,000 kilograms).

**Stereometer**, (math.) instrument for measuring volumes; also specific gravity of liquids, etc. **Stereometry**, (math.) science of calculating the solid contents of bodies (volumes).

**Stereoscope**, optical apparatus with 2 lenses same distance apart as human eyes (c. 2½ in.), thr. wh. 2 photos. are viewed, one with each eye; photos. are taken simultaneously by similar lenses the same (above) distance apart; observer combines in his brain the 2 pictures and gets the impressn. of one solid, 3-dimensional view instead of flat picture.



Stereoscope

**Stereotype plates**, printing plates cast in type-metal from a matrix or mould made from prepared soft paper (*fiong*), plaster of Paris, or other moulding material; stereos used for newspaper printing. See also **ELECTROTYPES**.

**Sterilisation**, 1) treatment of food or surgical and medical appliances, etc. by heat or otherwise to secure complete destruction of bacteria and other micro-organisms. 2) Surgical modification of generative organs with a view to preventing reproduction. S. frequently advocated for the feeble-minded; in some states of U.S.A. compulsory S. of the latter is in force; the operation need not interfere with normal sexual intercourse.

**Sterlet**, small species of sturgeon (q.v.), rarely exceeding 3 ft. in length; fnd. in Black Sea and Danube.

**Sterling**, John (1806-41), Brit. author; friend of Carlyle, who wrote his *Life*, 1851; pubd. *Arthur Coningsby*, 1853; *Poems*, 1839.

**Sterling**, gold and silver of standard fineness (q.v.); also term for Brit. currency generally. **S. bonds**, bonds of a foreign country payable in British currency. **S. area**, term used to describe group of countries wh. suspended gold standard at the same time as, or shortly after, Gt. Brit. did so in 1931, and tended to allow their currencies to remain close to a given ratio to the £. Sometimes used loosely to include (besides Brit. Empire and Scand.) S. Amer., Japan, Portugal, and other countries. **S. loans**, those made to foreign Govts. or companies payable as to interest and princ. in sterling.

**Stern**, William (1871- ), psycholog. and educationalist; *Psychology of Early Childhood*.

**Stern**, (naut.) afterpart of ship, housing screws and rudder; known as **counter s.**, if of steel with double knuckle, and as **cruiser s.** if of warship type.

**Sterne**, Laurence (1713-68), pseudon. *Forick*, Eng. humorist; *Tristram Shandy*, 1759; *Sentimental Journey*, 1768.



Laurence Sterne



**Stet** (Lat.) let it stand; marginal note cancelling a previous correction made in MS., proof, etc.

**Stethoscope**, (med.) instrument for listening to sounds of heart and lungs. See AUSCULTATION.

**Stettin**, free port, cap., Pomerania, Prussia, on Riv. Oder near its entrance into Stettiner Haff; pop., 270,300; engineering works; shipb.; cement factory; port of Berlin (Berlin-Stettin Waterway); airport. S. joined Hanseatic League, 1360; Swedish, 1648; Prussian since 1720.

**Steuben**, Friedrich Wilhelm von (1730-94), Ger. gen.; fought in 7 Years' War; drilled and orgnd. Amer. armies in War of Indep.; largely responsible for ultimate success.

**Stevadore**, person employed at docks to stow and unload cargoes.

**Stevens**, Alf. (1818-75), Eng. sculptor; Wellington Monument in St. Paul's Cathedral.

**Stevenson**, Robert Louis (1850-94), Brit. novelist, essayist, and poet; *Travels with a Donkey*, 1879; *Virginibus Puerisque*, 1881; *Treasure Island*, 1883; *Dr. Jekyll and Mr. Hyde*, 1886; and plays (with W. E. Henley).

**Stewart**, Dugald (1753-1828), Scot. philosopher; joint prof. of Mathematics, Edinburgh Univ., 1775, and of Moral Philosophy, 1785-1820; pubd. *Elements of the Philosophy of the Human Mind* (1792-1828).

**Steyn**, Martinus Theunis (1857-1916), S. African statesman; last Pres. Orange Free State, 1896-1902.

**Stheno**, one of the Gorgons (q.v.).

**Stibnite**, steel-blue sulphide of antimony, of which it is the most important ore; also called *antimony glance*.

**Stick-insect**, a member of the order Orthoptera; remarkable for its resemblance to a twig or branch of a tree; herbivorous; found in tropical and sub-tropical regions.

**Stickleback**, small fresh-water fish, with three sharp, erectile spines on back; found in ponds and streams; males, during breeding season, highly coloured and pugnacious; build nest of small fragments of water weeds, in wh. several females deposit their eggs and depart, leaving the male to mount guard over the spawn until the young hatch and emerge. **Fifteen-spined s.** is a marine species, of larger size but similar breeding habit; frequents deep rock-pools and makes nest in midst of sea-weed.

**Stickwort**: see AGRIMONY.



Stethoscope



R. L. Stevenson



Stickleback

**Stiff neck**: see TORTICOLLIS.

**Stigand** (d. 1072), Eng. ecclesiastic; under Edw. the Confessor, Bp. of Elmham, 1044, Abp. of Canterbury, 1052; incurred Wm. the Conqueror's distrust; deprived of see and imprisoned for life.

**Stigma**, (bot.) that part of the pistil of a flower which receives the pollen (q.v.).

**Stigmata**, (eccles.) marks, or periodically bleeding wounds, corresponding to the 5 wounds of Christ, appearing miraculously on bodies of some saints and other persons (e.g., St. Francis of Assisi).

**Stilbite**, a zeolite (q.v.).

**Stiletto**, 1) small, sharp dagger with tapering blade. 2) Small pointed instr. of metal or ivory, for making eyelet holes in fabrics.

**Stilicho**, Flavius (c. 359-408), Rom. gen. and statesman, of Vandal birth; ambass. to Persia under Theodosius; chf. adviser and guardian of Honorius; deftd. Alaric at Pollentia and Verona, 403, and Radagaisus at Faesulae, c. 405; put to death by Honorius after revolt of troops at Pavia.

**Stillingfleet**, Edw. (1635-99), Eng. divine; chaplain to Chas. II; Dean of St. Paul's 1678; Bp. of Worcester, 1689; pubd. *Origines Sacrae*, 1662; *Origines Britannicae*, 1685, etc.

**Still life**, pictorial repres. of inanimate objects, e.g., fruit, flowers, game, etc.

**Stilt**, bird of plover fam., with extremely long legs, long pointed wings, and round tail, upper plumage black; fnd. in S. Europe, Asia, Africa, Australasia, and parts of America.

**Stilton**, vill., Hunts, on Great North Road; former distrib. centre of *S. cheese* (made at Melton Mowbray and elsewhere in Leicestershire).

**Stilts**, high, wooden props with foot rests, used for walking, esp. in marshy districts.

**Stimson**, Henry Lewis (1867-), Amer. lawyer and statesman; appointed Gov.-Gen. of Philippine Islands, 1927; Sec. of State, 1929-1933; attended London Naval Conference, 1930.

**Stimulant**, (med.) drug wh. excites nerves or heart to quicker action, e.g., strychnine, caffeine, camphor.

**Stimulus**, 1) (psychol.) that wh. excites or provokes sensations. 2) (Physiol.) Influence leading to organic reactions.

**Sting**, offensive or defensive organ of cer-



Stiletto



Still Life, by Cézanne



Stilts

tain insects, e.g., wasps, bees, scorpions; also plants, e.g., nettles; the wound resulting from its use. Insect *S.* relieved by applying solutions of ammonia or bicarbonate of soda. **S. ray**, fish of shark order, in wh. pectoral fins continue round end of snout; long, armed tail, wh. may inflict severe wounds; mainly tropical; some 25 species known.

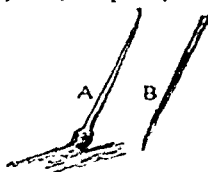
**Stinkhorn**, *Phallus impudicus*, fungus developing from an "egg," from which bursts an elongated stem; very foul smelling; has a great attraction for insects.

**Stint**, Brit. shore-bird, closely resemb. sanderling (q.v.); black and brown upper plumage; nests in Norway.

**Stipendiary**, Brit. magistrate apptd. by Home Sec. and pd. by Govt., who presides over the police courts of the metropolitan and certain other boroughs.

**Stippling**, painting, drawing or engraving with minute dots instead of continuous lines or hatching; in engraving especially fashionable in later 18th century.

**Stirlingshire**, co. in centr. Scot.; area, 448 sq.m.; pop., 166,400. Mountainous surface in N.W. and centre (*Ben Lomond*, 3,192 ft.), fertile plains in E.; chief riv. the Forth; Grangemouth, on Firth of Forth, an import-



Types of Sting  
A. Nettle. B. Bee



Stinkhorn

**Stirrup**, metal hoop or ring, with flat base, suspended by straps on either side of saddle to support rider's foot, and to assist him in mounting. Not in use until 7th cent., A.D., rider mounting at a block, or using spear as aid in vaulting into seat.

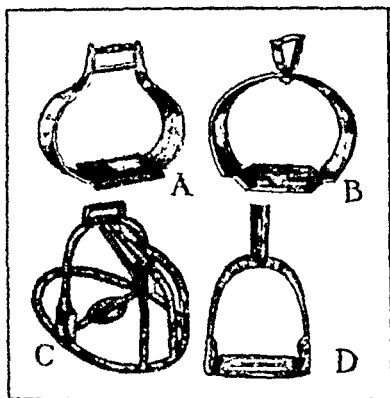
**Stitch**, (med.) 1) A sudden, spasmodic pain in the intercostal muscles. 2) Catgut or silk used for uniting the edges of a wound.

**Stitchwort**, hedge plant with grass-like leaves and white star-shaped flowers, form. used as folk remedy for stitch in side.

**Stoa**, (Gr. architecture) cloister, colonnade walled at back and open in front. **S. Polkile** ("Painted Colonnade") at Athens, where Zeno (q.v.) taught; hence *Stoic Philosophy*.

**Stoat**: see *ERMINE*.

**Stock**, 1) (finan.) portions of capital of a co. transferable in any amount. Unlike *shares* (q.v.), wh. are for stated amts. and can only be transfd. in those amts. (or multiples thereof). Kinds of *S.*: *Ordinary* (U.S., common), may be divided into *A stock* (Deferred) and *B stock* (Preferred), latter having priority in dividends and usu. also in capital distrib. at time of winding-up; also *Cumulative Preference S.* on wh. arrears of dividend are paid bef. *Ordinary* or *Deferred S.*-holders rec. dividends. In *Registered S.*, title of ownership is registered in transfer books, and signatures of seller and buyer are necessary to this, as well as on *S. certificate*. *Inscribed S.* carries no certificate, title to ownership being shown in *S. Register*; seller must be identified by stockbroker. 2) (Bot.) *McIlthiola*: garden plant; sweet-scented variety blossoms in June (Eng.), flowers chfly. red, purple, or white. **S. Exchange**, market for buying and selling, or exchange, of stocks, shares, bonds, and debentures. Modern *S. Exchs.* are highly organised institutions with strict regulations governing activities of members. In U.K. there are *S.E.s.*, in many of the large towns. London *S.E.* has over 5,000 members, and is governed by *S.E. Cmtee.* Members are *stockbrokers* (q.v.) and *jobbers* (q.v.). Brokers deal with jobbers on behalf of their clients, who are the general public. Permission of the *S.E. Cmtee.* must be obtnd bef. any security may be dealt in. Prices are quoted daily. Broker members (*inside brokers*) often receive much business from *outside brokers*. Difference betw. London and New York time, being 5 hrs., business in Amer. shares is contd. in Throgmorton Street after *S.E.* is closed for the night, hence business "in the street," often discussed in financial columns of newspapers; not equiv. to *Curb Market* in N.Y. (q.v.). **S. Exchange List**, official bulletin of *S. Exch.* prices and quotations; securities generally grouped in diff. categories; client or broker may require any *bargain* (deal) to be *marked*, which means that price at wh. the deal is made will be



Types of Stirrup

- A 15th century  
B Spanish mule rider's, 17th cent.  
C French Iron, 16th cent.  
D Modern English

ant port; coalfields, ironworks, textiles. **Stirling**, royal burgh and co. tn., on Riv. Forth; famous castle; Wallace monument; battlefield of *Bannockburn* 2 m. S.E. Manuf. woollens, carpets; pop., 22,600. *Battle of S.*, 1297, victory of Wallace over English.

published in the "business done" column of *Daily Official List*.

**Stockbroker**, one dealing in stocks, shares, bonds, etc.; for *inside* and *outside* brokers, see STOCK EXCHANGE.

**Stockholm**, 1) county (*Län*) of Sweden, on Baltic coast; 2,986 sq.m.; pop., 265,000. 2) City, cap. of Sweden, on N. bank (Norr-malm, Östermalm), S. bank (Södermalm), and intervening isls. (Stadholm, Riddarholm, Helgeandsholm); forming *Staden*, the anc. centre) of estuary (Saltsjö) linking L. Mälär with Baltic; pop., 502,200. *Stadholm* contains Slott (Royal Palace), Riddarhus (House of the Nobles), Storkyrka (oldest church), Town Hall, and comml. qrs., docks, etc.; *Riddarholm*, Riddarholmskyrka (royal tombs); *Helgeandsholm*, the Diet.

In remaining qrs. are the Museums, univ., academies, royal library, theatre and opera house, Nobel Institute, parks, gdns., and squares. Iron and steel, breweries, tobacco, printing and porcelain factories; engineering works; shipbuilding. **Blood Bath of S.**, massacre of Swedish nobles by Christian II in 1520; led to rising under Gustavus Vasa and liberation of Sweden from Denmark.

**Stockinet**, elastic knitted or woven matl., for dresses, underclothing, etc.

**Stockport**, co. bor., Cheshire, Eng., on Riv. Mersey; pop., 125,500; manuf. cotton, cloth, silk hats, machinery.

**Stock-pot**, saucepan kept solely for boiling of bones, vegetables, meat, etc., for soups and gravies.

**Stocks**, instrument of punishment formerly used in Gt. Brit., Europe and U.S.A.; the offender sat with his feet (and sometimes hands and head) locked in holes in a heavy wooden framework, exposed to public derision. A whipping-post was sometimes attached. Fell out of use in Eng. during first half of 19th century. Cf. **PILORY**.



Stocks

**Stockton-on-Tees**, tn. and riv. port in co. Durham, on Riv. Tees, 4 m. from its mouth; pop., 67,700; manuf. iron and steel. **S. and Darlington Rly.**, first passenger-carrying railway in England, opened 1825.

**Stoichiometry**, the mathematics of chemistry, embracing all laws wh. govern chem. changes as regards vol. and wt. of reacting substances; laws of *atomic* and *molecular weights* and of *valency* (*q.v.*) belong to Stoichiometry.

**Stoicism**, school of philos. fndd. by Zeno (*q.v.*) acdgd. to wh. a rational manner of living, self-control, and freedom from passion and emotion shld. be chf. aim in life; an ethical idealism taking form of relig. submission to a Divine order. Materialistic conception of Universe, Nature and Reason being the highest good, and mainspring of all activity. S. dominated Rom. later philos. (Seneca, Epictetus, Marcus Aurelius), teaching that true happiness is attainable only by the virtuous.

**Stoke**, **Battle** of fought nr. Newark, Notts, 16 June, 1487; rebellion in favour of Lambert Simnel (*q.v.*) crushed by Henry VII.

**Stoke Newington**, met. bor., N.E. London, Eng.; pop., 51,200.

**Stoke-on-Trent**, city and co. bor., Stafis, Eng., comprising the "Five Towns" (Stoke, Hanley, Burslem, Fenton, Longton); centre "Potteries" (*q.v.*); pop., 276,600; coal-mining, machinery; centre of porcelain and earthenware making.

**Stoke Poges**, vill., Bucks; ch. (12th and 13th cents.) is burial place of poet, Gray, who is said to have composed his *Elegy* here; pop., 1,710.

**Stokes**, Sir George (1819-1903), Brit. mathematician and physicist; prof. of mathematics, Camb., 1849; pres. of Royal Soc., 1885; report on hydrodynamics for Brit. Assoc., 1846; discovered refrangibility of light; pubd. *Natural Theology* (1891), and many scientific papers.

**Stokes Trench mortar**, light trench mortar, Brit. inven., to fire 18-lb. bombs in rapid succession. Each bomb contains its own propelling charge, wh. is fired as it strikes the base of the mortar.

**Stola**, outer garment worn by women of anc. Rome.

**Stole**, (eccles.) long strip of cloth or silk, varying in colour, embroidered, with fringed ends; part of Eucharistic vestments, worn over neck with ends hanging on either side in front (or, in R.C.Ch., crossed over breast); usually worn by Ch. of E. clergy over surplice at any ch. service. Deacons wear S. over left shoulder, with ends crossed under right arm.



Stole

**Stolp**, tn., Pomerania, Prussia, on Riv. Stolpe (c. 87 m.); pop., 42,000; preserved foods, amber, linen.

**Stolypin**, Peter Arcadieievich (1863-1911), Russ. statesm.; made Min. of Interior, and then premier, 1906, to suppress revln. wh. he did by breaking up peasant communes and sending out hanging patrols ("Stolypin's necktie"); shot in theatre at Kiev.

**Stolzenfels**, cas. on the Rhine, 4 m. S. of Coblenz, opp. Oberlahnstein; built 1242, restored 19th century.

**Stoma**, (bot.) minute orifices in outer cov-

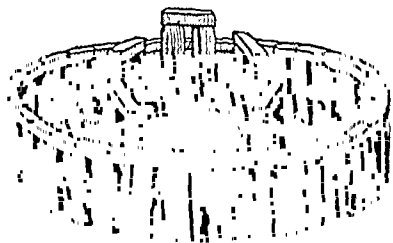
ering of plants, esp. on underside of leaves, that open and close for purpose of expulsion and absorption of gases (breathing).

**Stomach**, hook-shaped muscular pouch or reservoir for receiving, mixing and digesting food; lies in left epigastrium. *Bleeding of S.* occurs when ulcers are formed; patient vomits a substance like coffee-grounds, or blood is found in excrement. **S. pump**, instrument for evacuating contents of stomach, e.g., in cases of poisoning. **S. tube**, tube for irrigating stomach.

**Stone**, Brit. wt., varying; avoirdupois 14 lbs.; stone of meat or fish 8 lbs.; of cheese or butter, 16 lbs.; of hay, 22 lbs.; of wool, 24 lbs.; of glass, 5 lbs.

**Stone Age**, term for stage of human development, varying chronologically in different parts of world and still existing in some parts, when man had no knowledge of use of metals and relied upon stone for making tools and weapons. As specifically applied to earliest and most primitive stage of main development of civilisation, it is roughly divided into the Palaeolithic (*q.v.*), or Old Stone Age, characterised by slight artificial manipulation of stones, esp. flints, already partially modelled by nature, and the Neolithic (*q.v.*), or New Stone Age, in which stone implements were more elaborately sharpened and polished. The S.A. preceded the more advanced stages of the Bronze and Iron Ages (*q.v.*). **S. circle**, (archaeol.) prehistoric ring of menhirs (*q.v.*), as at Stonehenge. Referred to Neolithic Period. **S. kist**, (archaeol.) grave comprising a small chamber covered by a round barrow; referred to Neolithic Period and Early Bronze Age (*q.v.*).

**Stonechat**, bird of centr. and N. Europe



Stonehenge: Reconstruction

and India, of thrush tribe; early breeder; frequents open lands; black head and back, with white collar and brown tail.

**Stoncrop**, *Sedum*, mosslike plant with fleshy leaves and yellow flowers.

**Stonehaven**, co. tn., Kincardinesh., Scot.; pop., 4,200; seapt.; Dunnottar Castle.

**Stonehenge**, prehistoric stone circle, Salisbury Plain, Wilts, Eng., 7 m. N. Salisbury.

**Stone Mountain**, mass of bare rock, 867 ft. high, nearly 1 m. long, nr. Atlanta, Geor-

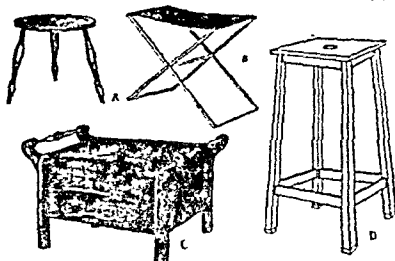
gia, U.S.A. Carved on side is memorial (not yet finished) to Southern Confederacy.

**Stoneware**, earthenware resembling porcelain (*q.v.*) but made of cheaper materials, with more frit (feldspar), and fired at lower temp. Felspathic glaze, also with lead and borax. Semi-porcelain, is the finest kind of stoneware, but is not white as porcelain, an opaque white glaze being used.

**Stonyhurst College**, Eng. school for R.C. boys, nr. Blackburn, Lancs; fndd. at St. Omer, 1592; migrated to Bruges, 1762, to Liège, 1773; re-opened at Stonyhurst Hall, 1794.

**Stook**, group of sheaves of corn set up in a field.

**Stool**, flat-topped, backless seat, supported by 2, 3, or 4 legs; one of earliest types



Types of Stool

A Milking  
B Sketching

C Music  
D Office

of furniture. **S.-ball**, primitive form of cricket (*q.v.*); the "stool" is a wooden disc on a post.

**Stoop**, **stoup**, (eccles.) receptacle for Holy Water (*q.v.*).

**Stop** (photog.): see APERTURE.

**Stopes**, Marie Carmichael, D.Sc., Ph.D., Brit. scientist and writer; awarded doctorate (Munich) for research in palaeobotany; joined Univ. of Manchester and science staff, 1904; fossil expln. in Japan, 1907-08; birth-control propagandist.

**Stopping**, (dental) artificial filling for hollow teeth; gold, amalgam, etc.

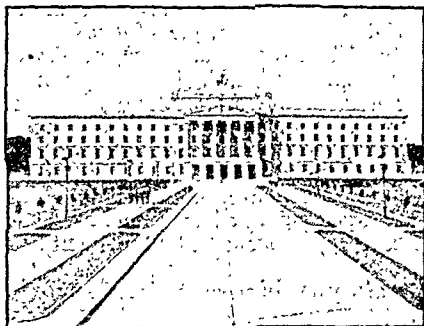
**Stopwatch**, instrument for recording to 1/2 sec. time taken over a race, etc.

**Storax**, balsam obtd. from trunk of *Liquidambar orientalis*, tree indig. to Asia Minor. Used in ointment for scabies; also, on account of its aromatic odour, as incense.

**Stork**, large, long-necked, long-legged bird of the sub-order *Ciconii*; best known species, **white s.** of Europe, which nests in Holland, Fr., and N. Ger., migrating to Africa in winter. See ADJUTANT BIRD; JABIRU; MARABOU.

**Stork's bill**, pelargonium, so called because of beak-like formation of seed-pod; indig. to S. Africa. Many variet., cultvd. in greenhouses in England.

**Stormont**, territorial dist. of Perthsh., Scotland. **S. House**, Parliament house of



Stormont House, Belfast

N. Ireland, outside Belfast; opened by Pr. of Wales, 1932.

**Stornoway**, seapt., isl. of Lewis, Scot.; pop., 4,100; fishing.

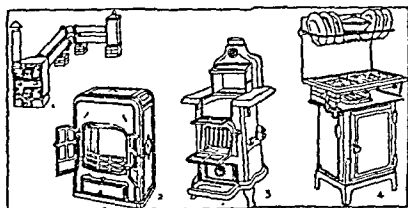
**Storting**, the legislative body of the Norwegian Constitution, elected every 3 yrs., by universal suffrage; divided into **Odelsting** (three-fourths of S.), before which all new laws are first laid, and **Lagting**, which rejects or accepts such laws after their approval by the Odelsting.

**Stothard**, Thomas (1755-1834), Eng. painter and illustrator; R.A., 1794; *The Pilgrimage to Canterbury*; *Shakespearean Characters*; illust. for *Robinson Crusoe*, *Pilgrim's Progress*, etc.; began ceiling of Advocates' Library, Edinburgh, 1822.

**Stotinka**, Bulgarian copper or nickel coin, value at par, .0036d.; 100 stot. = 1 leva (q.v.).

**Stoup**, 1) Brit. liquid meas.,  $\frac{1}{2}$  gallon. 2) See **STOOP**.

**Stour**, 1) riv., E. Eng.; forms boundary betw. Suffolk and Essex, flows into sea at Harwich; length 47 miles. 2) Riv., S. Eng.; rises S.E. Somerset, joins Riv. Avon at Christchurch, Hants; length 55 miles. 3)



Types of Stove

- 1) Greenhouse 2) Anthracite 3) Open 4) Gas

Riv., Kent, Eng.; flows past Canterbury and Sandwich into Strait of Dover; length 40 miles.

**Stourbridge**, munic. bor., Worcs, on Riv. Stour; pop., 19,900; grammar school, 1553; glass and iron; fire-clay.

**Stove**, any low-temp. heating apparatus with enclosed combustion chamber and adjustable air-supply. Domestic types: anthracite, slow-combustion, greenhouse, gas-stove. Numerous tech. types of oven with external and internal heating: e.g., for stoving enamel and paint, etc.

**Stow**, John (c. 1525-1605), Eng. historian and antiquary; ed. *The Woorkes of Geoffrey Chaucer*, . . . with divers additions which were never in printe before, 1561; Matthew of Westminster's *Flores Historiarum*, 1571; and Thos. Walsingham's *Historia Brevis*, 1574; pubd. *Survey of London*, 1598.

**Stowe**, Harriet Beecher (1812-96), Amer. author; anti-slavery novel, *Uncle Tom's Cabin*, 1852.

**Stowe School**, Eng. public sch. for boys; fndd., 1923, at Stowe Mansion, nr. Buckingham (former seat of Dukes of Buckingham and Chandos); 450 boys.

**Strabo** (63 B.C.-A.D. 19), Gr. geographer.

**Strachey**, Giles Lytton (1880-1932), Brit. author; *Eminent Victorians*, 1918; *Life of Qn. Victoria*, 1921.

**Antonius Stradiuarius Cremonensis**  
**Faciebat Anno 1713** (45)

Violin Label of Antonio Stradivarius

**Stradivari** (**Stradivarius**), **Antonio** (1644-1737) and 2 sons: **Francesco** (1671-1743), and **Omobono** (1679-1742); Ital. violin makers at Cremona.

**Strafford**, Thos. Wentworth, 1st Earl of (1593-1641), Eng. statesm.; Lord-Lieut. of Ireland and commanded army agst. Scots, 1640; impeached by Long Parliament for having incensed the Kg. agst. his subjects; condemned and executed, 1641.



Strafford

**Strait jacket**, strong jacket or waistcoat without sleeves, used to prevent lunatics from doing damage to themselves or others.

**Straits Settlements**, Brit. Crown colony, Malay Penins.; comprises Singapore (with Cocos-Keeling Isl. and Christmas Isl.), Penang, Malacca, The Dindings, Province Wellesley, and Labuan Isl.; 1,600 sq.m.; pop., 1,114,000 (incl. 663,000 Chinese and 284,000 Malaysians); chief exports: tin, rubber, coconuts, copra, rice, petroleum. Cap., *Singapore*. Gov. of S.S. is also High Commissioner of the Federated and Unfederated Malay States.

**Stralsund**, seapt. and dist. cap., Pomerania, Prussia, opp. isl. of Rügen; pop., 41,000; old brick houses; machinery, paper, playing cards. Fortress till 1873.

**Strand**, main thoroughfare betw. cities of London and Westminster, formerly skirting the banks of Thames. Now consists almost entirely of bldgs. erected in 19th and 20th centuries. *South Africa House* (1933), hdqrs. in Gt. Brit. of Union of S. Africa govt., is at corner of S. and Trafalgar Square. *Shell-Mex Building* (1933), fine example of modern archit., occupies former site of the Hotel Cecil. Ch. of *St. Clement Danes*, built, 1681, after design by Wren; has a famous peal of bells. *Royal Crts. of Justice*, built, 1874-82, by G. E. Street. See also ADELPHI; AUSTRALIA HOUSE; SAVOY.

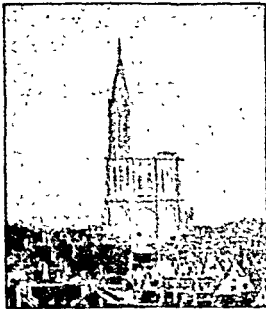
**Strangles**, (vet.) infectious catarrhal disease in horses, characterised by abscess betw. the jaws; usu. occurs in 3rd or 4th year.

**Stranraer**, royal burgh and seapt., Wigtownsh., Scot.; mail service to Larne (N. Ireland); pop., 6,400.

**Straparola**, Gian Francesco, 16th-cent. Ital. writer of tales: *Piaccvole Notti*, 1550-54.

**Strasbourg**, *Strassburg*, tn., Alsace, dépt. Bas-Rhin, Fr., on Riv. Ill and Ill-Rhine

Canal; pop., 175,000; cathed. (11th-15th cent.; spire 465 ft.); former epis. palace (now museum); univ. (1567); tobacco, paper, leather, *pâté de foie gras*. Ceded to Fr. by Peace of Ryswick, 1697; surrendered to Ger. in Franco-Pruss. War, 1871; restored to Fr. 1918.



Strasbourg Cathedral

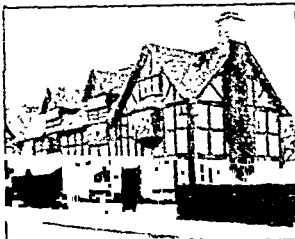
**Battle of S.**, victory of Rom. Emp. Julian over the Alamanni, A.D. 357.

**S. Oaths** (842), oaths of fidelity betw. Charles the Bald and Louis the German.

**Strass**, 1) lead glass used for imitation prec. stones. See GLASS. 2) Waste silk made up into skeins.

**Strategy**, art of war (q.v.).

**Stratford**, 1) E. suburb of London, divn. of West Ham; part of Greater London; rly. workshops. 2) Tn., Ont., Canada; pop., 16,100.



Stratford-on-Avon.  
Shakespeare's Birthplace

**Stratford-on-Avon**, mkt. tn., Warwicksh., Eng., on Upper Avon; famous as b-place of Shakespeare, tomb in Holy Trin-

ity Ch.; Shakespeare's House, Memorial (incl. theatre); pop., 11,600.

**Strath** (Scot.), broad, open vall. through wh. a river flows. **Strathclyde**, anc. N. Brit. kgdm., extending from basin Riv. Clyde (cap., *Dumbarton*) to Lancs; known also as *Cumbria*; fl. 7th-10th cent.; N. part incorporated in Scot. in 11th cent. **Strath-earn**, territorial dist. of Perthsh., Scotland. **Strathmore**, vall., Scot., betw. Highlands in N.W. and Lowland hills in S.E.; extends from Firth of Clyde to Stonehaven (N. Sea); in restricted sense, dist. N.W. of Sidlaw Hills. **Strathspey**, 1) lower vall. of Riv. Spey (q.v.). 2) Scot. dance; slower form of reel (q.v.).

**Strathcona**, Donald Alexander Smith, 1st bn. (1820-1914), Canadian financier; entd. service of Hudson's Bay Co., 1838; taken prisoner in revolt of Louis Riel, 1869-70; entered Parliamt. 1871; knighted, 1886; Gov. of Hudson's Bay Co., 1889; High Commr. for Canada in Gt. Brit., 1896-1911; peerage, 1897.

**Stratosphere**, the upper regions of the atmosphere (q.v.); lower limit 5½ m. high at poles, 10½ m. at Equator; unmanned balloons with recording apparatus have ascended to c. 21 m.; balloon ascents into S. accomplished 1931 and 1932 by Piccard (q.v.). See AVIATION.

**Stratum**, (geol.) layer of earth's crust of a certain geological age. Strata orig. horizontal, but distorted by subsequent movement into any position, even vertical.

**Stratus**: see CLOUD.

**Strauss**, 1) **Johann**

(1804-49), Austr. composer of dance music; *Radetzky March*. His son: 2) **Johann** (1825-99), composer: *Blue Danube Waltz*; operetta: *Die Fledermaus*.

3) **Richard** (1864- ), operas: *Ariadne in Naxos*; *Elektra*; *Der Rosenkavalier*; symphonies: *Ein Heldenleben*; *Symphonia Domestica*.

**Stravinsky**, Igor Fedorovich (1882- ), Russ. composer; leader in mod. music; brilliant orchestration. Ballets: *Firebird*; *Petrushka*; *Sacre du Printemps*; symphonic works; secular oratorio, *Oedipus*; mime-play, *The Soldier's Tale*.



Johann Strauss



Richard Strauss



Stravinsky

**Straw**, stalks of grain taken collectively, esp. after drying and threshing; used as bedding and fodder for cattle, in thatching (*q.v.*), weaving of mats, baskets, hats, etc., and making of pulp for paper. **Man of S.**, person without character, personality, or financial stability.

**Strawberry**, plant bearing sweet, pulpy fruit; wild *S.* is *Fragaria vesca*, from wh. the cultivd. var. has been derived, together with *F. clatior* (the Hautboy), and *F. virginiana* (U.S.A.). **S. Tree**, *Arbutus unedo*, evergreen shrub, white flowers and strawberry-like fruits, not edible.

**Strawberry Hill**, dist. in bor. of Twickenham, Mddx., named after house occupied by Horace Walpole from 1747-97; orig. a small villa, Walpole changed it into a Gothic mansion, in wh. he housed his remarkable collection of curios.

**Stream-lines**, (phys.) give direction of flow at any point of a fluid, or elec. current. Usu. relatively to an object, *e.g.*, ship, aeroplane wing, airship; thus *S.-lines* are those that particles of fluid (air, water) take when object is stationary and fluid flows past it. **Stream-lined forms**: bodies so shaped that eddies are not formed when they move thr. fluids, hence minimum loss of energy; streamlining applied to motorcars, aircraft, submarines, etc.

**Streatham**, residential dist. of S.W. London, incl. **S. Common** (c. 60 acres), in bor. of Wandsworth, Surrey.

**Street**, George Edmund (1824-81), Eng. architect; R.A., 1871; designed nave of Bristol Cathed.; choir of Christ Ch. Cathed., Dublin; archit. Royal Crts. of Justice (*q.v.*), London, 1868-81.

**Streptococci**, round bacteria (*q.v.*) arranged in chains; cause the formation of pus.

**Stresa**, vill., Piedmont, It., on L. Maggiore; scene of international conference to consider stabilisation of finances, etc., in S.E. Europe, 1932.

**Stresemann**, Gustav (1878-1929), Ger. statesm.; Chancellor and For. Min., 1923; inaug. peace policy paving way for Locarno Pact, 1925, and entry of Ger. into L. of Nations, 1926. Nobel Peace Prize, 1926.

**Stress**, (phys., eng.) internal force produced in a body by some outside agency, *e.g.*, gravity, load, impact, electric or magnetic force.

**Stretford**, urb. dist., Lincs, Eng., suburb of Manchester; pop., 56,800.

**Stretta, stretto**, (mus.) final part of a comp., with accelerated movement; passage

in a fugue where entrances of subject and answer follow rapidly and overlap.

**Strickland**, Agnes (1796-1874), Brit. hist. and novelist; *Lives of the Qns. of Eng.*, 1840-49; *L. of the Qn. of Scot.*, 1850-59; ed. *Letters of Mary, Qn. of Scots*.

**Stricture**, (med.) constriction of a body canal, *e.g.*, of urethra, where the *S.* may be caused by gonorrhoea.

**Strike**, 1) stoppage of work by common agreement, usu. organised by trade union, to obtain or resist change in conditions of employment. **General s.**, simultaneous stoppage by workers in all industries, usu. to exert polit. pressure on govt. (*Direct Action, q.v.*), made illegal in Gt. Brit. by T. U. Act of 1927. See also LOCK-OUT.

The following notes relate to graphs on opposite page:—**Mining**: More days lost ann. than in other indus., and dominated by coal. Severity of coal disputes due to lack of co-operation and to high proportion labour costs bear to total costs. **Transport**: Paralysis of industrial life produced by strike of T., with backing of strong trade union, causes utmost energy to be devoted to prevention. **Textile**: General spirit of co-operation betw. employers and employees has prevented long duration of strikes characteristic of coal. **Building**: Except in 1914 and 1924, industry has suffered little from disputes. This may be due to large number of small employers. **Other Industries**: Of little importance compared with mining, textiles, transport, etc., owing usually to higher proportion of employer to employees. **Total duration of dispute as a whole**: High rates of 1912, 1921, and 1926 reflect coal strikes of those years.

**Strike**, 2) Brit. dry meas.; 2 bushels 3) (Geol.) Direction of a seam or body of mineral in rock.

**Strindberg**, Aug. (1849-1912), Swed dramat. and novel.; plays: *Lady Julia*, 1888 *Dance of Death*, 1901; *The Father*, 1887; religious and mystical dramas: *To Damascus*, 1894, 1904; historical dramas; autobiogr. novels: *Son of a Bondswoman*, 1886; *Inferno*.

**String course**, (bldg.) horizontally projecting course (*q.v.*).

**Stringendo**, (mus.) contraction *string*; becoming quicker, hastening.

**Strings**, for musical instr., are made of sheep's intestines ("catgut"), often covered with wire, or of metal; also occasionally of silk covered with silver wire.

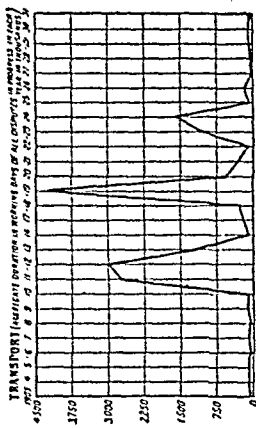
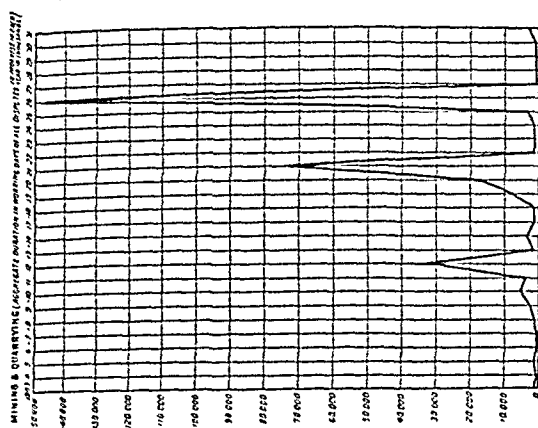
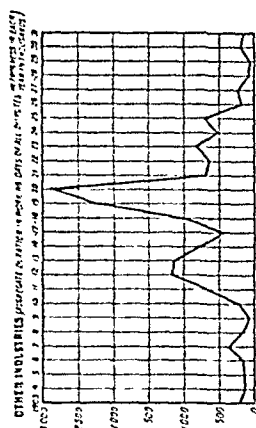
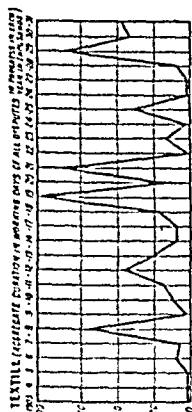
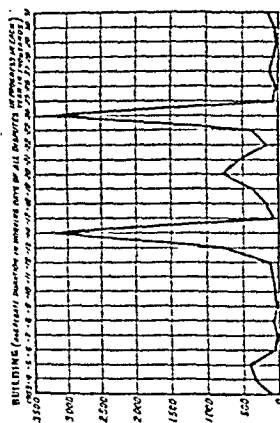
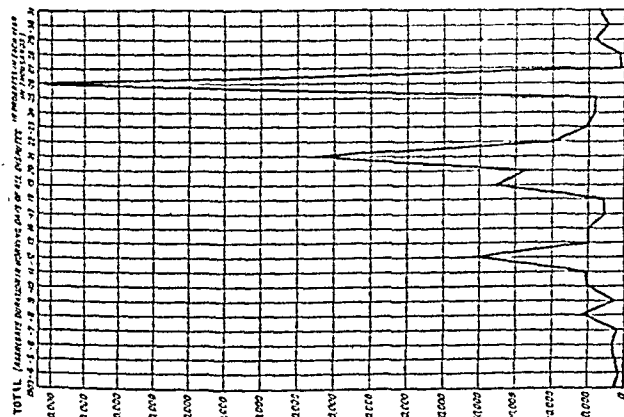
**Strobile**, (bot.) inflorescence made of scales; *e.g.*, fir cone; hop.

**Stroboscope**, apparatus for observing mo



Stresemann

Strindberg.  
Lithograph by  
Munch



Graphs showing loss incurred by strikes and lock-outs in various British industries.

See text for explanatory notes.



tion of a vibrating body by means of radial slits in a revolving disk; invtd. by the Belg. physicist, J. Plateau (1801-83).

**Stroke**, 1) (rowing) oarsman nearest stern, who sets rate of strokes for crew. 2) (Tech.) Of piston or any reciprocating part of machine, the distance over wh. it moves.

**Stromboli**, one of the Lipari Isls., N. of Sicily; active volcano (3,333 feet).

**Strongbow**, surname of Richd. de Clare, 2nd Earl of Pembroke (d. 1176); went to Ireland with a strong force to assist Dermot, Kg. of Leinster, 1170; captured Waterford and Dublin; m. Eva, Dermot's daughter; Gov. of Ireland, 1173.

**Strong room**: see SAFE.

**Strontium**, (chem.) element, sym. Sr, at. wt. 87.63, sp. gr. 2.54; m.p. c. 800°. Alkali earth metal, occurring as carbonate, sulphate or complex silicate; decomposes water; used in fireworks to produce red flames and (rarely) med. as bromide.

**Strophanus**, *Strophanthus kombé*, climbing plant indig. to trop. Africa; seeds cntn. *strophantin*, used as a heart stim.; very poisonous.

**Strophe**, lines recited durg. dancg. by anc. Gr. chorus; *Strophe*, *antistrophe*, *epode* were the 3 sections of a choral ode or of 1 divisn. of it.

**Strozzi**, name of noble Ital. fam. of Florence, from 14th cent.; opposed power of Medici. **Palazzo S.** blt. 1487 by Benedetto da Maiano and Simone del Pollaiuolo for Filippo Strozzi; bequeathed to Ital. nation, 1907.

**Structural formula**: see VALENCY.

**Struggle for existence**, phrase used by Darwin in expounding his theory of *Natural Selection*, accdg. to wh. only those species survive wh. are fitted to maintain themselves (see EVOLUTION).

**Struma**, riv. (165 m.), in the Balkans; rises S. of Sofia; flows through L. Takino, Macedonia, to Aegean Sea.

**Strychnine**, alkaloid from seed of *Strychnos nux vomica*. Used in med. as a tonic and stim. of nervous system in very small quant.; in larger quant. poisonous; see ANTIDOTES.

**Struwelpeter**, or **Shock-headed Peter**, hero of H. Hoffmann's rhymed children's book, 1847.

**Stuart**, Scot. fam. ruling in Scot. and in Eng., descd. fr. Walter, Steward of Scot. under David I (1124-53); Robt. II (6th in desc. in male line and gdson. of Robt. (the Bruce) 1st S. king (1370-90); James I of Scot. (q.v.), his gdson.; male line extinct 1807 (Henry, Cardinal York, q.v.). See CHARLES EDWARD; JAMES FRANCIS EDWARD.

(1575-1615), 4th in desc. Henry VII of Eng. and, after

Jas. VI, next heir to Eng. and Scottish thrones; Sir W. Raleigh accused of plot to place her on throne, 1603; died in Tower of London.

**Stucco**, (bldg.) cement finish for outer or inner walls and ceilings; lends itself to moulding in relief and can'tinted.



Stucco Ceiling: Rococo Style

**Stud**, number of horses, kept for breeding etc. **S.-book**, register of pedigrees of the oughbred animals. **S.-farm**, place where pedigree horses, etc., are kept; also the far attached to stud.

**Stuffing-box**, (tech.) surrounds the ho thr. wh. a circular rod (wh. must be free move) passes into a vessel; e.g., a piston into cylinder; stuffing-box is filled with *packi*. (soft metal rings; packing material such hemp, asbestos, leather, cotton, smeared w grease, oil, or graphite lubricant); compressed by a screw thr. centre of wh. t rod passes. See LABYRINTH PACKING.

**Stupor**, complete mental and bodily immobility; often occurs in cases of insanity.

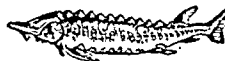
**Sturdee**, Sir Fredk. Ch. Doveton (1851-1925), Brit. Adml.; chf. of war staff, 1914; c-in-c. South Atlantic and Pacific (Falkland Islands).

**Sturdy**: see GID.

**Sturgeon**, large, marine ganoid fish, in which the ordinary scales are replaced by large plates of true bone, scale-like in shape, but thick and forming a row along ridge of back and two rows along sides. Grows to 18 ft. in length; frequently caught in N. Sea or at mouths large rivers. Occurs in great numbers in the Volga, and found also on E. coast of America. Several species all spawn in large rivers. See CAVIAR ISINGLASS.



Sturdee

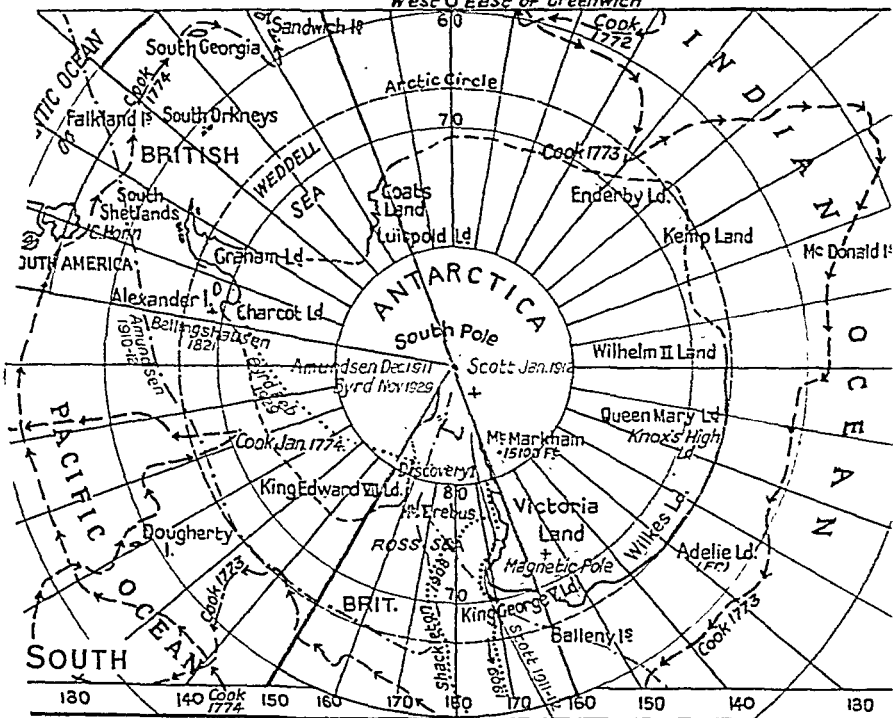
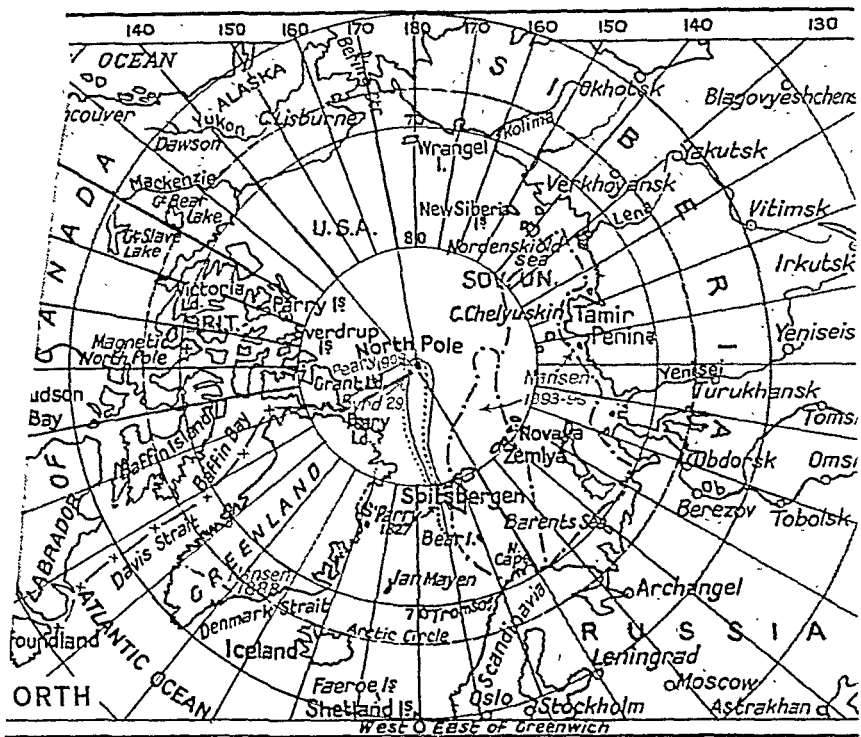


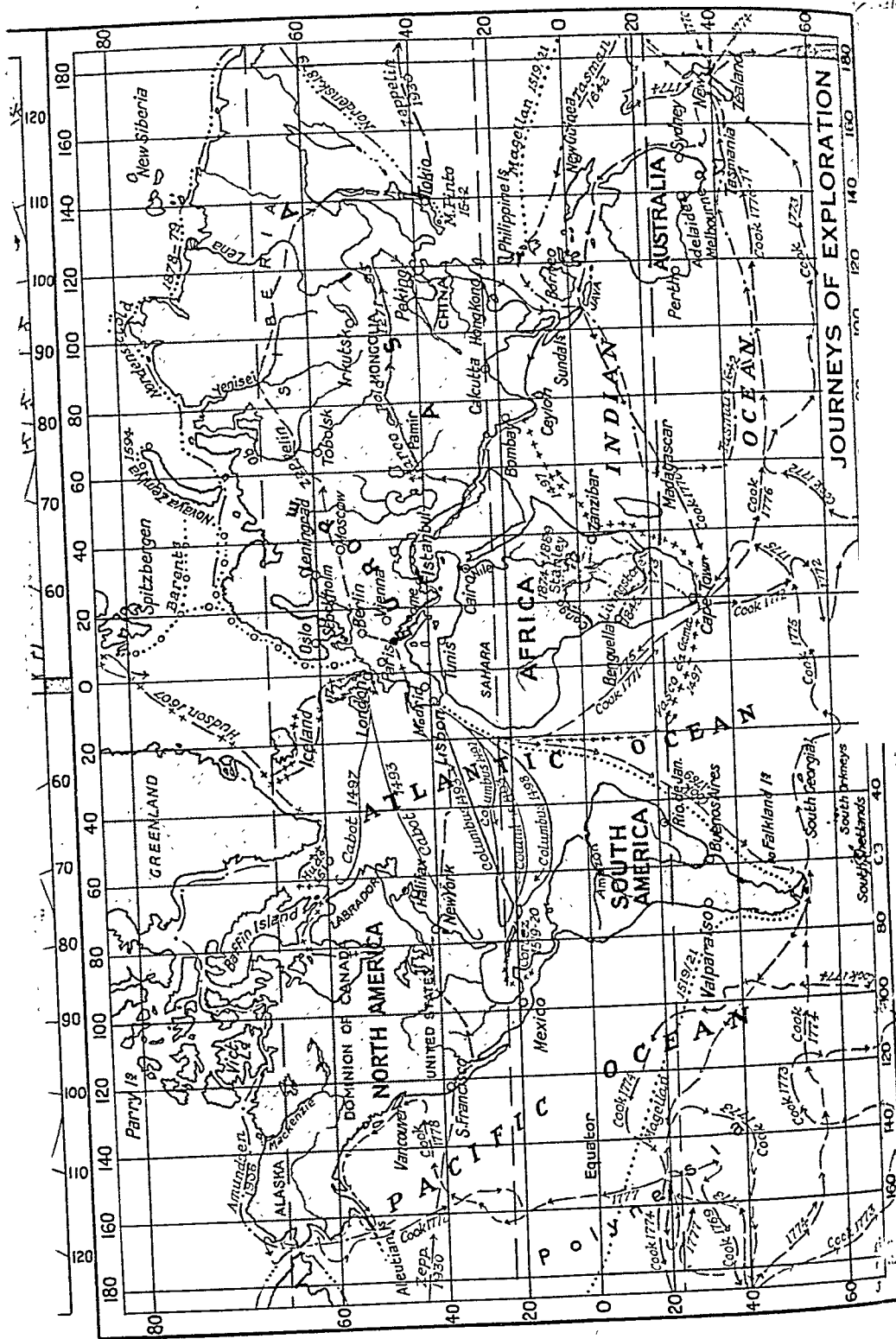
Sturgeon

**Stürmer**, Boris Vladimirovich (1841-1917), Russ. statesm.; Pr. Min., 1916, 1 signed when accused of negotiating w Centr. Powers; arrested after Rev., and d. prison.

**Sturm und Drang**, "Storm and Stress period of intellectl. convulsn. in 18th-cer Germ. lit. fm. drama *S.u.D.* by Klinger; a companion by demand for "nature," sens mentality, and revolt fm. recognised rules literature.

## POLAR REGIONS





**Sturzo**, Luigi (1870- ), Ital. priest and politician; sec. Azione cattolica, 1914; political sec. Partito Popolare Italiano, 1918, wh. dominated, 1919-20; left It. upon advice of Vatican, 1923; pubd. *Italy and Fascism*, 1927.

**Stuttgart**, cap., Württemberg, Ger., on Riv. Neckar; pop., 375,000; cas. (16th cent.); Gothic chs.; museums; picture gall.; techn. school; textiles, machinery, chemicals; leather; centre of S. Ger. book trade.

**Stye**, inflammation of a sebaceous gland of the eyelid.

**Style**, characteristic mode of expressn. esp. in lit. or art; S. of a *period of time* or of a certain *region*, conditioned by a common sense of form, conceptn. of Universe and material used, e.g., *Gothic S.* Personal expressn. of the artist e.g., S. of Rubens, S. of Wagner.

**Stylographic pen**, pen containg. an ink supply to a conical fine orifice, through which passes a fine needle controlled by a spring; pen thus writes with a uniform line like a pencil.

**Stymie**, golf positn. in wh. one ball lies in a straight line between another and the hole.

**Styptic**, (med.) any application that arrests flow of blood from a wound. Ferric chloride and alum are commonly used; an old and very dangerous remedy is a spider's web.

**Styria**, prov. S.E. Austria; 6,323 sq.m.; pop., 980,000; mountainous; rivs. Enns, Mur; half area forested; mineral springs (Gleichenberg, Kalsdorf, Einöd); cattle breeding, fruit-growing, timber, iron and steel; cap., *Graz*.

**Styx**, 1) riv., Arcadia, Greece. 2) (Gr. myth.) Chf. riv. of Underworld, across which the dead were ferried by Charon (*q.v.*).

**Suakin**, Red Sea port, Anglo-Egypt. Sudan; pop., 8,000; cotton, tobacco, gums; pearl-fishing.

**Suaviter in modo, fortiter in re** (Lat.), "softly in manner, firmly in performance."

**Subadar**, native officer of Ind. infantry = lieutenant.

**Subaltern**, milit. officer below the rank of captain in the Brit. Army. In other armies, including captain.

**Sub-arctic, Sub-antarctic**, those parts of the temperate zones contiguous with the polar zones.

**Subject**, 1) one who is placed under the dominion of a monarch or a State authority; in republics, usu. *citizen*. 2) That wh. is treated or dealt with in a specif. way; cause, originating circumstance. 3) (Gram.) Word or group of words in a sentence representing that abt. wh. something is predicated. 4) (Logic) That abt. wh. a statement is made, or judgment expressed. 5) (Philos.) The substance of a thing; thing in itself as opposed to its qualities and attributes. The ego: the "I" wh. thinks. **Subjective**, originating in the mind itself, not produced by something external; *anti.* objective. **Subjectivism**,

philos. theory that all things are determined by the ego, and that there is no objective test of validity of knowledge and ethics.

**Sub judice** (Lat.), under the judge; term applied to a case under consideration or trial.

**Subjunctive**, mood indicating action or state of existence as hypothetical, contingent on something else; virtually obs. in English.

**Sublapsarianism**, doctrine of less extreme Calvinists that God did not decree, but foresaw, the fall of man. Cf. SUPRALAPSARIANISM.

**Sublimate**, produc. of *sublimation* (*q.v.*); contraction for corrosive S., mercuric chloride (*q.v.*).

**Sublimation**, 1) (phys.) vaporisation by heat of a solid, and condensation of the vapour (as a *sublimate*); used for purifying iodine, camphor, and sulphur. A solid sublimates when its m.p. is higher than temp. at wh. its vapour pressure becomes equal to atmospheric pressure. 2) (Psychol.) Process by wh. an attainable good is reached as outcome of conflict betw. impulse and inhibition.

**Sublime Porte**, name given to Turk. Govt. up to 1918, from the chief gate of the Sultan's principal palace in Constantinople.

**Submarine**, a warship capable of travelling on and under the surface of the sea; submerged by the inlet of water ballast and adjustment of water-planes; propelled by Diesel engines or elec. motors (with accumulators); are fitted with torpedo-tubes, guns, gyroscopic compass, and periscope (*q.v.*); maximum tonnage, 3,000; and crew, 100 men. **S-signalling**, transmission of sound thr. water from a bell or other instr. in hull of the ship, well below water-line; sound wave travels downwards, strikes sea-bottom, and is deflected upwards into receivers, time taken betw. transmission and reception being a measure of depth of water in wh. the ship is floating. Such measurement is usu. known as *echo sounding*. S. signals consist also of bells in hulls of lightships, and in lighthouses giving out sounds at fixed intervals, wh. serve to identify partic. ship or lighthouse.

**Subotica, Szabadka, Maria-Theresiopel**, tn., Yugoslavia; pop., 90,960; fruit, tobacco, wine, agric., cattle breeding, linen-weaving.

**Subpoena**, order to persons to attend as witnesses or produce papers in crt., on pain of arrest for contempt in case of non-compliance.

**Sub rosa** (Lat.), under the rose; secretly.

**Subscription** (Stk. Exch.), engagement to take up shares, bonds, debentures, etc., of an issue.

**Subsidiary companies**, fndd. or acquired by a "Parent co." which holds whole or greater part of their shares.

**Subsidies**, payments, esp. by States, to assist private enterprise; granted for social, military, or econ. reasons.

**Sub sigillo** (Lat.), under seal.

**Substance**, (philos.) the underlying permanent reality and cause of all outward phenomena.

**Sub-tropics**, those parts of the temperate zones contiguous with the torrid zone.

**Succès d'estime** (Fr.), success of a work; limited to critical commendation, and without wide popularity.

**Succession duties**: see DEATH DUTIES.

**Successor States**, States formed (Czechoslovakia and Pol.) or enlarged (Rum., Yugoslavia, It.) out of former Austro-Hung. monarchy at end of World War.

**Succory**, plant bearing blue flower; root is dried and ground and mixed with coffee, or used as a substitute for coffee. See CHICORY.

**Succuba**, female demon supposed to materialise and to have sexual intercourse with men. See INCUBUS.

**Suchow**, treaty port, Kiangsu, E. China; pop., 35,000; silk industry.

**Suckers**, (bot.) fine terminals of roots of a plant wh. absorb moisture; organ by which parasitic plants receive nourishment from their hosts.

**Sucking-fish**, *Echeneis*, fish of temperate and tropical seas, distinguished by large, plate-like, adhesive disk, occupying whole of upper surface of head. Passes much of its time attached to the under-surface of the body of a shark, turtle, or hull of a ship. Small species about 18 in. long; larger may measure as much as 3 feet.

**Suckling**, Sir Jn. (c. 1609-42), Eng. poet and courtier; some of his lyrics and ballads of well-established fame.

**Sucre**, legal cap. of Bolivia; pop., 34,600; cathed. (1550), univ., law courts; see LA PAZ.

**Sucre**, silver coin of Ecuador = 100 centavos or 9.86 d. (\$2) at par.

**Suction**, (phys.) negative pressure (as compared with surrounding pressure). **S. gas**, form of producer-gas made by drawing air by suction through a glowing mass of coke.

**Sudan**, undefined region (c. 1,010,000 sq.m.) N. Africa, stretching from Red Sea to Atlantic and from Egy. and Sahara to terrs. on Guinea coast; surface largely a plateau, with grassy steppes; forests in S.; rivs. include Nile, Niger, Senegal; L. Chad in centre; climate, hottest in Africa. Divided betw. Britain (Anglo-Egypt. Sudan, Nigeria, Gold Coast) and France (Fr. W. Africa, Fr. Equatorial Africa). Pop., c. 7,000,000 (Sudanese Negroes).

**Sudanese**: see LANGUAGE SURVEY, *Ethiopia*. Languages. **S. Negroes**, living N. of Equator up to Sahara; div. linguistically and physically into sev. races (e.g., Ashanti,

Mandingo, Hausa, Ewe, Kanuri, Tiba; mostly agriculturists.

**Sudermann**, Hermann (1857-1925), Ger. author; plays: *Magda*, 1892; novels: *Lithuanian Tales*, 1917.

**Sudetes Mountains**, range separating Prussian Silesia from Bohemia (Czechoslovakia); extends from the Lausitzergebirge in W. to the Moravian Gate in E.; length 191 m.; highest peak, Schneekoppe (5,260 ft.); sub-divisions include Riesengebirge, Moravian Gesenke, etc.

**Sudorific**, drug or other remedy which promotes perspiration; acetyl salicylic acid (*aspirin*, etc.) taken internally; hot salt-baths; cold-water pack; electric-light baths.

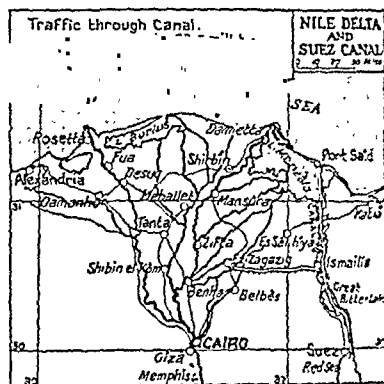
**Sudra**, lowest and darkest-skinned caste in India.

**Sue**, Eugène (1804-57), Fr. novelist: *The Mysteries of Paris*, 1849-56.

**Sueter**, Murray Fraser (1872- ), Brit. adm.; created R.N. Air Service, Armoured Car Force, and Anti-Aircraft Corps.

**Suetonius**, Gaius S. Tranquillus, Rom. historian; 1st cent. A.D.; *Lives of the Caesars*.

**Suez**, port, Egy., at head of Gulf of Suez; S. term. of *Suez Canal*; pop., 40,500. **S. Canal**



ship canal through Isthmus of Suez from Port Said, on Mediterranean, to Suez, on Red Sea; 101 m.; min. width, 148 ft.; depth, 35 ft.; passes through Bitter Lakes and other lakes; no locks; since 1918 crossed by rly. at Kantara; built by de Lesseps; opened 1869; admin. by international company (Brit. Govt. holding 44% of the shares); managed by Council of 32, of whom 10 are British.

**Suffolk**, easternmost co. in Eng., part of *East Anglia*; area 1,475 sq.m.; pop., 401,100. Surface mainly flat or undulating; coast much eroded. Mainly agric.; manuf. agric. machinery; herring-fisheries at Lowestoft; horse-racing at Newmarket. Contains S. part of the *Broads*; "Constable country" in S. Interesting flint-and-stone churches. Divided administratively into E. S. (Ipswich) and W. S. (Bury St. Edmunds). Co. tn., *Ipswich*.



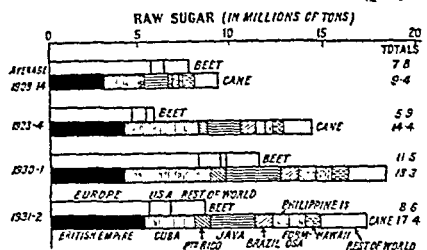
Wild Succory

**Suffragan bishop**, bp. acting as auxiliary to the titular bp. of a diocese. Cf. COADJUTOR-BISHOP.

**Suffrage**, right to, or exercise of, political vote; until 20th cent. dependent in most countries on property qualification, now almost everywhere on residence only; in some countries (Hungary, Brazil) educational test; aliens, convicts, and lunatics generally denied S.; women now granted vote in most countries, except Fr. and It. (in Eng. since 1918); in Russia right to S. restricted to workers and peasants.

**Suffragette**, name given to female supporters in Gt. Brit. of movement for woman suffrage (q.v.), 1905-14. **Militant S.**, one who adopted violence (window-breaking, etc.) as mode of propaganda; the militant movement in Gt. Brit. led by Mrs. Pankhurst, lasted from 1908 to 1914.

**Sufis**, members of Moham. sect of mystics, out of whom arose the *Dervish* orders (q.v.).



Beet sugar production, confined to Europe, was more affected by World War than cane production. In 1930-31 B.S. total nearly 50%, and C.S. total nearly 100% greater than pre-war production. In 1931-32 falling off in production more severe in B.S. than in C.S., for although Cuban cane figure suddenly dropped, this was partly counteracted by rise in Indian production. India accounts for 65-75% of Brit. Emp.'s total. Chief B.S. producing countries: Germany, Russia, U.S.A., France, Holland, and Poland.

**Sugar**, name denoting a large number of chem. compounds belonging to group of carbohydrates (q.v.). Most common is cane s., sucrose ( $C_{12}H_{22}O_{11}$ ), from sugar-cane

moved, and then refined by filtering liquid thr. animal charcoal and crystallising; residue is molasses. Other sugars are glucose, lactose, mannose, maltose, levulose. **S.-beet**, variety of beet (q.v.), with large white roots rich in sugar, for which they are extensively cultivated in France, centr. Eur., U.S.A. In Gt. Brit. cultivation of sugar-beet is supdtd. by a State subsidy and has made some progress since 1924, esp. in E. Anglia. **S.-cane**, tall, jointed grass (*Saccharum officinarum*), cultivd. in the W. Indies and elsewhere for its juice, wh. may contain up to 20% of sugar; now superseded to a great extent by sugar beet (q.v.).



Sugar-cane

**S. of lead**, common name for acetate of lead,  $Pb(C_2H_3O_2)_2 \cdot 3H_2O$ ; very poisonous. Used extern. in med., and dyeing of cotton goods.

**Suggestio falsi** (Lat.), suggestion of what is false; representation as a fact of what is known to be false.

**Suggestion**, (psychol.) influence exercised upon the mind to exclusion of judgment; objectively, by exterior S., e.g., advertisements, or subjectively by auto-s. Important element in psycho-therapeutics. Conspicuous in its effect upon a crowd: mass-suggestion.

**Suggia**, Guilhermina (1888- ), Ital. 'cellist; has toured most of important Europ. centres.

**Suicide**, intentional taking one's own life, a practice common to every age and nation; in Eng. law accounted a crime, *felo de se*, equivalent to murder; by some nations held, in certain circumstances, an honourable and moral act, e.g., in Japan (see HAKAKIRI) and in anc. Rome, esp. among the Stoics (q.v.). Rates of s. differ in various countries but, while generally increasing, maintain fairly constant ratio to one another; climate, nature of occupation, national and individual habits of life, etc., are factors to some extent governing frequency of suicides.

**Sui generis** (Lat.) of its own kind; belonging to a class distinct from all other classes.

**Suir**, riv., Munster, I.F.S.; rises in Co. Tipperary and then forms boundary betw. Co. Waterford and cos. Tipperary and Kilkenny; flows into Waterford Harbour; 85 m.; nvgl. for barges to Clonmel.

**Suit**, (cards) one of the 4 divs. of a pack, viz. "clubs," "spades" (black), "diamonds," and "hearts" (red); each consisting of 13 cards. **Follow s.**, to play card of same S. as the one led.

**Suite** (Fr.), 1) military following of princes; à la suite, formerly post of honour in Ger. Army for highly placed officers attached to a regiment without any def. duties. 2) (Mus.) Oldest form of composition in several separate movements.



Sugar-cane plantation

(15-20%) or beet (15-18%); crushed cane is mixed with milk of lime, boiled, the lime re-

**Sukhomlinov**, Vladimir Alexandrovich (1848-1926), Russ. gen. and Min. of War, 1909-16; sentenced (1916) to penal servit. for life on charge of treason; released by Bolsheviks; *Memoirs*, 1921-24.

**Sukhum-Kale**, port on E. coast Black Sea, Abkhasia S.S.R.; pop., 20,100.

**Sukkur**, tn., Sind, Bombay, India; *Lloyd Barrage*, across Riv. Indus, 1932; irrigates 5,000,000 acres.



Lloyd Barrage, Sukkur

**Suleiman** or **Soliman**, name of Turk. sultans, of whom the most important is **S. II, the Great** (1495-1566), Sultan, 1520; cong. Persia, Hungary, and besieged Vienna.

**Sulgrave**, vill., Northants, Eng.; manor house was 16th-cent. home of Washington family, now Washington Museum; in ch. are brasses of Laurence Washington (d. 1583) and his wife.

**Sulina**, port, Rumania, on Black Sea, at mouth of the Danube; pop., 8,000.

**Sulky**, light 2-wheeled vehicle used in trotting-races.

**Sulla**, Lucius Cornelius (138-78 B.C.) Rom. dictator; leader in civil war agst. Marius, 88; dictator, 82-79; issued *Proscriptions* agst. enemies, declaring them outlaws.

**Sullage piece**, *sprue* (metall.), piece of metal projecting from a casting, resulting from the passage through which the molten metal was poured into the mould.

**Sullivan**, Sir Arthur Seymour (1842-1900), Eng. composer; collab. with W. S. Gilbert (Gilbert and Sullivan operas); *Orpheus with his Lute*; *The Lost Chord*.

**Sully**, Maximilien de Béthune, Duc de (1560-1641), Fr. Protestant statesm.; friend of Hy. of Navarre; Min. of Fin., 1597-1610; Gov. of Bastille, 1602; Marshal of France, 1634; pubd. *Mémoires des sages et royales économies d'estat . . . de Henry le Grand*, 1638-62.

**Sully-Prudhomme**, René François Armand (1839-1907); Fr. poet and philos.; Nobel Prize (Lit.), 1901; *Les Épreuves*, 1866; *Réflexions sur l'art des vers*, 1892.

**Sulpa**, (zool.) semi-transparent, cylindrical-bodied marine organisms of order Ascid. either solitary or forming chains inches to several feet in length.



Suleiman II



Sir A. Sullivan

**Sulphates**, salts of sulphuric acid (*q.v.*).

**Sulphides**, (chem.) compounds of sulphur, e.g., hydrogen S., H<sub>2</sub>S, an evil-smelling gas wh., when passed into solutions of most metallic salts, forms S. of the metals. Sulphides of alkali metals (sodium, etc.) and alkaline earths (calcium, barium, etc.) are soluble in water; used as depilatories, luminous paints, etc.; "Mosaic gold" is S. of tin, SnS; galena, S. of lead, PbS; iron pyrites, S. of iron, FeS<sub>2</sub>.

**Sulphites**, salts of sulphurous acid (*q.v.*).

**Sulphocyanides**: see THIOCYANATES.

**Sulphur**, chem. element, sym., S; at. wt. 32.06; sp. gr. 2.1; occurs almost pure in volcanic districts and combined with metals as sulphides (*q.v.*); yellow, brittle, non-metal; m.p., 113° C.; b.p. 445°. Vapour condensed quickly gives flowers of sulphur; precip. s. made from solution of polysulphides. **Rolls**, is melted S. run into moulds and allowed to cool; soluble in benzol and carbon disulphide; used for gunpowder, in sulphuric acid, vulcanising; in med. as a laxative, and ext. for eczema and other skin diseases. When burnt, S. forms s. dioxide; used for fumigating infected rooms.

**Sulphuretted hydrogen**: see HYDROGEN SULPHIDE.

**Sulphuric acid**. (chem.) oil of vitriol; H<sub>2</sub>SO<sub>4</sub>; most imp. inorganic acid; manuf. by lead chamber process, in which iron pyrites, FeS<sub>2</sub>, is burned, giving sulphur dioxide, which is oxidised to S.A. by means of nitric acid vapour; or by modern contact process, in wh. sulphur dioxide (SO<sub>2</sub>) and air or oxygen are converted to trioxide (SO<sub>3</sub>) by contact with platinum as catalyst (*q.v.*), and then dissolved in water to form S. acid. Strongly corrosive, combines with water with evolution of heat, dehydrates and carbonises organic substances such as textiles and wood. Used in many chemical processes, in accumulators, and for combining with ammonia to make ammon. sulphate, a fertiliser. Takes up SO<sub>3</sub> to form fuming (or Nordhausen) acid, oleum.

**Sulphurous acid**, (chem.) sym. H<sub>2</sub>SO<sub>3</sub>; solution of sulphur dioxide in water; its salts are called sulphites; used as bleaching agent; a permitted preservative for cert. foodstuffs.

**Sulpicians**, R.C. relig. order of priests devoted to eccles. education and conduct of seminaries; fndd. (1642) by the Abbé Jean Jacques Olier at seminary of St. Sulpice, Paris.

**Sultan**, (fem., Sultana), title of a Moslem ruler.

**Sultana**, 1) a small, yellow dried grape without seeds, exclusively grown and prepared in Smyrna. 2) see SULTAN.

**Sumach**, shrubs or trees of genus *Rhus*: used in tanning; causes dermatitis.

**Sumatra**, second largest and westernmost

of Great Sunda Isls., Malay Archipelago; Dut. E. Indies; separated from Malay Penins. by Malacca Str.; 129,165 sq.m.; pop., 6,770,400 (20,155 Europeans). Volcanic ridge runs N. and S. (Indrapura, 12,500 ft.); E. coast flat and covered with jungle; many rivers and marshes; W. coast precipitous; coffee, tobacco, pepper, vanilla, rubber. Chf. tns., *Medan* and *Padang*.



Malay Hut, Sumatra

**Sumer**, (anc. geog.) dist. corresp. to lower Mesopotamia, inhab. by Sumerians, as distinct from upper Mesopotamia (*Akkad*). **Sumerians**, pre-Semitic dwellers of lower course of Euphrates and Tigris, achieved great culture in 4th and 3rd millennia B.C.; subjugated by Babylonians (2000 B.C.). **Sumerian languages**: see LANGUAGE SURVEY.

**Summa** (Lat.), term applied to a comprehensive statement of a partic. system of philos. and theolog., esp. that of one of the *Scholastics* (e.g., the *S. Theologica* of Thomas Aquinas). **Summer**, (astron.) period betw. the *summer solstice* (June 22nd) and autumnal equinox (Sept. 23rd) in N. Hemisphere; or betw. *winter solstice* (Dec. 22nd) and vernal equinox (Mar. 21st) in S. Hemisphere. **Summer diarrhoea**, epidemic diarrhoea in children living in overcrowded areas; characterised by rapid loss of weight, high temperature, and collapse. **S-lightning**, *heat-lightning*, lightn. so distant that the thunder is inaudible. **S. school**, course of instruction, usu. at univ., during summer vacation, esp. for teachers and students of univ. extension classes. **S. time**: see DAYLIGHT SAVING.

**Summons**, 1) in criminal law an order addressed by a crt. to person to attend crt. and answer charge. 2) In civil proceedings, process of crt. by wh. legal proceedings are begun. 3) Order from Crown requiring a peer to attend Hse. of Lords.

**Summum bonum** (Lat.), the greatest good. **Sump**, (tech.) chamber into which waste or spent liquid (oil, water) trickles; for oil in engines and machines, for water in mines, chem. plants, etc.

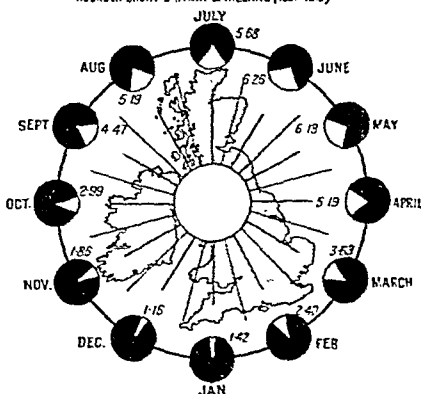
**Sun**, centre of solar system; sign ☉; a star (q.v.) of medium size and age; mean distance from earth 93 mill. m., wh. is traversed by light in 499 seconds and is used as astron. unit of distance in solar system; cf.

**PARSEC**. Proportionate dimensions (earth = 1.0): Density 0.25; diameter 109.1; surface 11,900; volume 1.3 mill.; mass 333,434. Rotation of the sun-surface varies, from 24½ days at the solar equator to 34 days at the poles. Inclination of the rotary axis twds. ecliptic 82°50'. Absolute temperature of visible illuminating surface, c. 6000°C. Above



Sunshine Recorder the photosphere (q.v.) are further gas layers: *reversing layer*, *chromosphere*, *corona*; latter visible only at times of eclipse, hence little explored. From chromosphere rise immense clouds of glowing hydrogen (see SOLAR PROMINENCES). Eddies in photosphere appear as dark *sun-spots*, often visible to naked eye (through smoked glass), of up to c. 50,000 m. diameter, whose frequency and size vary in *sun-spot period* of c. 11½ years. Frequency of sun-spots has been proved to influence terrestrial magnetism, atmospheric temp., and frequency of tropical storms; other effects doubtful. **S.-animalcule**, *Heliozoa*, microscopic animal with straight, ray-like pseudopodia. These rays of protoplasm are not really rigid, and when brought into contact with a food particle, contract or bend backwards so as to draw it towards the body mass. **S.-bird** (*honey bird*), small passerine bird of the tropics, similar to humming bird (q.v.), with brilliant feathers, thin beak, long, extensible tongue; feeds on insects and nectar from flowers. **Sunburn**, pigmentation of the skin, caused by exposure to the sun. **Sunlight**, rays of the sun are strongest in high altitudes where they are rich in the chemically powerful

SUNSHINE: MEAN DAILY SUNSHINE DURING EACH MONTH IN HOURS IN GREAT BRITAIN & IRELAND (1831-1915)



ultra-violet rays. Sunlight is used therapeutically in treatment of certain diseases, e.g., rickets, tuberculosis, etc. See IRRADIATION.



TION. **S.-rose**, rock-rose, *Helianthemum*, gar. plant; sev. var., mostly yellow flowers; grows in sandy soil. **S. spurge**, *Euphorbia helioscopia*: see SPURGE. **S.-stone**, mineral oligoclase, a feldspar containing sodium and calcium aluminium silicates in varying proportions. **Sunstroke**, as opposed to heat exhaustion (q.v.); illness due to intensive action of the sun on the head, accompanied

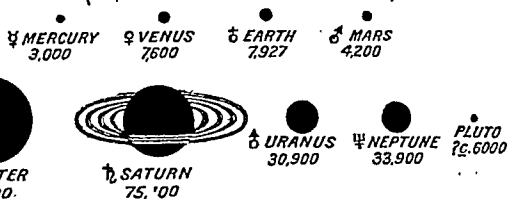
by sickness and headache; see FIRST AID. **S.-tables**, astron. tables for reckoning position of sun at each instant; that in present use compiled by Newcomb (q.v.), 1888. **S.-worship**, veneration of the sun, as source and sustainer of nature and human life; found in most pagan religions, often mixed with other cults (fire, moon); prominent in Zoroastrianism (q.v.).

MEAN DISTANCES OF THE PLANETS FROM THE SUN IN MILLIONS OF MILES

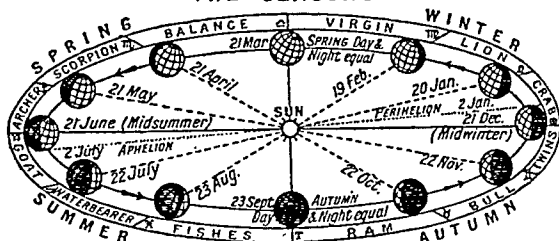
PLUTO ?  
3,666

SEMI-DIAMETER OF THE SUN  
432,000 MILES

RELATIVE SIZES OF THE PLANETS  
(EQUATORIAL DIAMETER IN MILES)

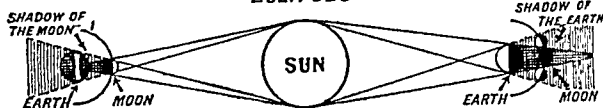


THE SEASONS

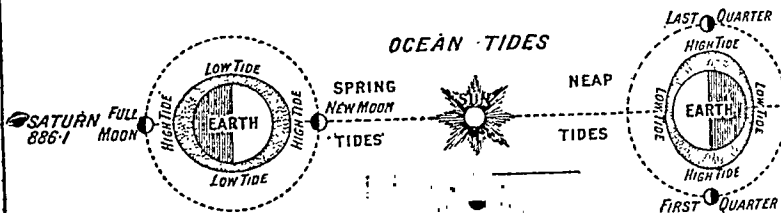


• URANUS  
1,782.8

ECLIPSES



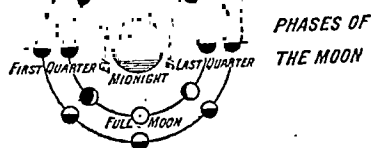
OCEAN TIDES



• HIDALGO 531

• JUPITER  
483.3

• MARS 141.5   ERDS 135.3  
• EARTH 92.9  
• VENUS 67.2  
• MERCURY 36



PHASES OF THE MOON

SUN

**Sunda Islands**, collective name for volcanic archipelago, E. Indies, betw. Malay Penins. and Moluccas; **Great Sunda Isls.**: Sumatra, Java, Borneo, Celebes; **Lesser Sunda Isls.**: Bali, Lombok, Sumbawa, Sumba, Timor, Flores. Chf. exports: sugar, petroleum, tobacco, rubber, tin.

**Sunday**, 1st day of week; the Lord's Day among Christians, reserved for worship and rest. **S. schools**, institutions providing special relig. instruction for children on Sundays; founded as modern organised system in Eng. by Robert Raikes, of Gloucester (1735-1811). **S.S. Union**, fndd. 1803, to promote such work. **American S.S. Union**, fndd. 1824. Similar insts. in R.C.Ch., known as *Catechism* (q.v.) **Classes**. **S. trading**, first forbidden by Constantine (A.D. 321); laws against it in England since 7th cent. A.D. By *Sunday Observance Act* (1677), all trade forbidden on S., but since 1871, Act has been largely a dead letter, and provisions, temperance drinks, and tobacco may be freely sold. Women and children may not be employed in factories or workshops on S. (Act, 1901).

**Sunderland**, co. bor. and seapt., Co. Durham, Eng., at mouth of riv. Wear; pop., 185,900; coal-mining centre; shipb., engineering, glass-works.

**Sundew**, *Drosera*, bog-inhabiting carnivorous herbs; leaves exude a sticky substance by which small insects are captured.

**Sundial**, device for ascertaining time during the day by means of the shadow of a rod or gnomon cast by the sun on a graduated dial. Earliest reference to a sundial is in Is. xxxviii. 8, c. 700 B.C. They were common in various forms up to the 18th cent., when they were superseded by clocks; now found only as garden ornament or curiosity.

**Sundsvall**, port, Sweden, on W. coast Gulf of Bothnia; pop., 18,215; sawmills; shipb.; exports timber.

**Sunfish**, marine fish attaining 7 ft. in length, characterised by excessively compressed, deep body, and very long narrow dorsal- and anal-fins, placed one above the other at the hinder end of the body. Distribtd. throughout temperate and tropical seas.

**Sunflower**, *Helianthus*, high-growing composite flower with large yellow flower disks, introd. to Eur. fr. America. **Common S. H. annuus**; seeds are edible, widely used as food for cage birds and pressed for oil. *H. tuberosus*, Jerus. artichoke (q.v.).



Sunflower

**Sunflower State**: see KANSAS.

**Sungari**, r. trib. (c. 1,500 m.) of Riv. Amur, Manchuria; navigable, 1,100 miles.

**Sung style**, period in Chinese art, end of

10th to 13th cent. A.D., named after Chinese dynasty Sung.

**Sunium**: see COLONNA.

**Sunna** (Arab.), way; collection of traditional sayings, actions, etc., of Mohammed. See KORAN; HADITH.

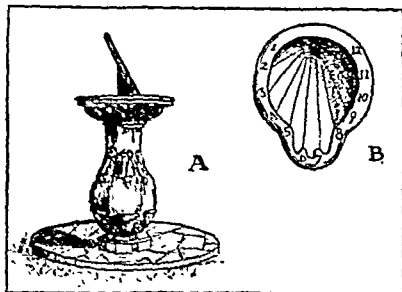
**Sunn hemp**, **Indian hemp**, *Crotalaria juncea*, plant native to India and Ceylon, where fibre is used for rope, etc.

**Sunni**, an orthodox Mohammedan, accepting authority of the Sunna (q.v.).

**Sun Yat Sen** (1868-1925), Chin. physician and statesman; joined revolu. soc., 1894, and Chin. Revolu. League, 1905; kidnapped and held at Chin. Legation, London, until released on application by Ld. Salisbury, 1896; largely resp. for Chinese revol. of 1911 but Yuan Shih Kai made Presdt., Sun's ideas abandoned. Sun organised Kuo-Min-Tang Party and by 1924 had estab. govt. in Canton; after his death Kuo-Min-Tang conquered rest of China.

**Suomi**: see FINLAND.

**Super-**, Latin prefix meaning above, or placed above, as super-normal (above



Types of Sundial

A) General B) Ancient

normal); super-capital (archit.), cap. placed above another.

**Superannuation fund**, built up by contribs. from intended beneficiaries or by reduction from their salary or wages, enabling them at predetermined age to give up work in reliance on fund.

**Supercharger**, apparatus for supplying greater weight of fuel and air to engine than it would take of itself; some form of pump. Used in motor-racing, also in attaining great altitudes in aeroplane.

**Supercooled liquid**, liq. below m.p. of corresponding crystalline solid. As long as liquid is fairly fluid, solidification occurs on addition of fragment of solid, or even spontaneously. When liq. becomes very viscous, and finally glass-like, crystallisation becomes increasingly slow. Glass is supercooled liquid. See NUCLEI.

**Superheater**, apparatus for superheating steam as it leaves the boiler; gives higher

efficiency without higher boiler-pressure; steam, moreover, is perfectly dry. **Superheated steam**, steam heated above temp. at which it leaves boiling water, i.e. at a temp. higher than the saturation temp. corresponding to its pressure.

**Superior**, tn., Wisconsin, U.S.A., at W. end L. Superior; pop., 36,100. **Lake S.**, westernmost of Great Lakes, N. Amer., on boundary of Canada and U.S.A.; largest fresh-water lake in the world; 380 m. by 160 m. (31,200 sq.m.); depth 1,000 ft.; alt. 600 ft.; coal and iron ore on shores. Connected with L. Huron (E.) by narrow strait (St. Mary's Riv., 45 miles).

**Superman**, ideal man; portrayed in philos. of Nietzsche (*q.v.*) as the strong, dominant character, superior to and beyond theories of good and evil. Term first used by Goethe in *Faust*.

**Supernaturalism**, the study which deals with manifestations that cannot be accounted for by natural science, and, therefore, may be thought to derive from a power outside the earthly sphere or understanding.

**Superphosphate**, artificial manure, contng. gypsum, phosphates, and phosphoric acid; various grades; used largely for root crops.

**Superposition**, placing one upon another; in physics, add. of forces, motions, currents, etc., by wh. each part produces same effect as if others were not there.

**Supers**, extra or supernumerary actors in play, with speaking parts.

**Supersaturation**: see SATURATION.

**Supersonic vibrations**, (phys.) elastic vibrations of same nature as sound, but much shorter wave length and higher frequency. Destructive to life.

**Superstition**, credulity with regard to supernatural portents and phenomena, distinguished from recognised relig. or scient. belief.

**Suppé**, Franz von (1820-95), Austr. composer; *Poet and Peasant*; *Fatinitza*, 1876.

**Supplementary angle**, (geom.) the angle necessary to make another angle equal to two right angles.

**Supporters**: see HERALDRY.

**Suppository**, torpedo-shaped crayon of cocoa butter or gelatin cntg. medicament for intro. into rectum, e.g., morphine suppository.

**Suppressio veri** (Lat.), suppression of the truth.

**Suppuration**, inflammation which has resulted in the formation of pus (*q.v.*).

**Supra-conductivity**, (metall.) characteristic of certain metals (mercury, lead, tin, thallium, etc.), by which they become perfect conductors within a few degrees of absolute

zero (*q.v.*). An electric current induced in a ring of such metal continues indefinitely as long as temperature is kept low.

**Supralapsarianism**, doctrine of extreme Calvinists that God, in creating man, pre-ordained his fall. Cf. **SUBLAPSARIANISM**.

**Suprarenals**, small glands situated above the kidneys, consisting of two parts: *cortex* and *medulla*. Deficiency of cortex leads to Addison's disease (*q.v.*). The medulla produces *adrenalin*, a hormone that helps to regulate sugar metabolism and has an important influence on blood-pressure.

**Supreme Court**, instituted by Judicature Act, 1873; consists of 2 permanent divisions: High Crt. of Justice and Crt. of Appeal. Supreme Court of U.S.A., 9 judges, has appellate and original jurisdiction, and duty of pronouncing upon constitutionality of laws, etc.; thus at times overriding both States and Congress.

**Surabaya**, Dut. Residency, E. Java, E. Indies; 3,680 sq.m.; pop., 2,550,000; fertile plain; coffee and rice plantations, tobacco; stock-raising; oil. Cap., S., on Strait of Madura, opp. isl. of Madura; pop., 255,000 (25,000 Chin., 18,000 Eur.); port and naval base.

**Surakarta**, residency, centr. Java, Dut. E. Indies; 2,400 sq.m.; pop., 2,257,000; tobacco, coffee, sugar. Cap., S.; pop., 157,725 (11,945 Europeans).

**Surat**, 1) maritime dist., Bombay, India, on Gulf of Cambay; 1,600 sq.m.; pop., 700,000; rice, wheat, cotton. 2) Cap. and port of dist., on Riv. Tapti, 15 m. from mouth. Eng. settlement, 1612; chf. trading centr. India, 17th-18th cent.; Parsi temples; manuf. cotton, silk; pop., 117,500.

**Surbiton**, urb. dist., Surrey, Eng., suburb of Kingston-on-Thames; residential part Greater London; pop., 29,400.

**Surety**: see GUARANTEE.

**Surface combustion**, method of burning mixture of gas and air by bringing it in contact with heated, porous, refractory material, wh. thus becomes very hot and radiates intense heat. Combustion very complete and flameless. **S. tension**, (phys.) every liquid (and solid) behaves as if covered by a stretched elastic skin, due to mutual attraction of surface particles not being balanced in all directions, as in interior of liquid. Causes liquid to form drops, to rise in capillaries wh. are wetted by it, to be depressed in caps. not wetted (mercury in glass). Light objects greased (e.g. needle) float on water.

**Surf riding**, sport popular among Hawaiian natives and adopted in Australia and, to some extent, in U.S.A. and Gt. Brit.; the rider balances himself upon a small plank of wood as it is borne shoreward by the breaking waves, or as it is towed through the water by a motorboat.

**Surgeon**, a doctor who specialises in the branch of medicine dealing with the operative treatment of disease (*surgery*).

**Surges**, (elec.) irregular fluctuations of current in supply networks, due to resonance (g.r.) and capacity (g.r.) effects; may give rise to dangerously high voltages.

**Surinam toad**, *Pipa*, toad of trop. Amer.; the eggs are placed by the male on the back of the female, where they develop in honeycomb-like proliferations on the skin and are carried in this position until the young emerge, there being no tadpole stage.



Surinam Toad

**Sur le tapis** (Fr.), on the carpet; under discussion.

**Surplice**, loose, white vestment of varying length, with wide sleeves, worn by clergy and, usually, by choir at divine service.

**Surplus value**: see MARXIAN THEORY.

**Surrealism**, modern French art movement technically allied to Cubism (g.r.), but aiming at the expression of dream-states and the sub-conscious on the theory, derived from Freud, that these are the true indexes of personality.



Surplice

**Surrey**, Henry Howard, Earl of (c. 1516-47), introduced blank verse into Eng. and, with Wyatt (g.r.) was one of 1st Eng. poets to adopt the sonnet-form; executed on Tower Hill on false charge of high treason.

**Surrey**, co., Eng., S. of Riv. Thames; area, 758 sq.m.; pop., 1,180,800. Contains part of Greater London. Surface generally undulating and well wooded; crossed (E. to W.) by the *North Downs*; drained by Thames, Wey, and Mole; agric., mkt.-gardening, hops, dairy-farming; co. tn., Kingston-on-Thames.

**Surrogate** (Lat.), a substitute, deputy; esp. an eccles. officer acting as deputy for the bp. or his chanc. in granting marriage licences.

**Sursum corda** (Lat.), "Lift up your hearts"; versicle before the Preface of the Mass (g.r.).

**Surtax**, tax payable in Gt. Brit. in addition to ord. income-tax on incomes over £2,000; present rates (1933) vary from 1s. to 7s. 6d. in the pound, plus ten per cent. in all cases.

**Surtees**, Robert Smith (1803-64), Eng. sporting writer and novelist; pubd. *The Horseman's Manual*, 1831; co-fndr. and ed.

(1832-37) of *New Sporting Magazine*, in wh. first appeared *Jorrocks's Jaunts and Jollities*; novels: *Handley Cross*, 1843; *Mr. Facey Romford's Hounds*, 1865.

**Surtout, point de zèle** (Fr.), "Above all, no enthusiasm!" Advice given by Talleyrand (g.r.) to his subordinates.

**Surveying**, branch of applied mathematics by which the various dimensions and characteristics of any portion of the earth's surface are determined and delineated; effected by various methods and with various instruments (see LEVELLING; THEODOLITE; TRIANGULATION); also from the air by means of photographs; essential preliminary to map-making, road-construction, the charting of currents, etc.; applied also in mining to subterranean survey. See also ORDANCE SURVEY.

**Surveying staff**, rod about 9 ft. long, painted red and white in alternate bands, used in land-surveying.

**Susa**, 1) tn., Turin, It., on Dora Riparia; pop., 5,000. 2) Or *Sousse*, tn. on coast of Tunisia, N. Africa; pop., 21,500; olives. 3) Anc. cap. of Elam; civilisation earlier than that of Persia.

**Susannah**, wife of Joachim; subject of hist. of Susannah and the Elders in Apocrypha.

**Susceptibility**, (magnetic) ratio of intensity of magnetisation of body to magnetic field (inside it).

**Suspension**, 1) (chem.) emulsion, liquid containing an insoluble substance, e.g., cream in milk. 2) (Mus.) Note of a chord wh. is held over and prolonged into the following chord.

**Susquehanna River**, Eastern U.S.A.; rises in 2 main streams, joining at Sunbury, Penn.; empties into Chesapeake Bay; 420 miles.

**Sussex**, mar. co., S.E. Eng.; area, 1,456 sq.m.; pop., 770,100; div. administratively into *East S.* and *West S.*; crossed (E.-W.) by *South Downs*, reaching to Beachy Head; conts. part of the *Weald*. Mainly agric.; cattle-raising, dairy-farming, mkt.-gardening; fisheries. Many seaside resorts, incl. Brighton and Eastbourne. Cap., *Lewes*.

**Sutherland**, mar. co., extreme N.W. Scot.; area, 2,028 sq.m.; pop., 16,100; surface mainly mountainous (*Ben More Assynt*, 3,273 ft.) with grouse moors and deer forests; some fertile valls.; Loch Assynt; sheep raising, salmon fisheries; co. tn., *Dornoch*.

**Sutlej**, longest (925 m.) and most easterly of the "five rivers" of the Punjab; rises Himalayas, tributary of Riv. Indus (g.r.).

**Sutra**, Sansk. rule of life, incldg. rules of religion, philosophy, and grammar.

**Sutro**, Alfred (1863-1933), Eng. play-

wright and producer; pub. *The Foolish Virgins*, 1904; *Freedom*, 1916; *About Women*, 1931; and translations of Maeterlinck's works.

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**Suzerainty**, paramount auth. of a State over another.

**Svalbard**: see SPITZBERGEN.

**Svealand**: see SWEDEN 2).

**Sverdlovsk, Ekaterinburg**, chf. tn., Uralsk Terr., Russian S.F.S.R., on Riv. Isset, pop., 136,880; gold mines, platinum refinery, flax spinning. Tsar Nicholas II, his wife, 4 daughters, and Tsarevitch murdered by order of local Soviet, July, 1918.

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**Swage**, (tech.) wrought-iron mould (sometimes of sevl. parts), into wh. a piece of almost white-hot iron is placed; when hammered or pressed, causes soft metal to take shape of mould; used in mass production.

**Swahili**, Bantu Negroes mixed with Arabs, Pers., Indians, etc., on E. coast of Afr. and at Zanzibar; traders; Mohammedans; language Kiswahili is the *lingua franca* of equatorial E. Africa. See LANGUAGE SURVEY, Bantu.

**Swakopmund**, port, S.W. Africa, on Walvis Bay; pop., 1,900.

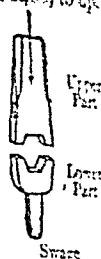
**Swale**, 1) riv. Yorks, Eng.; rises in Pennines (border of Westm.), flows past Richmond and joins Riv. Ure to form Riv. Ouse; length 60 miles. 2) Channel sep. Isle of Sheppey from mainland, Kent,  $\frac{1}{2}$ - $1\frac{1}{2}$  m. wide, 16 m. long; joins Riv. Medway.

**Swallow**, small, migratory passerine bird of the family *Hirudinidae*. World-wide distribution, coming far N. in summer, wintering as far S. as Cape Colony and India.

Arrives in Gt. Brit. early in April, leaving in late Sept. and October. Builds its shallow, saucer-shaped nest on rafters of sheds and barns. **S-hole**, (geol.) funnel-shaped, water-worn hole in limestone rock; rock fissure through which stream flows underground. **S-tail butterfly**, species of family *Papilionidae*, hairy hindwings each prolonged into a short tail. *Scarce S-t.*, fnd. in subtropical countries, and rarely in S. England; has pale yellow wings, barred with black. The common *S-t.b.*, frequenting fen districts of Eng., but becoming rare, owing to land-drainage, is sulphur-yellow, black and blue. **S-tailed kite**, falcon-like bird of prey with forked tail, fnd. in S. States of U.S.A. and in S. America. **S-wort**, popular name for *celandine* (*q.v.*); also *milkweed*, sevl. species of weeds exuding white milky juice.

**Swallows**, Oil of: see ELDER.

**Swammerdam**, Jan (1637-80), Dut. naturalist; disc. valves of lymphatic vessels;



Swallow



Swallowtail Butterfly

studies of anatomy of bees, mayflies, and frogs; *General History of Insects*, 1669.

**Swamp**, level tract of land saturated with moisture; marsh, bog.

**Swan**, riv., W. Australia; flows past Perth to mouth at Fremantle; first explored, 1697; first W. Austral. colony, 1829.

**Swan**, large, white semi-aquatic bird of the sub-family *Cygninae*. Distinguished among the duck tribe by its abnormally long neck. *Mute S.* is the familiar species seen on rivers and lakes of Gt. Brit. The *Whooper* or *Whistling S.* and the smaller *Berwick's S.* are migrants, breeding within Arctic Circle and migrating to rivers and lakes of Gt. Brit. and N. Europe in autumn and winter. *Black S.*, orig. native to Australia only, now bred by bird fanciers in Gt. Brit., etc. The *Coscoroba S.* (small) and *Black-necked S.* are South American species. **S.-mussel**, a large freshwater bivalve mollusc found in rivers and lakes, the shell somewhat resembling that of the true mussel in shape. Young, on escaping from parent shell, attach themselves to passing fish, and for a short period lead a parasitic life, in which form they are known as *Glochidium*. **S.-song**, last work of a poet (from mythical song of dying swan).



Swan

**Swanage**, tn. and seaside resort, Isle of Purbeck, Dorsetsh.; quarries (Purbeck stone); pop., 6,300.

**Swanee River**: see SUWANEE.

**Swansdown**, down of swan, esp. as trimming for dresses; fine, thick, woollen cloth.

**Swansea**, co. bor. and seapt., Glam., S. Wales, at mouth of Riv. Tawe; pop., 164,800; important metal-working town; centre of tin-plate industry; copper-smelting; oil-refineries; extensive docks; coal-mines; univ. college (part of Univ. of Wales).



Civic Buildings, Swansea

**Swaraj**, name applied to movement for "home rule" in India, and (since 1919) to political party advocating this; adopted (1920) by Indian National Congress as their aim; party followed for some years policy of "non-co-operation" with existing Ind. Govt.; cf. GANDHI.

**Swarthmore**, borough, Pennsylvania, U.S.A., nr. Delaware Riv.; pop., 3,400; S.

Coll., fndd. by Society of Friends, 1864.

**Swash letters**, italic letters in wh. the normal, plainer form is elaborated by flourishes: *ARN*.

**Swastika**, very anc., pract. universal symbol in form of equal-armed cross with arms bent back at rt. angles; taken as emblem by Nazis in belief that it is "Aryan"; see CROSS.

**Swatow**, seapt., Kwangtung, S. China; pop., 125,000; harbour, fisheries, manuf. of tin wares.

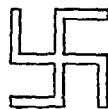
**Swaziland**, Brit. protectorate, S. Africa, admin. by S. Afr. High Commission; lies betw. Transvaal, Portug. E. Africa, and Natal (Zululand); 6,700 sq.m.; pop., 113,000 (Bantus; 2,700 whites); divided longitudinally into *Low Veld* (E., 1,000 ft.), *Middle Veld* (2,000 ft.), and *High Veld* (W. 4,500 ft.); healthy and fertile; cattle-ranching, sheep-grazing; maize, tobacco, fruit; coal, gold, tin; cap., Mbabane.

**Sweat**, watery fluid contng. certain salts, excreted by sweat-glands of the skin. S. becomes more abundant with muscular exercise, and when body temperature is raised, e.g., during fever. S. plays part in cooling body by evaporating from surface of skin; secretion of S. limited in animals. **S. glands**, minute glands situated in deeper layers of skin and connected with surface by means of their respective ducts; they manufacture and excrete S. from the blood.

**Sweated labour**, employment of workers, mostly in home industries, at such low rate of pay that bare subsistence can only be gained by working intolerably long hours. Now largely prevented by trade boards which fix minimum rates of pay.

**Swede**, Swedish turnip, edible root of *Brassica campestris*.

**Sweden**, *Sverige*, 1) kgdm. comprising larger (E.) half of Scandinavian Penins.: bounded W. by Norway, N.E. by N. Finland; separated by Gulf of Bothnia from S. Finland, by Baltic Sea from Baltic republics and Ger., and by Kattegat and the Sound from Denmark. Extends 200 m. into Arctic Circle and includes part of Lapland. Length c. 1,000 m.; max. breadth 250 m.; 173,143 sq. m.; pop., 6,120,080 (over 6,000 Lapps; c. 30,000 Finns), mostly Lutherans. Coast (partly ice-bound in winter) much indented, though less so than Norway; like Norway has a protective fringe (Skärgård) of small isls.; in the Baltic are large isls. of Gotland and Öland. Longest European range (see SCANDINAVIA) separates Sweden from Norway, with Kebnekaise (7,005 ft.) in the mountainous N.; remainder generally low-lying. Very well watered; chf. rivs. (many falls and



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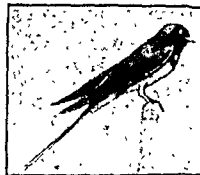
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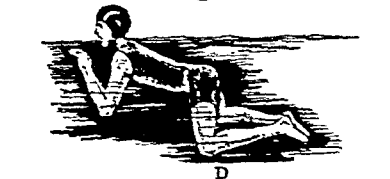
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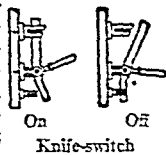


Swimming Strokes

- A) Floating      B) Overarm  
C) Dog Paddling      D) Breast

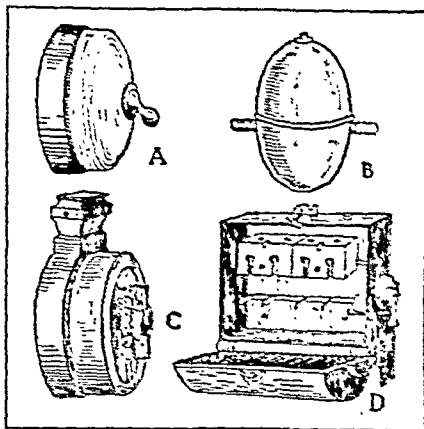
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**Switch**, 1) (elec.) apparatus for connecting and disconnecting elec. current for lighting; *tumbler S.* (for rooms); for larger currents, *knife switch*; for high tension: *autom. oil S.* (q.r.); behind bus-bar: *circuit-breaker*; in spec. cases: *high-speed S.*; on electr.-driven vehicles: *controller*. **S.-board**, in elec. installations; board of insulating non-inflammable material (gen. marble) on front of wh. are the switches, meters, and other instr., and the controls. Bare connections and switch parts are usu. at the back. 2) (Rly.) Apparatus for making connections betw. different rails in order to bring rolling stock from one rail to another without interrupting the journey; S. are gen. worked from signal-box, also local turning by revers-



Knife-switch

ing lever at **switchbox**; setting of S. indicated by **s.-lamps**; **simple s.**, cross-over S.; **scissors s.**, double cross-over switch.



Types of Electric Switch

- A) Wall      B) Pear-shaped  
C) Rotary      D) Double-pole main

**Swithin, St.** (d. 862), Bp. of Winchester, S36; had great influence over Eng. kgs. of his time; his remains were translated from outside to inside Winchester Cathedr., 971, on 15th July, and according to popular superstition the weather on this date sets an example which is followed for 30 days.

**Switzerland**, federal repub. (confederation), centr. Europe betw. France (W. and N.W.), Ger. (N.), Liechtenstein and Austria (E.), and Italy (S. and S.E.); 25 cantons (incl. six half-cantons); 15,944 sq.m.; pop., 4,077,000 (71% speak German, 21% French, 6% Italian, 1% Romansch and Latin.) Crossed



in S. by W. and *Central Alps* (q.q.r.) with *Matterhorn* (14,770 ft.) and *Dufourspitze* (Monte Rosa, 15,215 ft.; highest Swiss peak) on Ital. frontier. In centre are mtns. of *Bernese Oberland* (Finsteraarhorn, 14,000 ft.; Jungfrau, 13,658 ft.); in N.W. *Jura Mtns.* (partly on Fr. frontier). Mtn. ranges separated by high riv. valls. (Engadine up to 3,900 ft. abv. sea-level). The Rhone flows through Canton of Valais and L. of Geneva into France; in Canton of Grisons are head waters of the Rhine. Longest Swiss riv. the Aar (chf. trib., Reuss), joins Rhine on N. frontier; other rivs.: Ticino (into Riv. Po), Inn (through Engadine into Danube). Chf. lakes: Geneva (partly in France), Constance (partly in Ger. and Austria), Maggiore and Lugano (partly in It.), Neuchâtel, Thun, Lucerne, Zürich. Surface 48% pasture, 21% forest, 7% agricul., 20% barren; cattle-breeding, dairying; condensed milk, choco-



rapids; water-power): Torne (on Finnish frontier), Kalix, Luleå, Angerman, and Dal Elf drain into Gulf of Bothnia; Klar Elf into L. Vener and Göta Elf, thence into Kattegat; lakes (over 14,500 sq.m.) include Vener (largest in Scandinavia), Vetter, Mälars, and Hjälmars in the S., and those of N. lake-district. Many canals, incl. Göta Canal (*q.v.*). Forests (conifers) cover 52% of area. Climate more severe than Norway's. Country largely agrictl. (oats, wheat, rye, barley, sugar-beet, flax, hemp); fisheries; cattle, sheep, and pigs (reindeer in Lapland); iron and steel; timber industry important (saw-mills: wood pulp and match factories; wood-working); engineering. Rlys. 14,600 miles. Divided into three territorial divs.: Norrland, Sweden (Svealand), and Götaland, and 25 counties (*Län*); chf. tns.: *Stockholm* (cap.), Gothenburg (Göteborg), Malmö. *Constitution* (6 June, 1809; last modified, 1929): hereditary monarchy: First chamber (150 members), Second Chamber (230 members). **HISTORY:** Settled by N. Germanic tribes: Christianity introduced 11th cent.; united to Denmark 14th-16th cent.; under Hse. of Vasa became chf. Baltic power; Gustavus Adolphus (1611-22) extended dominions; Charles XII defeated after initial successes agst. alliance of Russia, Poland, and Denmark (1700-21; Northern War) losing much territory. United to Norway, 1814; separated, 1905. 2) Or **Svealand**, centr. terr. divn. of Sweden; 36,600 sq. miles.

**Swedenborg**, Emanuel von (1688-1772), Swed. mystic, physicist, physiolog. and pol. econ.; formulated nebular hypothesis and made many disc. in physiology. Fndd. New Church; membs. known as **Swedenborgians**, professing Xtian. relig. with strong mystical element; emphasis on spiritual sense of Scriptures, and on possibility of personal inner communication with world of spirits; churches in Gt. Brit., Amer., and Scandinavia.

**Swedish:** see LANGUAGE SURVEY, *Scandinavian*. **S. gymnastics**, system of phys. training as a dep. of educ., inven. by P. H. Ling (1776-1839), from wh. most modern systems have been developed.

**Sweeps**, (naut.) long oars used for propelling large boats.

**Sweepstake**, form of lottery (*q.v.*), in which the entrance-money of each participant forms a pool to provide prizes for those who draw the winning numbers.

**Sweet**, Henry (1845-1912), Eng. philologist; pioneer and leading authority in sciences of phonetics and linguistics.

**Sweet basil**, *Ocimum basilicum*, white-

flowered herb with strong, sweet scent. Young leaf tops used in soups and salads.

**S. briar**, eglantine, light red var. of wild rose, found in Eur. and America. **S. flag**, *Acorus calamus*, herbaceous wild plant with branching root-stock and sword-shaped, scented leaves; used in folk medicine for ague and infantile diarrhoea, and occas. for flavouring beer. **S. pea**, see Sweet Potato



**PEA. S. potato**, farinaceous root of *Batatas batatas*, trop. Amer. vine, now cultivated.

**S.-william**, *Dianthus barbatus*, ornamental plant with profuse inflorescence.

**Sweetbread**, the pancreas of calf or other animal; delicate dish, suitable for invalids.

**Sweno's Stone**, carved pillar (23 ft.), nr. Forres, Moray, Scot., said to commemorate victory of Sweyn over Malcolm II in 1068.

**Swettenham**, Sir Frank (1850- );

Brit. admin. in Malaya; *Arabella in Africa*, 1925.

**Swift**, Jonathan (1667-1745), Eng. author; politic. satire *Gulliver's Travels*, 1726; *Tale of a Tub*, 1704; *Battle of the Books*, 1704.

**Swift**, bird similar to swallow, but not related; like most pica-rine birds, it has ten tail-feathers, while swallow has twelve and is a passerine bird. Migratory, arriving Gt. Brit. early in May and departing for Africa and Madagascar about



Swift

middle of August. Extraordinarily rapid flight. Nest is placed in some recess or crevice in darkness, under eaves of houses or in roof-towers of churches, or in holes in face of rocky cliffs: consists of fragments of grass, straw, wool, feathers, all collected while on the wing and glued together by a glutinous secretion from the salivary glands.

**Swilly**, Lough, inlet, N. coast of I.F.S.; length 25 m.; breadth  $1\frac{1}{2}$ - $4\frac{1}{4}$  miles.

**Swimming**, art or sport of travelling thr. water by moving limbs or body. See BREAST-STROKE; SIDE-STROKE; CRAWL; CHANNEL SWIMMING.

**Swinburne**, Algernon Charles (1837-1909), Eng. poet; *Atalanta in Calydon*, 1865; *Poems and Ballads*, 1866.

**Swindon**, munic. bor., Wilts, Eng.: G.W.R. works; pop., 62,400.

**Swine fever**, highly infectious disease of pigs characterised by marked rise of temperature, loss of appetite, diarrhoea, and cough.

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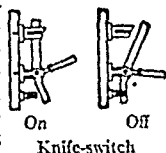


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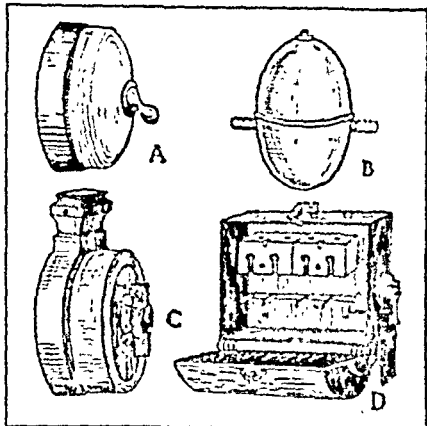
**Swiss Family Robinson**, Eng. trans. (1820) of romance by Swiss author, Johann Wyss (1781-1830); describes vicissitudes of family wrecked on desert island.

**Switch**, 1) (elec.) apparatus for connecting and disconnecting elec. current for lighting; **tumbler S.** (for rooms); for larger currents, **knife switch**; for high tension: **autom. oil S.** (q.v.); **behind bus-bar: circuit-breaker**; in spec. cases: **high-speed S.**; on electr.-driven vehicles: **controller. S.-board**, in elec. installations; board of insulating non-inflammable material (gen. marble) on front of wh. are the switches, meters, and other instr., and the controls. Bare connections and switch parts are usu. at the back. 2) (Rly.) Apparatus for making connections betw. different rails in order to bring rolling stock from one rail to another without interrupting the journey; S. are gen. worked from signal-box, also local turning by revers-



Knife-switch

ing lever at **switchbox**; setting of S. indicated by **s.-lamps**; **simple s.**, cross-over S.; **scissors s.**, double cross-over switch.



Types of Electric Switch

- A) Wall B) Pear-shaped  
C) Rotary D) Double-pole main

**Swithin, St.** (d. 862), Bp. of Winchester, 836; had great influence over Eng. kgs. of his time; his remains were translated from outside to inside Winchester Cathedr., 971, on 15th July, and according to popular superstition the weather on this date sets an example which is followed for 40 days.

**Switzerland**, federal repub. (confederation), centr. Europe betw. France (W. and N.W.), Ger. (N.), Liechtenstein and Austria (E.), and Italy (S. and S.E.); 25 cantons (incl. six half-cantons); 15,944 sq.m.; pop., 4,077,000 (71% speak German, 21% French, 6% Italian, 1% Romansch and Latin.) Crossed in S. by W. and **Central Alps** (qq.v.) with **Matterhorn** (14,770 ft.) and **Dufourspitze** (Monte Rosa, 15,215 ft.; highest Swiss peak) on Ital. frontier. In centre are mtns. of **Bernese Oberland** (Finsteraarhorn, 14,000 ft.; Jungfrau, 13,658 ft.); in N.W. **Jura Mtns.** (partly on Fr. frontier). Mtn. ranges separated by high riv. valls. (Engadine up to 3,000 ft. abv. sea-level). The Rhone flows through Canton of Valais and L. of Geneva into France; in Canton of Grisons are head waters of the Rhine. Longest Swiss riv. the Aar (chf. trib., Reuss), joins Rhine on N. frontier; other rivs.: Ticino (into Riv. Po), Inn (through Engadine into Danube). Chf. lakes: Geneva (partly in France), Constance (partly in Ger. and Austria), Maggiore and Lugano (partly in It.), Neuchatel, Thun, Lucerne, Zürich. Surface 48% pasture, 21% forest, 7% agrictl., 20% barren; cattle-breeding, dairying; condensed milk, choco-



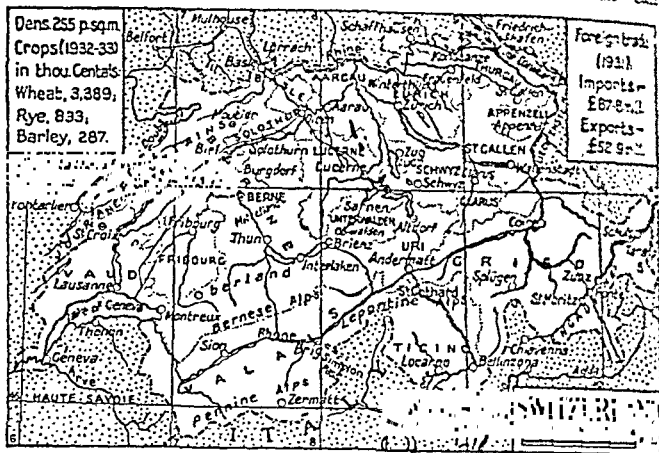
late, cocoa; orchards in N.; iron in Aargau; coal in Valais; 2 million h.p. water-power; silks and cottons, machines, clocks, and watches; tourist centre (important hotel industry). Rlys.,

3,370 m.; many rly. tunnels through Alpine passes (Simplon, St. Gotthard, Lötschberg tunnels). Chf. tns.: Zürich, Basle, Geneva, Berne (cap.), Lausanne. Constitution (1874): *Bundesversammlung* (Fed. Assembly) made up of two bodies National Council (*Nationalrat*) 1 deputy for 20,000 pop. (univ. male suffrage) and States' Council (*Ständerat*) 2 depts. per canton; Assembly elects Fed. Council (*Bundesrat*) of 7 members. Presdt. of Confedn. also elected by Assembly, for one year.

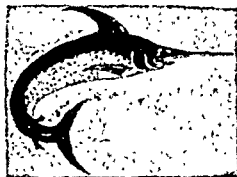
**HISTORY:** Alliance (Everlasting League) of cantons of Uri, Schwyz, and Unterwalden, 1291; extended until, by 1386, it included Lucerne, Zürich, Glarus, Zug and Berne. Successful opposition to the Habsburgs; victories at Morgarten (1315), Sempach (1386), agst. Charles the Bold of Burgundy at Grandson and Morat (1476-77). Reformation introduced by Zwingli, 1519. Indepe. recognised by Peace of Westphalia, 1648; became *Helvetic Republic*, 1798; replaced by new federal settlement, 1803. Congress of Vienna (1815) guaranteed perpetual neutrality to Switzerland. Sonderbund War, 1847; federal constitution, 1848. Swiss neutrality emphasised by fndn. of Red Cross Society at Geneva in 1864 and by choice of Geneva as hdqrs. of League of Nations in 1918.

**Sword**, weapon for cutting and thrusting. **S.-dance**, 1) *d.* imitating action of s.-players; 2) *d.* over or among naked swords; 3) *d.* in wh. women pass under double line of swords crossed over them by the men. **Swordfish**, marine fish. The upper jaw is

developed into a "sword," a wedge-shaped spike often exceeding half the length of the rest of the head and body. With this formidable weapon, the sword-fish can



transfix its prey, attacking large cod, tunny, and even driving it into the side of a whale. There are records of sword-fish driving their weapons into the planking of wooden ships, and even through the copper sheathing; chf. surface swimmers, and love to bask in the sun.



Swordfish

**Sybarite**, inhabit. of Sybaris (anc. Gr. city in S. It.; fudd. 721 B.C.); in antiqu. its luxury became a byword. Hence, *sybaritic*, luxurious, effeminate.

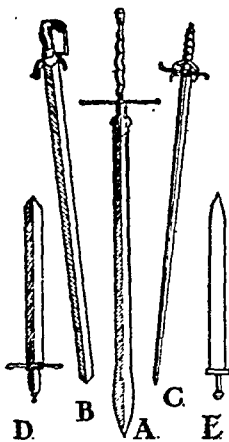
**Sycamore**, 1) *Ficus sycomorus*, Egyptn. and Syrian tree of fig family. 2) *S. maple*, broad-leaved tree of N. Europe.

**Sycophant**, informer in anc. Athens; hence: flatterer, toady.

**Sydenham**, Thomas (1624-89), Eng. physician; 1st to produce laudanum from opium; laid foundtns. of mod. clinical methods.

**Sydenham**, residential dist., S.E. London, partly in bor. of Lewisham; the *Crystal Palace* (q.v.) is here.

**Sydney**, cap. New South Wales, Australia, on natural harbour (22 sq.m.) of *Port Jackson*; pop. (with suburbs) 1,256,200; largest tn. and port in Australia; two catheds.; univ.; art gall.; observatory; parks and gardens; industrial and commercial metropolis; engineering, shipb., foundries, blast furnaces, dyeworks, textiles. Sydney Harbour Bridge, with span of 1675 ft. (complt'd. 1932), unites S. with N. Sydney.



Types of Sword

- A) Double-Handled
- B) Broadsword
- C) 16th Century
- D) Roman
- E) Norman



Sycamore

**Syenite**, kind of red granite, from Syene in Upper Egy.; crystalline, igneous, alkaline rock, containing little or no quartz.

**Syllable**, sevrl. letters wh., together, represent one sound; a word, or part of a word uttered by a single effort of the voice.

**Syllabus**, 1) outline or summary of princ.

subjects to be dealt with in instructional course.

2) (R.C.Ch.) list (issued 1864) of

80 philos. and theol. propositions censured at various times by Pope Pius IX, as inconsistent with the faith. Many Cath. theologians do not consider the S. an infallible pronouncement. Name also applied to decree *Lamentabili* (1907) condemning 65 chief errors of leading Modernists (q.v.).



By Courtesy of Australian Commonwealth Govt.  
Sydney Harbour Bridge

**Syllogism**, formal statement of an argument in logic (q.v.), consisting of 3 propositions: major and minor premises and conclusion; a partic. conclusion drawn from general truths. See **DEDUCTION**.

**Sylphs**, spirits of the air.

**Sylt**, largest of N. Frisian Isls., Ger., in N. Sea, off Schleswig; 37 sq.m.; sea bathing at Westerland; causeway (7 m.) to mainland.

**Sylvester**, name of 3 popes and 1 antipope. 1) **S. I, St.** (314-335), sd. to have received the Donation of Constantine (q.v.).

2) **S. II** (999-1003), noted for his scholarship.

3) **S. III** (1044), elected in place of Benedict IX, who expelled him 3 months later.

**Sylvine**, (chem.) native potassium chloride, KCl, found at Stassfurt (q.v.).

**Symbiosis**, a living together of 2 dissimilar organisms to their mutual advantage; e.g., hermit-crabs and sea-anemones, or the alga and fungoid elements in lichens.

**Symbol**, 1) object chosen to represent an idea or quality, and associated with it, e.g., lily for purity. 2) (Science) Character or cipher indicating quantity and nature of bodies, e.g., in chemistry, astron., etc. 3) (Relig.) Object representing a divine quality, e.g., Christ repled. by dove, lamb, etc. 4) (Relig.) A creed, esp. the Apostles' Creed. 5) (Psychol.) Subconscious substitution of an acceptable idea or action for one that is unpleasant or intolerable to the conscious ego.

**Symbolism**, originally the use of particular signs to denote abstract, usually religious, concepts, e.g., the totems of N. Amer. Indians, the phallus (fertility), the Egypt. tau-cross (eternity), and the early Christian symbols. In lit. and art history, a 19th-cent. French movement in which representation

and statement were eschewed in favour of the evocation of emotions and ideas by suggestion (approximation to music). **Symbolists**, group of Fr. poets, writg. c. 1880, whose motto, expressed by Verlaine, was: "*Pas de couleur, rien que la nuance*" i.e., they suggested, not attempted, to depict or transcribe. Symbolism was a revolt against Naturalism and Parnassianism; its chief exponents were Baudelaire, Verlaine, Rimbaud, Corbière and Mallarmé; it coincided with the Aesthetic movement in England.

**Symmachus, St.**, Pope (498-514).

**Symmetry** (Gr.), regularity and harmony of proportions in nat. or art.

**Symonds**, John Addington (1840-93), Eng. critic; *The Renaissance in Italy*, 1875-86.

**Symons**, Arthur (1865- ), Eng. poet and essayist; *Studies in Two Literatures*, 1897.

**Sympathy**, responsive feeling; term has distinct ethical significance in the *Theory of Moral Sentiments* of Adam Smith (1723-90), and denotes moral attitude of the well informed and impartial spectator who has adopted the viewpoint, wishes, and desires of another.

**Symphony**, (mus.) orchestr. comp. with several movements. **Symphonic poem**, orchestral piece in one movement in the style of programme music (q.v.).

**Symposium** (Gr.: banquet), title of a work by Plato (q.v.).

**Synagogue** (Gr., assembly), Jew. place of worship.

**Synalepha**, *synalephe*, contraction by suppression of a final vowel or diphthong bef. another vowel or diphthong.

**Synaphea**, (pros.) continuity betw. lines of portions thereof in verse; mutual connectn. of all verses in a system so that they are scanned as 1 verse, esp. when last syll. of 1. is elided by synalepha with first syll. of next.

**Synaxarium**, lesson read in Gk. Ch. based on lives of the saints; book contg. such lessons.

**Synchronise**, to bring in exact agreement in time; e.g., to synchronise clocks with Greenwich, or to S. sound with picture in film. **Synchronous**, occurring, existing simultaneously.

**Syncopation**, 1) (mus.) displacement of the regular time-accent; found in classical music, but spec. characteristic of jazz and



Syncopation

ragtime (qq.v.). 2) (gram.) Contraction of word by omission of letters, e.g., *ne'er*, for *never*.

**Syncretism**, attempt to harmonise or unite varying relig. or philos. systems; often used derogatorily.

**Syndicalism**, (econ.) form of Socialism (*q.v.*), of Fr. origin, aiming at control and ownership of all industries by workers in each (ant.: *State Socialism*), working through their trade unions (Fr. *Syndicats*), and gen. advocating class war and direct action (strikes, sabotage, etc.). First *Int. Synd. Congress*, 1913.

**Syneresis, synæresis**, coalescence of 2 vowels or sylls.; ant.: *Diaeresis* (*q.v.*).

**Synergism**, doctrine that the salvation of the soul is effected, not by Divine grace alone, but by this in co-operation with human effort.

**Synge**, John Middleton (1871-1909), Irish dramatist; *The Playboy of the Western World* (1906); assoc. with W. B. Yeats in revival of Irish lang. and literature.

**Synod**, 1) General or local eccles. council. 2) Council in Presbyt. Ch. intermediate betw. General Assembly and presbyteries. 3) Any deliberative assembly. 4) (Astron., archaic) Conjunction (*q.v.*). **Holy S.**, supreme governing body of the Russian Ch. from suppression of Patriarchate, under Peter the Great, until 1917.

**Synodic period**, that betw. 2 successive conjunctions (*q.v.*) of the moon or a planet with the sun.

**Synonyms**, words of similar or ident. meaning, e.g., *mendacious, untruthful*.

**Synopsis**, gen. survey or summary of a subject. *Synoptic Gospels*, first 3 Gs.: Matthew, Mark, Luke; so called bec. their similarity in form and language shows a common outlook.

**Synovia**, (physiol.) albuminous fluid secreted by glands betw. joints and acting as lubricators. **Synovitis**, inflammation of the synovial membrane of a joint (*q.v.*). Usually accomp'd. by swelling of joint and pain.

**Syntax**, study of sentence construction.

**Synthesis**, combination, creative union of opposites to harmonious whole; in Hegelian and Marxist logic, truth is considered to be discovered by process of thesis—antithesis—synthesis; also, building-up of chem. combinatn. from elements; Ant.: *analysis*.

**Syntony**, adjustment of tuning to equal natural period of oscillation of two vibrators, gen. wireless transmitter and receiver. See **WIRELESS**.

**Syphilis**, contagious disease acquired by contact, usu. sexual intercourse, with infected person, or transmitted by mother to her infant. Caused by *spirochæta pallida* (*Treponema pallidum*). Stages of disease are: 1) Primary sore, hard chancre (*q.v.*), usu. on genitals, with swelling of inguinal glands, appearing 2-3 wks. after infection. 2) Mucous patches in mouth and skin eruptions. 3) Affections of nervous system, e.g., tabes, paresis. *Diagnosis* from blood serum by

means of Wassermann or Sachs-Georgi reaction; in case of S. of nervous system from cerebro-spinal fluid.

**Syphon, siphon**, glass container for aerated water, wh. is forced up by air-pressure thr. glass tube and discharged from metal mouthpiece with valve operated by hand.

**Syra, Syros**, isl., Greece, one of the Cyclades; 31 sq.m.; pop., 28,000; cap., *Hermoupolis*.

**Syracuse**, 1) tn. New York State, U.S.A., on L. Onondaga and Erie Canal; pop., 210,000; univ. (1848); iron and steel indus.; salt springs (salt indus.), typewriters; airport. 2) Cap. of prov. S. (852 sq.m.; pop., 284,400), on E. coast of Sicily; pop., 50,100; abpric.; ruins of anc. temple and theatre. Fndd. as Gr. colony c. 750 B.C.; flourished under tyrants 5th cent. B.C. (victory of Gelon over Carthaginians at Himera 480 B.C.); abortive siege by Athenians in 414-413 B.C. (Sicilian Expedition); capt. by Rom. 212 B.C. despite ingenious defences by Archimedes.

**Syr-Darya**, river (c. 1,600 m.), Centr. Asia, rises in *Tianshan Mtns.*, flows through Turkestan into Sea of Aral.

**Syria**, independent State, Asia, under Fr. mandate, bounded by Asia Minor on N., Iraq on E., Transjordan and Palestine on S., and Mediterranean on W.; c. 61,400 sq.m.; pop., c. 3,500,000; traversed N. to S. by *Lebanon* and *Anti-Lebanon Mtns.* (10,500 ft.); Syrian Desert in E.; fertile vall. of the Orontes in N.W., head-waters of the Jordan in S.W. Products include cereals, wine, mulberries, cotton, tobacco, tropical fruits, oil; exports silk, fruit, wool, oil. Rly. from Aleppo (Asia Minor) to Damascus (Transjordan and Egypt). Air services from Damascus to Bagdad. Divided into *Syrian Repub.* (cap., *Damascus*; includes Sanjak of Alexandretta), *Lebanese Repub.* (cap., and port *Beirut*), and govts. of *Latakia* and *Jebel Druze*. Babylonian 3rd-2nd millennium B.C.; Assyrian in 9th cent.; Persian in 6th cent.; under Seleucids, 312-64 B.C.; Rom. prov. 64 B.C.; Latin duchy during crusades; Turkish, 1517-1918.

**Syriac**, see LANGUAGE SURVEY, *Aramaic*.

**Syrian Church**, traditionally founded by the Apostle Thomas; Syrian Christians belong to various branches, mainly Nestorian, of the Eastern Churches (*q.v.*). **S. Catholics**, a body in communion with Rome, but observing ancient Syriac rites.

**Syringa, Philadelphus**, flowering shrub; white, sweet-scented blossoms.

**Syros**: see SYRAR.

**Syrtis**, anc. name of two bays, N. Africa; *Syrtis Major*, Gulf of Sidra, coast of Libya; *Syrtis Minor*, Gulf of Gabes, E. coast of Tunis.

**Syrup**, by-product in manuf. of sugar, also solution of grape sugar (*glucose*); thickened fruit juice (*fruit-syrup*).

**Syryenians**, *Zyrians*, *Komi*, E. Finn. people of N.E. Russ.; agric., cattle-rearing, trading; c. 250,000 in number.

**Syzygy**, point of moon's orbit in wh. it is either new moon or full moon; line of syzygies passes through these points, crossing moon's orbit.

**Szabadka**: *see* SUBOTICA.

**Szechuan**, **Szechwan**, inland prov. W.

China, on upper Yangtze-kiang; c. 200,000 sq.m.; pop., 52,063,600; mountainous (up to 24,600 ft.); coal, iron, salt, rice and tea plantations; cap., *Chengtu*.

**Szeged**, **Szegedin**, tn., Hungary, on right bank Riv. Theiss (Tisa); pop., 135,100; univ.; paper mills; textiles; shipbuilding.

**Szolnok**, tn., Hung., cap. co. of S., on Riv. Theiss (Tisa); pop., 33,000.

**Szombathely**, **Steinamanger**, tn., Hung., cap. co. of Vas (Eisenburg), on Riv. Güns; pop., 35,000; rly. workshops.

**T.**, abbr., 1) Testament, 2) tare (*q.v.*); 3) territory; 4) ton. **t.**, abbr. *tome* (Fr.), volume of a book. **Ta**, (chem.) symbol of tantalum (*q.v.*).

**Taal**, dialect or patois of Dutch, with a proportion of native, English, and other words; spoken in S. Africa, esp. at the Cape; also called Cape Dutch and Afrikaans.

**Tab**, (theatre) sheet of canvas suspended from flies, but not size of whole stage. **T. curtain**, for front of stage, drawn aside by ropes.

**Tabard**, tunic or mantle formerly worn over the armour; reaching below the loins, and open at the sides from the shoulders down; as part of the ceremonial dress of a herald, emblazoned with the royal arms. Sign of the inn at Southwark from which Chaucer's Canterbury Pilgrims set out upon their journey. **Tabarder**, a foundation scholar at Queen's Coll., Oxford; usu. spelt *tabdar*.

**Tabby**, (weaving) waved or watered silk; hence brindled cat with similar markings known as *tabby cat*.

**Tabernacle**, relig. centre of Israelites, containing Ark of Covenant, made under command of Moses in Wilderness; in Palestine set up at Shiloh until time of Eli; later established by Solomon at Gibeon until building of Temple, within which it was placed. **Tabernacles, Feast of**, Jew. festival in nature of a harvest-thanksgiving during week from 15th day of Jew. New Year, commemorating the sojourn of Israel in tents in the wilderness. Temporary dwellings (A.V.; *booths*) should be erected and occupied (Lev. xxiii, 33).

**Tabes dorsalis**, *locomotor ataxia*, disease caused by syphilis, in wh. there is degeneration of spinal cord.

**Tablature**, (mus.) old notation with letters and numbers instead of notes; name given to the rules laid down for the *Meister-singers* (*q.v.*).

**Table Bay**, inlet, S.W. coast of prov. of Cape of Good Hope, S. Africa, overlooked by Table Mountain. **T. Mountain**, mtn., S. Africa, with flat top (3,546 ft.), rising from Table Bay; Cape Town lies at its foot and on lower slopes.

**Table d'hôte** (Fr.), "the host's table;" meal at an inn or restaurant arranged by the management, and with fixed price.

**Tablespoonful**: see **DRAM**, 2).

**Table tennis**, or ping-pong; table-game in wh. celluloid balls are struck over a net with wooden racquets.

**Taboo, tabu**, 1) (Polynesian) setting apart of certain persons or objects, as either sacred or accursed, usu. with implication that such persons or things may not be touched nor their names uttered. 2) Relig. or social system characterized by T. 3) A ban, prohibition.

**Tabor**, 1) hill in Galilee (1,830 ft.), scene of Christ's Transfiguration (Mark ix); 2) tn., Bohemia, Czechoslovakia, on Riv. Luznice; pop., 14,260; see **HUSSITES**.

**Tabora**, tn. and rly. junc., Tanganyika Terr., E. Africa; trading centre; pop., c. 40,000.

**Tabarites**, extreme Hussites (*q.v.*).

**Tabriz**, chf. tn. prov. Azerbaijan, Persia; pop., 180,000; dried fruit, textiles; tradg. centre.

**Tabula rasa** (Lat.), a wax writing tablet scraped clean; blank sheet, fresh start.

**Tacca**, *Tacca pinnatifida*, plant growing in E. India and Polynesia; tuberous, starchy root used for food.

**Tachometer**, instr. for counting revs. of wheels and shafts, also registers speed in miles p.hr., e.g., on motorcars.

**Tachymeter**, instr. for automat. measuring distance, by counting paces of a person carrying it; used in surveying.

**Tacitus**, Publius Cornelius (A.D. 56-118), Rom. histor.; *Germania*; *Annals*; *Life of Agricola*.

**Tack**, (naut.) to sail in zigzag line against direction of wind.

**Tackle**, (naut.) ropes, hawsers, cables, and sheets of a ship; hemp or steel cables, the latter sometimes with a hempen core.

**Tacna**, S. coastal prov., Peru, bounded S. by Chile (Arica) and E. by Bolivia; 12,600 sq.m.; pop. c. 60,000; cap., Tacna (pop., 15,000). **T.-Arica Question**, dispute betw. Chile and Peru over disposal of these provs. after the War of 1879; treaty (1883) provided that Chile shd. hold dists. for 10 yrs., after which plebiscite be held. Attempts at settlement abortive until proposal of U.S.A. for arbitration was accepted; prolonged negotiations ended in 1929. Chile retaining Arica and Peru receiving T. plus £1,200,000.

**Tacoma**, tn., Washington, U.S.A., on

Commencement Bay; pop., 106,800; timber, lead and copper smelting; important seaport.

**Tactics**, art of using available forces to the best advantage in warfare, taking account of the lie of the land and other circumstances.

**Tadpole**, long-tailed larva of frogs, toads, newts. See also **FROGS**.

**Tael**, Chinese wt. of silver varying in diff. tns. and provs., and of varying value accdg. to price of silver. *Shanghai T.* (used till 1933—when \$1 = .715 tael became offcl. currency—for quotatns. of For. Exch.) = .898 *Haikwan T.* = (theoretically) 3s. od. The H.T. weighs 583.3 grains (1.125 oz. troy); the *Kuping T.*, 575.8 grs., and the *Tsaoping T.*, 565.65 grs.; these are the *Treasury Taels*—there are over 160 others.

**Taff**, riv., Wales, 40 m.; flows through Brecknock and Glamorgansh. into Bristol Channel at Cardiff.

**Taffeta**, silk fabric, sometimes interwoven with linen.

**Taft**, William Howard (1857-1930), Amer. lawyer and statesm.; 27th Pres. U.S.A., 1909-13; Chf. Justice, 1921.

**Taganrog**, seapt., N. Caucasian Area, Russia, on Sea of Azov; pop., 86,465; exports coal, ore, paper, grain and wool. Bombarded by Anglo-French fleet, 1855.

**Tagliacozzo**, tn. in the Abruzzi, It., on Riv. Imele; pop., 10,000. Victory of Charles of Anjou over Conradin of Swabia, 1268.

**Tagliamento**, riv. (97 m.), N. It.; rises Carnic Alps, flows into Gulf of Venice; Austr. offensive in World War (1917).

**Taglioni**, Maria (1804-84), Ital. ballet-dancer; 1st appd. as *première danseuse*, Vienna, 1818; originated a light, delicate style; chfly. known for performances in *La Bayadère*; *La Fille du Danube*; *La Sylphide*.

**Tagore**, Sir Rabin-dranath (1861- ), Ind. poet; Nobel Prize (Lit.), 1913.

**Tagus**, longest riv. of Iberian penins. (565 m.); rises Muela de San Juan, Spain; flows W. and S.W. across Sp. and Portug. into Atlantic at Lisbon.

**Tahiti**, chf. and largest of the Society Isls. (405 sq.m.; pop., 13,280); French since 1842. Exports: pearls; mother of pearl.

**Tahoe, Lake**, in mtns. betw. California and Nevada, U.S.A.; 6,225 ft. abv. sea-lvl.; 25 m. long.

**Talga**, term for marshy belt of pine forest

land in N. Asia, betw. tundra in N. and steppes in S. Rich in fauna (brown bear, wolf, fox, sable, ermine, otter, eland, and reindeer); huntg. preserves.

**Tai hoku**, **Talpeh**, cap. of Formosa; pop., 229,000 (60,200 Jap.); manuf. camphor oil.

**Tailings**: see ORE.

**Tailor bird**, small passerine bird of India; builds ingenious nest betw. growing leaves, which are fastened together with strands of cotton or other fibre.

**Taimir**, penins., N. Siberia, betw. Yenisei estuary and Khatanga Bay; Cape Chelyuskin, Asia's most northerly point.

**Taine**, Hippolyte (1828-93), Fr. critic and histor.; *Hist. of Eng. Lit.*, 1863; *Philosophy of Art*, 1865; *Origins of Contemporary France* (unfinished, 1871-93).

**Taiiping**, tn., rt. bk. Riv. Yangtze-kiang, China; pop., 88,900; cotton; scene of Chinese rising, begun 1850; suppressed, largely by efforts of Gen. Gordon, 1864.

**Tajikistan**, Russ. Soc. Sov. Repub., Asia, bounded N. by Kirghiz, S. by Afghanistan, W. by Uzbekistan, and E. by Chin. Turkestan; c. 22,120 sq.m.; pop., 1,174,000 (75% Tajiks, 21% Uzbeks); mtns., agric., cattle rearing; home indus.; mineral wealth. Cap., *Stalinabad*, an airport.

**Taj Mahal**, marble mausoleum built by Shah Jehan, for his favourite wife, in 17th cent., at Agra, India. Unique monument, consisting of platform 18 ft. high, four



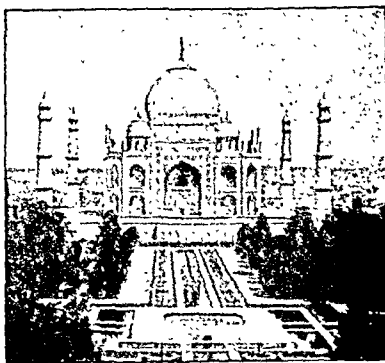
Tailor-Bird



W. H. Taft



Tagore



Taj Mahal

minarets 133 ft. high, two tiers of arches crowned by dome; within the mausoleum are four corner chambers and one large centr. chamber, where stand two cenotaphs; interior decorated by mosaics worked in semi-precious stones, and lighted by finely pierced marble windows.



**Taku**, fortified port of Tientsin, China, on Riv. Peiho; dockyard; forts taken by Eng. and Fr., 1858; by Allies (Boxer Rising), 1900.

**Talaat Bey**, Mehmed (1874-1921), Turk. politic.; leader of Young Turks.

**Talavera, Battle of**, victory of allied English and Span. armies under Wellington over French, 1809; named after tn. in prov. Toledo, centr. Spain (pop., 13,500).

**Talbot House**: see TOC H.

**Talc, talcum**, mineral, magnesium silicate (*q.v.*), the common mica (*q.v.*); in powdered form used as base of many toilet preparations.

**Tale of a Tub, A**, 1) play by Ben Jonson (*q.v.*), 1601. 2) Satire by Swift (*q.v.*), c. 1696, ridiculing the corruptions and failings of the Roman, Anglican, and Presbyterian chs. in persons of Peter, Martin, and Jack.

**Talent**, anc. weight and sum of money varying in different places and periods; *e.g.*, *Attic T.* = nearly 57 lbs. avoirdupois, or as silver money = c. £243.

**Tales of Hoffmann**, opera by Offenbach (*q.v.*), 1881. Student H. tells of his three tragic love episodes, engineered by his evil genius; in first he is made to love an automaton; in second a courtesan; in third a delicate girl whom the evil genius induces to sing until she dies from the exertion.

**Tallith** (Hebr.), Jewish prayer-shawl with fringes, worn by males in synagogue services (see Num. xv, 38).

**Talipes**: see CLUB FOOT.

**Talisman**, object wh. brings luck or protection to its possessor.

**Talking film**, cinematograph film with synchronised sound. Two systems: sound-on-disk (Edison), and sound-on-film (Lauste, Vogt-Engl-Massolle). *Sound-on-disk*, in princ., cinematograph and gramophone driven accurately tog. (in synchronism). Records now usu. made subqtly. from sound-on-film taken with picture. The disks run at a lower speed (33½ rev. p. min.) than gramophone, and are 16 in. diam. *Sound-on-film*, record of sound in form of strip 2½ mm. wide alongside pictures on film. Strip either of variable density (blackness) or variable width of blackness. Princ. same: variation in amt. of light let thr. by strip corresp. to sound waves recorded. Recording by microphone, amplified current from wh. varies light of neon lamp (var. dens.) or deflects spot of light (var. width, oscillograph). Reproduc. same for both: ordinary filament lamp supplies narrow slit beam wh. passes thr. sound record and so to light-sensitive (photo-electric, selenium) cell. Electr. variations there (electron emission, resistance) amplified and fed to loud-speaker. Recording usu. on separate film, wh. is combined with picture record in printing, sound being a standard distance of 19 pictures from corresponding picture.

**Tallahassee**, cap., Florida, U.S.A.; pop., 10,700; shipping centre for cotton, grain, tobacco, and agric. produce; airport.

**Tallboy**, chest of drawers, usu. in walnut, oak, or mahogany, on a stand (often with drawers); may be straight, bow-fronted, or (rarely) serpentine.

**Talleyrand-Périgord**, Charles Maurice de (1754-1838), Fr. statesm. and diplomat.; Bp. of Autun; after Fr. Rev. became member of cmttee. apptd. by National Assembly; Min. of Foreign Affairs under Napoleon and Louis XVIII; secured territorial integrity of Fr. at Congress of Vienna, 1814-15; instrumental in forming Quadruple Alliance, 1834.

**Tallinn, Reval**, cap. and seapt. of Estonia, on Gulf of Finland; pop., 127,610; Parliament House (Riigi Kogu); cathed. and churches (St. Olai, 13th cent.); techn. coll.; docks; shipb. yards; paper, textile, and cement industries. In Mid. Ages headqrs. of the Order of the Sword; cap. of Estonia since 1918.

**Tallis**, Thomas (c. 1505-85), Eng. composer; "father of English Cathedral music".

**Tallow**, animal fat, espec. of oxen and sheep; chf. ingred., stearic, palmitic, and oleic acids, combined with glycerin; used for soap, candle, and margarine manuf., and as a lubricant. **T.-tree**, 1) *Sapium sebiferum*, found in China and India; leaves coated with greasy exudation used for manuf. of soap and candles. 2) *Pentadesma butyracea*, found in Sierra Leone, bearing fruit whose rind secretes thick yellow juice.

**Talma**, Francois (1763-1826), Fr. actor; tragedian; largely respons. for introd. of realism to Fr. stage.

**Talmage**, Algernon (1871- ), Brit. painter; official artist in Fr. for Canadian Government, 1918.

**Talmud** (Hebr. teaching), compilation of Jew. civil and relig. law in 2 collections, viz., 1) the Babylonian (completed c. A.D. 500); and 2) the Palestinian (completed in Palestine c. A.D. 350). The first consists of the *Mishnah* (*q.v.*) and the Gemara, a commentary on the Mishnah. First printed, Venice, 1520.

**Tamar**, riv., forming boundary betw. Cornwall and Devon, Eng.; flows into its estuary (called the Hamoaze) in Plymouth Sound; length, 60 miles.

**Tamarind**, *Tamarindus indica*, large ornamental tree, cultivd. in E. and W. Indies; fruits edible, acid and mildly laxative; when used as a drug are preserved in syrup. Wood used in turnery and leaves as a mordant in dyeing.



Talleyrand

**Tamarisk**, *Tamarix*, broom-like shrub; *T. gallica* grown for ornament and yields manna; *T. articulata* yields tannin.

**Tamatave**, chf. port and trading centre of Madagascar; pop., 64,000.

**Tamerlane**, **Timur**, (1336-1405), Mongol conqueror; his empire stretched from Moscow (1394) to mouth of Ganges (1398), and to Egy. (1401).



Tamerlane, from an Indian Miniature

**Tamil**: see LANGUAGE SURVEY, *Dravidian Languages*; spoken in S.E. Ind. and N. half of Ceylon, possessing rich and varied literature.

**Tammany**, friendly society in N.Y., with hdqtrs. at Tammany Hall (named after reputed Ind. sage), fndd. 1789. Since 1805 T. Hall, separated from friendly soc., has ruled N.Y. with brief intermissions, as organ of Democratic party, based on spoils system (q.v.) and "boss rule." Under most famous boss, Tweed (1867), amount corruptly plundered from city estd. as \$200,000,000.

**Tam Marte quam Minerva** (Lat.), as much by courage as by wisdom.

**Tammerfors**: see TAMPERE.

**Tampa**, tn., W. Florida, U.S.A., on Tampa Bay; pop., 101,200; winter resort; phosphate rock; cigars.

**Tampere**, **Tammerfors**, tn. in Finland, pop., 54,015; on Tammerkoski Rapids; textiles, leather manufacture.

**Tampico**, port, State of Tamaulipas, Mexico; pop., 76,000; petroleum wells.

**Tampon**, gauze-covered swab, often impregnated with drug, for introd. into vagina.

**Tamworth**, munic. bor. on boundary of Warwicksh. and Staffs; pop., 7,500; roy. seat in Saxon kgd. of Mercia; cas., rebuilt 17th cent.; ch., partly Norman; coal mining; fire-clay.

**Tan**, ground oak and other bark, used for leather dressing; active principle *tannin*.

**Tan**. Abbr. tangent, see GEOMETRY.

**Tana**, 1) or **Tsana**, lake, Abyssinia; alt., 5,700 ft.; 1,100 sq.m.; outlet Blue Nile. 2) Riv. (500 m.), Kenya; gives name to Tanaland Prov.; drains into Ind. Ocean; nvgbl. for shallow draught smrs., 400 miles.

**Tanagra**, anc. tn. in Boeotia, Greece. **T. figurines**, terracotta statuettes of girls (4th-3rd cent. B.C.), found in large quantities at T. in 1870.

**Tananarivo**: see ANTANANARIVO.



Tanagra figure

**Tancredi**, opera by Rossini (q.v.) (1813).

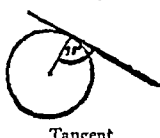
**Tandem**, 1) team of two or more horses harnessed in single file; 2) two-seater bicycle. **T. cylinders**, cylinders placed in line; steam or petrol engine.

**Tang**, seaweed, common rock weed, *Fucus vesiculosus*, bladder wrack.

**Tanga**, port, Tanganyika Terr., E. Africa, on Tanga Bay; term. Usambara Rly.; pop., 10,000.

**Tanganyika**, fresh-water lake, Centr. Africa, bounded N. and W. by Belgian Congo, E. by Tanganyika Territory, S. by N. Rhodesia; alt., 2,680 ft.; length, 420 m.; width, 15-50 m.; area (est.), 12,650 sq. miles. Outlet, Riv. Lukuga (see CONGO). **T. Territory**, former Ger. East Africa, now admin. by Gt. Brit. under mandate; bounded N. by Kenya and Uganda, W. by Belg. Congo, S. by N. Rhodesia, Nyasaland, and Mozambique, E. by Indian Ocean; 374,000 sq.m.; pop. (native) est., 5 millions; white, 6,900. Surface mainly elevated plateau, with many lofty mountains. (Kilimanjaro, 19,700 ft.; Meru, 15,500 ft.); 4,100 sq.m. forests; climate unhealthy; rubber, sisal fibre; cotton, coffee, rice, gold, diamonds. Cap., Dar-es-Salaam.

**Tangent**, (geom.) straight line touching, but not cutting, a curve (arc) at a single point; see TRIGONOMETRY. **T. galvanometer**, one of earliest instruments for accurately measuring elec. current; coil acting on compass-needle pivoted at centre. Now used only educationally.



Tangent

**Tangler**, seapt., N. Morocco, on Str. of Gibraltar; pop., 46,500. **T. International Zone** (155 sq.m.; pop., 70,000) under joint Fr., Brit., Span., and Ital. administration, with Moorish official (*Mendoub*) representing Sultan of Morocco.

**Tango**, mod. ballroom dance of S. Amer. origin.

**Tang style**, art period named after Chin. dynasty. Naturalistic animal modelling.

**Tank**, 1) receptacle for storage or carriage of liquids, as oil, water. **Tanker**, **tank-steamer**, for transporting oil by sea; **tank-lorry** for land transport; loaded and unloaded by pumps. 2) (Mil.) Armoured car with caterpillar tractors, armed with guns and machine guns, carrying a crew of 2-5. Brit. inven., 1st. used in Somme advance, 15 Sept., 1916. **Royal T. Corps**, Brit. Army, raised 1916, "royal" since 1919; hqrs. Wool, Dorset; barracks at Farnborough, Hants.

**Tank test** of ship designs, made by towing exact scale model of wood covered with paraffin wax, in tank; power reqd. at var. speeds can be observed, and h.p. reqd. for full-sized vessel calculated, artificial waves being produced in the tank.

**Tannate**, a salt of tannic acid (tannin).

**Tannenberg**, vill., E. Prussia; pop., 800. Polish victory over Teutonic Knights, 1410; German victory over Russians, 26-31 Aug. 1914.

**Tannhäuser**, opera by Wagner (*q.v.*), 1845. T., an unsuccessful minnesinger, hopeless of winning Elizabeth of Thuringia, joins licentious revels on Venusberg; returns repentant; is condemned to pilgrimage to Rome; Pope refuses absolution until his rod blossoms. E. offers herself to the Virgin to atone for T.'s sin and dies. T., in despair, abt. to return to Venus., is told that Pope's rod has bloomed; overcome with joy, he dies by E.'s bier.

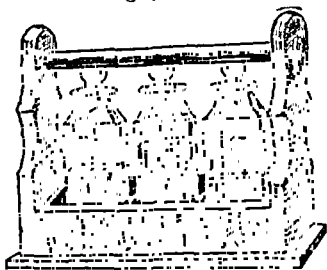
**Tannin**, *tannic acid*, astringent substance obtd. from oak-bark, gall-nuts, etc., used in preparation of leather, in medicine, and in making ink.

**Tanning**, process, dating from prehistoric times, for making hides supple and for preserving them from putrefaction; *see* LEATHER.

**Tansy**, 1) *Tanacetum vulgare*, herb with strong arom. odour, used in folk med. as tonic and anthelmintic. 2) Old Eng. dish made of eggs, cream, sugar, and sweet herbs.

**Tantalum**, (chem.) element; rare metal, sym. Ta, at. wt., 181.4; sp. gr., 16.6, m.p. c. 2,800°; very hard and tough; used as filament for elec. lamps but now being replaced by tungsten (*q.v.*) for this purpose.

**Tantalus**, 1) (Gr. myth.) legend. Kg. of Lydia who betrayed Divine secrets; in Underworld tormented with unquenchable thirst and placed in the midst of a lake from wh. he was unable to drink. Hence, *tantalise*. 2) Stand for spirit decanters closed by a bar at the top wh. prevents removal of bottles unless unlocked.



Tantalus

**Taoism** (Chin. *Tao*: way), 1) philos. fndd. on teachings of Lao-tse (7th cent. B.C.); 2) Chin. popular religion; based on philos. of T.; resembles Buddhism in tendency; modern T., largely corrupted by nature- and spirit-worship. *Tao-te Ching*, work by Lao-tse cntg. teachings on Providence and morality.

**Taormina**, tn., prov. of Messina, Sicily; pop., 5,000; anc. Gr. theatre.

**Tape-machine**: *see* TICKER. **T. prices**, prices of stocks and shares,

etc., recorded telegraphically in a ticker tape instrument; known in U.S. as *ticker prices*.

**Tapestry**, hand-woven fabric in wh. design is formed by stitches made across the warp (*q.v.*); used as a wall-covering. Early examples of T. have been found in Egypt. tombs (15th cent. B.C.), and in Greek graves in the Crimea (3rd cent. B.C.); also remnants of silk Byzantine T. of 11th cent. A.D. Highest skill attained in Flanders and France; Gobelins' (*q.v.*) factory, near Paris, reached height of its achievement in 17th cent., under Louis XIV; other Fr. factories existed at Arras, Beauvais, Aubusson, etc. In 16th cent., Wm. Sheldon started T. weaving at Barcheston, Warwickshire; and other factories existed at Mortlake and Lambeth. In 19th cent. art was revived in Eng., mainly (1881) at Merton Abbey, by Wm. Morris (*q.v.*), and was introduced into U.S.A. by Wm. Baumgarten, who brought weavers from Aubusson. Modern, machine-made T. is produced in large quantities for upholstery, curtains, etc.

**Tapeworms**, flat, parasitic worms found in the intestines of man and animals; the head is provided with sucker-like organs of adhesion, and there may be thousands of segments; length up to 20 ft. (giant tapeworm of sheep); nourishment is absorbed from the body walls; the final segment, filled with eggs, is broken off and expelled with the dung of domestic animals. If the eggs are absorbed with food by the host an embryo develops from each egg in the animal's intestines; these penetrate muscle, liver, and brain. Meat infected with the larvae will produce tapeworms in the intestines. T. in human beings is mostly contracted through consumption of under-cooked pork, beef or fish. The larvae of the T. of the dog cause hydatid disease in man.



Tapeworms  
a Pork tapeworm, b Beef tapeworm, c Hookworm

**Tapioca**, farinaceous substance obtained by scraping and washing roots of the cassava plant; used in milk puddings, soups, etc.

**Tapir**, member of primitive and ancient group of herbivorous mammals termed Odd-toed or Perissodactyle Ungulates. Five living species, one in Malaya, 4 restricted to forest region of tropical Amer., with long, prehensile snout; shy, harmless animals, about size of donkey, nocturnal in habit. Malay species has middle of body white, fore and



Tapir

hind parts uniformly black. In all, the young are striped and spotted.

**Tar**, heavy oily part of distillate from wood, coal, and other organic substances when subject to destructive heating. Mixture of hydrocarbons, phenols, nitrogen bases, sulphur compounds, etc. **Wood-t.**, source of creosote; **coal-t.**, source of large number of valuable products. T. is used in orig. state for protecting wood and brick from weather.

**Tara**, hamlet, Co. Meath, I.F.S.; on Tara Hill (505 ft.), where the anc. Kgs. of Ire. were crowned and held their assemblies; see DESTINY, STONE OF.

**Tarantella**, rapid whirling Ital. dance.

**Taranto** (anc. *Tarentum*), seapt. tn., S. It., on Gulf of T.; pop., 126,000; naval and commercial port; abpric.; shipb., machinery. Founded as Gr. colony 707 B.C.; Rom., 272 B.C.

**Tarantula**, hunting spider of Mediterranean regions, 2 in. long; lives in burrows. Bite painful but not dangerous; legend associates the bite of this spider with the *tarantella* (q.v.).



Tarantula

**Tarascon**, tn., dépt. Bouches-du-Rhône, France; pop., 8,600. (*Tartarin de T.*, by A. Daudet, 1872).

**Tarbes**, cap. dépt. Hautes-Pyrénées, Fr.; pop., 29,860; cathedral.

**Tardenoisian Culture**, (archaeol.) phase of Mesolithic Period (q.v.), possibly contemporaneous with Azilian (q.v.), named after *Fère-en-Tardenois*, Fr.; so-called pygmy tools.

**Tardieu**, André P. G. A. (1876- ), Fr. statesm.; Min. of Liberated Regions, 1919-20; Pr. Min., 1929; Right wing, follower of Clemenceau.



Tardieu

**Tare**: see GROSS WEIGHT.

**Tarentum**: see TARANTO.

**Tarifa**, fortified port, prov. Cadiz, Sp., on Str. of Gibraltar; pop., 12,000; most southerly tn. in Europe.

**Tariff Reform**, Eng. polit. movement assoc. esp. with Joseph Chamberlain, for superseding Free Trade by Protection. Cf. TRADE POLICY.

**Tarn**, 1) right trib. Riv. Garonne; 233 m.; rises in the Cevennes, joins Garonne nr. Moissac. 2) dépt., S. Fr.; 2,203 sq.m.; pop., 301,700; cap., *Albi*.

**Tarn-et-Garonne**, dépt., S.W. France; 1,440 sq.m.; pop., 164,200; cap., *Montauban*.

**Tarnopol**, cap. prov. of T., (6,270 sq.m.; pop., 1,428,520), S.E. Poland; pop., 32,100, on Riv. Sereth; horse market.

**Taro**, herbaceous, tropical plant of family *Aracae*; cultivated in Pacific Isls. for its bulbous roots wh., when cooked, are used as food by the natives.

**Tarot**, painted playing-card, 78 to a pack; used in card game of same name and in fortune-telling; in use in Fr. from 14th century.

**Tarpan**, wild horse of the Asiatic steppes.

**Tarpaulin**, waterproof cover of spec. prepared canvas, used for protec. agst. water and bad weather.

**Tarpeian Rock**, S. summit of Capitoline Hill of Rome, from wh. criminals were hurled in anc. times.

**Tarpon**, fish of herring family, hunted for sport off coasts of W. Indies and Sthrn. U.S.A.; may attain 7 ft. in length and weigh abt. 200 lbs.



Tarpon

**Tarquinius**, two legend. Rom. Kgs.: **T. Priscus** and **T. Superbus**, 5th and 7th respectively; latter was deposed in conseq. of his rape of Lucretia.

**Tarragon**, *Artemisia dracunculus*, aromatic herb, sim. to wormwood; used to flavour vinegar, pickles, etc.

**Tarragona**, seapt., N.E. Spain, cap. prov. of T. (2,506 sq.m.; pop., 355,150); Rom. aqueduct; 12th-cent. cathed.; exports vinegar, wine, and the liqueur manuf. by the monks of Chartreuse; ironware, paper, soap; pop., 28,100.

**Tarred roads** ("tarmac"), roads with surface treated with tar. Metal mixture with tar gives no dust, is waterproof, and easy to clean.

**Tarrytown**, vill. New York State, U.S.A., on Hudson Riv.; pop., 6,841; home of Washington Irving.

**Tarshish**, (anc. geog.) wealthy region (mentioned I Kings. x, 22), probably in S.W. Spain, the Phoenician Tartessus.

**Tarsier**, small squirrel-like lemur with enormous eyes and ears, long, thin, tufted tail, and long, slender limbs. Feeds chfly. on insects and birds' eggs. Entirely nocturnal and arboreal in habit. Ranges from Malaya, Celebes to Philippines.

**Tarsus**, anc. city, S.E. Asia Minor, on Riv. Cydnus; cap. of Cilicia; b.-place of St. Paul; now a Turk. tn. in vil. of Adana; pop., 18,000; exports wool, hides, and skins.

**Tartan**, woollen fabric having distinctive pattern of horiz. and vert. lines; forms pt. of dress pecul. to Scot. Highlanders, each clan wearing partic. pattern and colours.



Tarot Card, 15th cent.

**Tartar**, (dental) mineral and organic matter deposited on teeth; if not removed by regular brushing causes decay of enamel.

**Tartar emetic**, tartrated antimony, antimony potassium tartrate,  $2[(\text{SbO})\text{K}(\text{C}_4\text{H}_4\text{O}_6)]\text{H}_2\text{O}$ . Poisonous white crystals used in med., in small doses as a diaphoretic; in larger doses, up to one grain, as emetic; also as a mordant in dyeing.

**Tartaric acid**,  $(\text{CHOH})_2(\text{COOH})_2$ , organic acid made from argol or from acid potassium tartrate; white crystals; used in baking powders and efferv. powders, most imp. salts are *cream of tartar* (acid potassium tartrate), *Rochelle salt* (sodium potassium tartrate), and *tartar emetic* (q.v.).

**Tartarin**, blustering humbug, chief character in A. Daudet's *T. de Tarascon*, *T. sur les Alpes*, *Port Tarascon*; satire on typical character attrib. to S. France.

**Tartars**: see TATARS.

**Tartarus**, deepest hell of Gr. Underworld, reserved for the rebel Titans. In Rom. poetry, synonym for Hades (q.v.).

**Tartary**, **Tartaria**, mediaeval name of Centr. Asia; sometimes extended E. to incl. Manchuria, W. to Riv. Dnieper, and dividd. into Europ. and Asiatic Tartary: see TATARS.

**Tartini**, Giuseppe (1692-1770), Ital. violinist and composer; *The Devil's Sonata*.

**Tartu, Dorpat**, admin. dist. (2,710 sq.m.; pop., 176,100) and tn., Estonia, on Riv. Embach; pop., 65,270; univ. fndd. 1030; taken by Teutonic Knights, 1224; Hanseatic tn.; Russian, Polish, and Swedish, 16th-17th cent.; Russian, 1704-1918.

**Tartuffe**, hypocrite in Molière's comedy, *Tartuffe*.

**Tashi Lama**, 2nd chief of the Lamas.

**Tashkent**, cap. Uzbek S.S.R., Asiatic Russia; pop., 403,300; situated in oasis; comm. and indust. centre; on air route and rly. Known in 6th century.

**Tasman**, Abel Janszoon (1602-50), Dut. navigator; discovered N. Zealand and Tasmania, 1642-43.

**Tasmania, Van Diemen's Land**, isl. State, Commonwealth of Australia; separated by Bass Strait from Victoria; 26,200 sq.m.; pop., 214,000; coast-line indented; surface generally mountainous (to 5,000 ft.); rivs. Tasman and Derwent; several lakes; forests; climate equable; rainy in W.; apples, potatoes, oats, wheat, pulses; sheep, cattle, pigs, horses; copper, tin, silver, lead, coal; exports wool, fruit, timber; cap. *Hobart*. Discovered 1642-

43 by Tasman (q.v.); Eng. settlement, 1803; 1st gov. apptd. 1825; absorbed in Commonwealth of Australia, 1901.

**Tasmanian devil**, (zoöl.) marsupial of Australia, member of *Dasyure* (q.v.) family; nocturnal in habit; powerfully built, with large head and short, broad muzzle. **T. wolf**: see THYLACINE.

**Tasso**, Torquato (1544-95), Ital. poet: *Jerusalem Delivered*, 1574.

**Taste**, 1) the sensation produced in the mouth by contact with certain soluble substances; sense of T. is located chfly. in the tip, sides, and back of the tongue (being absent from the middle portions), and to some extent in the soft palate; tastes are most conveniently classified as sweet, bitter, acid or sour, and salt, and not all taste-cells are necessarily sensitive to all of these; hence, a substance, e.g., saccharine, may taste sweet at the tip and bitter at the back of the tongue. 2) By analogy, aesthetic appreciation. **T. buds**, gustatory cells, on surface of the tongue, which communicate taste to the gustatory nerves.

**Tata**, name of Parsee fam. of industrialists and philanthrop., whose activities in India incld. establm. of cotton mills, iron and steel foundries, cement works, collieries, etc. 1) **Jamsetji Nasarwanji** (1839-1904), promoted cotton industry in India, esp. in Bombay; endowed instit. of research, Bangalore. 2) His s., **Sir Dorabji Jamsetji** (1859-1932), estab. Indian Instit. Scientific Research, Bangalore, 1905. 3) A younger s., **Sir Ratan** (1871-1918), fndd. *Ratan Tata Dept. of Social Science*, L'don Sch. of Econ. 1912, and *Ratan Tata Fund*, L'don University.

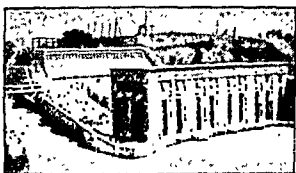
**Tatar Republic**, Auton. Soc. Soviet, E. Europ. Russia, c. 26,000 sq.m.; pop., 2,592,870; forests; grain, agric. machinery, leather goods. Chf. riv., Volga; cap., *Kazan*.

**Tatars**, now name of Turco-Tatar peoples in S. Russ. (Crimean, Caucasian, Volga, Ural, and Siberian T., Khirghises and Bashkirs); entered Eur. c. 13th cent.; culturally very varied; many Mohammedan.

**Tate**, Sir Henry (1819-99), Brit. merchant; fndd. Nat. Gall. of Brit. Art (*Tate Gall.*), 1892. **T. Gallery**, London, formerly the Nat. Gall. of Brit. Art, Millbank; opened on site of old Millbank Prison, 1897; was presented to nation by Sir Henry Tate, together with nucleus of collection of paintings by Brit. artists; pictures and sculpture are purchased mainly under Chantry Bequest (q.v.). Gall. of modern foreign art opened, 1926.



Tasso

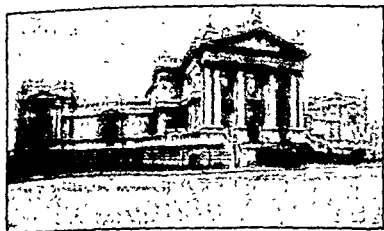


Tashkent, Waterworks



Tasmanian Devil

**Tatra**, two parallel mtn. chains of Carpathians, in Czechoslovakia and Poland; **High T.**, on N. (37 m. long), inaccessible gneiss and granite range; highest in Carpa-



Tate Gallery, London

thians; Gírlachovka, 8,737 ft.; 112 mtn. lakes, glacial valls., and snowfields; chamois, bear, marmot; sheep pasture; health resorts; **Lower T.** on S. (45 m. long); Dumbier, 6,710 feet.

**Tattersall's**, horse auction mart, now at Knightsbridge, London, fndd. by Richard T., 1766. **T.'s Ring**, princ. and most expensive enclosure on a race-course.

**Tattershall Castle**, ruined 15th-cent. cas., Lincs, Eng., 11 m. N.W. Boston. Bequeathed to Nat. Trust by Lord Curzon of Kedleston, 1926.

**Tattoo**, "retreat," evening trumpet, bugle- or drum-call in the army; about sunset. 2) Milit. display.

**Tattooing**, process of colouring skin by introd. suitable dyes into scratches or punctures.

**Tauchnitz**, Karl Christoph Traugott (1761-1836), Ger. publ. His nephew **Christian Bernhard**, Bn. von Tauchnitz (1816-95), inaug. *Libr. of Brit. and Amer. Authors*, 1841.

**Tauern Alps**, chain of Eastern Alps, Austria, betw. provs. of Salzburg and Carinthia: *Hohe T.*, from Brenner Pass to Katschberg, highest peak, Grossglockner (12,468 ft.); *Niedere T.*, betw. Enns and Mur valls., Radstädter (9,394 feet).

**Taungs skull**: see AUSTRALOPITHECUS AFRICANUS.

**Taunton**, co. tn., Somerset, Eng., on Riv. Tone; 15th-cent. ch.; cas., famous in Civil War (1645); "Bloody Assizes" (q.v.) held here, 1685; pop., 25,200.

**Tauris**, *Tauric Chersonese* (anc. geogr.), country of the Tauri, who sacrificed all strangers to Artemis; identified with the Crimea (q.v.).

**Taurus**, 1) mtn. range, nr. S. coast of Asia Minor, rising to 11,660 ft.; *Anti-T.*, offshoot to N.E.; pierced by Bagdad Rly. tunnel (2½ m.); chf. pass, Cilician Gate. 2) (Astron.) "The Bull," zodiacal constell., ♂, containing star Aldebaran (q.v.), 2nd sign of Zodiac (q.v.); see Pl., ASTRONOMY, N.C.H., B.

**Tautology**, superfluous accumulation of expressions with same meaning, e.g., *slony rocks*.

**Taverner**, John (c. 1495-1545), Eng. composer; songs; ch. music.

**Tavistock**, urb. dist. and mkt. tn., Devon; pop., 4,500; agric. centre; copper mining; gives title of marquess to Dukes of Bedford.

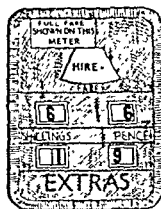
**Tawing**, branch of tanner's trade; use of alum and salt in dressing skins (e.g., kid).

**Taxation**, levy made by a govt., and chief source of govt. revenue. **Direct t.**, such as income-tax, *surfax* (formerly *super-tax*), *death duties* (estate and succession duty; U.S.A., *inheritance taxes*), pd. by individs. or companies. **Indirect t.**, e.g., *customs duties*, *excise duties*, *entertainment tax*, passed on to consumer by increase in prices. Income-tax, *surfax*, and estate and succession duty rates are on *sliding scale*, i.e., rate adjusted accdg. to amt. of income or estate of the individual. *Motor tax*, levied in Gt. Brit. accdg. to h.p. of each motorcar. *Stamp duties* (q.v.) on documents, contracts, etc. **Local t.**, in U.K., called *rates* (q.v.). See also INCOME-TAX; CUSTOMS DUTIES; EXCESS PROFITS DUTY; CORPORATION PROFITS TAX; INHABITED HOUSE DUTY.

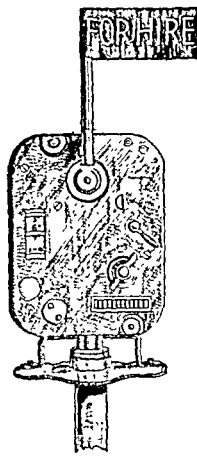
**Taxed costs**, (law) costs of a suit decided by taxing-master in accordance with recog. scale; usu. payable by losing party, but decision as to this lies in discretion of court or judge.

**Taximeter**, instrument fitted to cab; records payment due according to distance or time; driven by flexible shaft from one of road-wheels.

**Tay**, longest riv. in Scot. (117 m.), famous for its salmon, issues from *Loch Tay* (Perth-sh.) and takes a circuitous course via Aberfeldy and Dunkeld to Perth, where it



Taximeter (front)



Taximeter (back)

opens out into the *Firth of Tay* to Dundee and the sea. The *Tay Bridge* (1888; 2 m. long) crosses the Firth of Tay from St. Fort to Dundee.

**TaÏgetus**, mtn. range in the Peloponnese, Greece, separating Laconia from Messenia; highest peak, Mt. Elias, 7,904 feet.

**Taylor**, 1) **Jeremy** (c. 1613-67), Eng. bp. and theolog. writer; *Holy Living*, 1650; *Holy Dying*, 1651. 2) **T., Tom** (1817-80), Brit. dram. and journalist; succ. Shirley Brooks as ed. of *Punch*, 1874; plays: *Our American Cousins*, 1858; *Ticket-of-Leave Man*, 1863. 3) **T., Zachary** (1784-1850), 12th Pres. of U.S.A., 1849-50; as brig. general deftd. Mexicans in war of 1846-7.

**Taylor system**: see SCIENTIFIC MANAGEMENT.

**T.B.**, abbr. tubercular bacilli.

**Tb**, (chem.) symbol for terbium.

**T.B.D.**, abbr. torpedo-boat-destroyer.

**T.C.D.**, abbr. Trinity College, Dublin.

**Tchakovsky**, Peter Ilyitch (1840-93), Russ. composer: *Pathetic Symphony*, 1893; operas: *Eugen Onegin*; *Pique-dame*.

**Tcheka**, see CHEKA.

**Tchekhov**, Anton (1860-1904), Russ. author; tales, plays: *The Three Sisters*; *The Cherry Orchard*; *The Sea-Gull*.

**Te**, (chem.) symbol of tellurium.

**Tea**, evergreen shrub or small tree, extensively cultivated in China, Ceylon, Assam, etc. The process of making an infusion of the leaves is said to have been discv'd. in China c. 2000 B.C. First used in Eng. in 17th cent., when prices ranged from £6 to £10 per lb. Leaves are prepared by a process of roasting and drying. **Green**

**t.** is lightly roasted **Black t.** is subjected to more prolonged process. Within last 50 years cultivation of T. has been extended to Africa, Java, and Sumatra. The infusion contains the alkaloid caffeine (*q.v.*) and acts as a stimulant. Name is often used to designate infusions from other herbs, e.g., camomile, black currant, etc.

**Tea-planting** and rapidly dried. **TEA** PRODUCTION. TOTALS 417 65 413 75. (PART OF WORLD TAKES FROM CHINA) DUTCH E. INDIES FORMOSA JAPAN OTHER BRIT. IND. Ceylon BRITISH EMPIRE. 1850-1913 1913 1930. 10,000 TONS 800 400 200 100 0. 10,000 TONS 800 400 200 100 0.



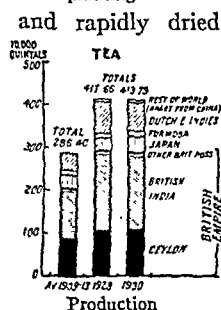
Tchekhov



Tea-plant

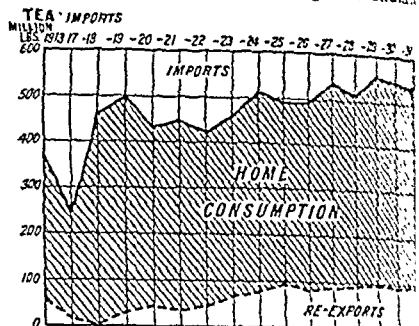


Tea-planting

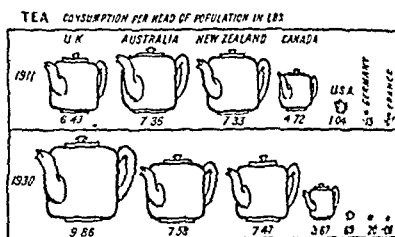


**Teachers**: see EXCHANGE OF TEACHERS; NAT. UN. OF TEACHERS; TRAINING COLLEGE. **Teacupful**: see OUNCE 2). **Teaspoonful**: see DRAM 2).

**Teak**, *Tectona grandis*, large E. Indian



T. almost exclusively produced in Asiatic countries. World prodn. (excluding Chinese, for wh. statistic not available) in 1930 increased by over 40 per cent. of pre-war figures; Brit. Empire's share still real. 2 despite incr. in Dutch E. Indies. T.-drinking greatest in English-speaking countries of Brit. Emp., consumption in U.S.A. and on Continent being comparatively small. Since 1911, U.K. increased its consumption by 50 per cent and now leads Australia and New Zealand, while Canada is turning to coffee. London chf. market, and re-exports form important part of U.K.'s entrepôt trade.



tree. Valuable hard wood, used in shipb. and for rly. purposes. Leaves yield red dye.

**Teal**, small anserine bird fnd. in Europe, Asia, and N. Amer., with short neck and rounded tail.

**Teasel**, plant, genus *Dipsacus*, with large burrs or heads covered with hooked prickles, used to raise nap on cloth.



Teasel

**Technical college**, institution, usu. provided and controlled by local educ. authorities, for training students in industrial subjects, e.g., mining, engineering, chemical, and textile industries, etc.; cf. POLYTECHNIC.

**Technique**, method or manner of performance; details of mech. execution in art, esp. music and painting.

**Technology**, 1) science of indus. processes, e.g., weaving, building, etc. 2) Terminology of an art or industry.

**Teddington**, residential urb. dist.,

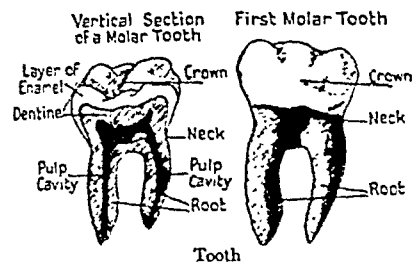
Middx., Eng., on Riv. Thames (largest lock); pop., 23,400.

**Te Deum (laudamus)** (Lat.: "We praise Thee, O God"), Christian hymn (4th cent. A.D.); ascrib. to St. Ambrose, but more prob. by Niceta of Remesiana; sung at Matins, and as a spec. office of thanksgiving.

**Tee**, (golf) peg, or mound of sand, on wh. the ball is placed for the first drive to each hole. **Teeing-ground**, space from which the drive must be made.

**Tees**, riv., N. Eng., rises Cross Fell, Cumb.; flows past Stockton and Middlesbrough into estuary on N. Sea betw. Hartlepool and Redcar; boundary Durham and Yorks; length, 70 miles.

**Teeth**, 1) hard, ivory-like objects in jaws of human beings and many animals, serving for mastication of food and in case of



man to assist articulation, in case of animals freqtly. as offensive and defensive weapon. Composed of ivory (*dentine*) covered with enamel, forming cutting surface; the pulp-cavity lies inside the dentine and contns. pulp, blood-vessels and a nerve. Exposed part of the tooth is the crown, the narrow part the neck; the root is embedded in the jaw. In man, T. of 1st dentition (*milk T.*) are deciduous; they number 20 and begin to appear during 1st half yr. of life. After 6th yr. they fall out and are replaced by *second T.*, numbering 32. The back molars (*wisdom T.*) appear betw. 18th and 20th yr., or later, sometimes not at all. 2) Projecting points or cogs on a wheel; projecting portions of a comb or saw, etc.

**Teetotaller**, one who voluntarily abstains entirely from alcohol.

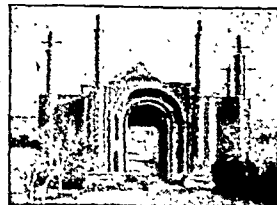
**Teg**, young sheep, c. 1 yr. old, that has never been sheared.

**Tegea**, anc. city, Arcadia, Greece; Temple of Athena Alea.

**Tegucigalpa**, cap. repub. of Honduras, Centr. America; pop., 40,100; archdiocese, university.

**Tehran**,

**Teheran**, cap. of Persia; pop., 215,400; S. of Elburz Mtns.; 12 arched gates; palace of Shahs; C. of E. diocese; schools of medicine, art, law, and agric.; commerc. centre.



Northwest Gate, Tehran

**Tehuantepec**, 1) tn., State of Oaxaca, S. Mexico; pop., 10,000. 2) Isthmus of S. Mexico, betw. Gulfs of T. and Campeche, 130 m. wide.

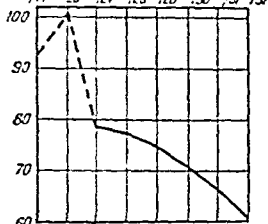
**Teignmouth**, seapt. and pleasure resort. Devon; pop., 10,000; fishing centre.

**Telamon**, 1) (Gr. myth.) father of Ajax; took part with Hercules in hunting Calydonian boar. 2) (Archit.) Large sculptured male figure, used as support for cornices, etc.

**Telegram**,

message sent by electric wire; see TELEGRAPHY.

**TELEGRAMS** (INLAND & FOREIGN IN MILLIONS)



Number of telegrams sent shows great decrease in last decade, owing to substitution of telephone calls for inland telegrams

**Telegraphy**, transmission of messages over distances by electric means, as wire, or waves (wireless); by visual means, as heliograph, semaphore, etc.

Transmission on wires by Morse Code (key and writer); Hughes apparatus with synchronised type printing (mechan.). Morse transmission by means of slotted strips. **Multiplex T.**, in wh. one wire is used for simultaneous transmission of several messages. **Needle T.**, devised by Gauss and Weber, 1833; enables messages to be read by means of deflections of magnetic needle.

**Telekinesis**, spiritualistic hypothesis; movement of material objects by psychic forces without physical connection or agent.

**Tel-el-Amarna**, site of ruins of Akhetaton, Upper Egy., on E. bank of Nile, 190 m. S. of Cairo; built by Amenhotep IV, in 14th cent. B.C., as imperial cap. in place of Thebes; abandoned after his death; ruins of royal palace; rock tombs.

**Tel-el-Kebir**, vill., c. 48 m. N.E. of Cairo, Egy.; scene of defeat of Arabi Pasha by Brit. under Sir Garnet Wolseley, 1882.

**Telemachus**, son of Odysseus (g.v.).

**Telemark**, 1) prov. of S. Norway;



5,860 sq.m.; pop., 132,215; mountainous, wooded country, with many rivers and lakes; paper manuf.; port and cap., *Skien*. 2) (Ski-ing) Turn made on outside edge of ski (*q.v.*), with one foot in advance.

**Teleology**, explanation of philos. or biol. phenomena by recognition of a purpose or aim; in contrast to explanation by recognition of causes.

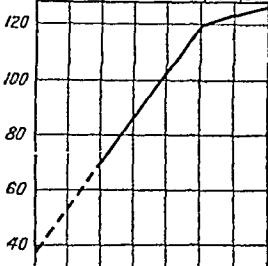
**Telepathy**, communication of thought from one mind to another, without the physical medium of the senses.

**Telephone**, instrument for transmitting sound by elec. current; sound falls on microphone (*q.v.*), loose carbon contacts wh. vary in resistance as sound waves, and so cause current to vary. At receiving end, current varies magnetism of steel magnet close to iron diaphragm, causing latter to vibrate like original sound, and cause sound waves in air. First T. by Reis, 1860; magnetic transmitter, Bell, 1876; microphone, Hughes, 1878. For long-distance and submarine T., line must be loaded with self-induction at intervals to compensate capacity (Heaviside, Pupin).

**Telephotography**: see PHOTOTELEGRAPHY. **Teletypewriter**, apparatus by which a typewriter-like keyboard operates, by elec. transmission over telephone line, a receiver which prints message in ordinary type. Now available at a rental to all telephone subscribers in Gt. Britain. **Telescope**, (optics) instr. thr. wh. distant objects are seen magnified and so appear to be brought nearer, usu. consists of *object glass*, lens wh. produces in the tube a small inverted image of object; this image is enlarged by the *eye-piece*, a 2nd lens acting as a magnifying glass (Kepler, 1609). In the **Galilean t.** (1610) eye-piece is a bi-concave lens wh. magnifies and reinverts image. In mod. T. there is a 3rd lens betw. object and eye-piece wh. reinverts image before magnification. In **prismatic t.** reflection in

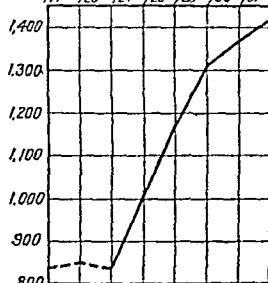
TELEPHONES (TRUNK CALLS IN MILLIONS)

1913/14 1920 23/24 25/26 27/28 29/30 31/32

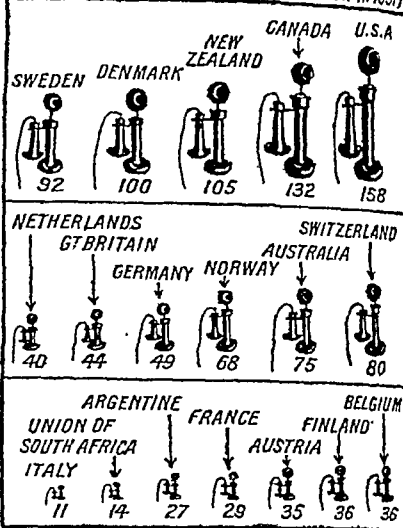


TELEPHONES (LOCAL CALLS IN MILLIONS)

1913/14 1920 23/24 25/26 27/28 29/30 31/32



TELEPHONES (PER 1,000 OF POPULATION IN 1931)



As in case of motorcars, countries with sparse pop. make greatest use of telephone; hence figures for Germ., U.K., and France are lower than for Canada, New Z., and Australia.

prisms is used instead of inverting lenses. In **reflecting t.** (Newton, 1671), image is produced by a concave mirror inst. of by lens objective. For **giant reflecting t.**, see ASTRONOMY. See also OPTICS.

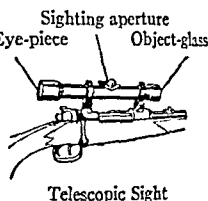
**Telescopic eyes**, (zool.) eyes located on long stems, e.g., in snails, certain Crustacea, and many deep-sea fish.

**T. graphometer**, optical instr. used by surveyors for topograph. measurements. **T. sight**, magnifying telescope on firearms with a sighting device.

**Telephorus, St.**, Pope (128-137), said to have suffered martyrdom.

**Telethermometer**, apparatus allowing temperature at a given place to be read from a distance. Types: Electric (thermocouple, resistance), air expansion, vapour pressure, mercury-in-steel. Used in large buildings, cold-storage rooms, warehouses, etc.

**Television**, apparatus for reproducing instantaneously, at distant point, image of real objects or of cinema film. In all methods, image seen by T. is formed by a large number of single spots of different degrees of brightness (like pictures printed in newspapers). Original object is "scanned," point for point, by various methods, and a signal is sent corresponding to the brightness of each point. The signal modulates a source of light at the receiving end, and the eye sees



this source of light, at each moment, as if it were in the position correspondg. to the part of object being scanned at that moment; or the light projected on a screen in correspondg. position. The whole picture must be scanned 16 times p. sec., so that a picture made up of 10,000 spots needs 160,000 signals p. second. For scanning, Nipkow disk (q.v.), rotating mirrors and other devices are used; for receiving, similar apparatus. For modulation of light, Neon lamp or Carolus (Kerr) cell. T. was first made to work practically by J. L. Baird, in London, in 1926.

**Tell, William**, 14th-cent. legendary Swiss patriot, alleged to hv. shot apple off own son's head, by order of Austr. bailiff.

**Tellez, Gabriel**: see MOLINA.

**Tellurion**, apparatus illustrating rotation of earth and obliquity of its axis. Cf. ORRERY; PLANETARIUM.

**Tellurium**, (chem.) rare metallic element, sym. Te; at. wt., 127.5; sp. gr., 6.27; m.p., 453°. Found to small extent in pure form, usu. combined with other rare metals; resembles sulphur in its properties.

**Tellus**, (in Rom. myth.) goddess of the Earth. See GAEA.

**Telpher**, electric apparatus for lifting and carrying loads at high speed; single suspended rail with supports at intervals, load carried in cars or trucks suspended from wheel running on rail.

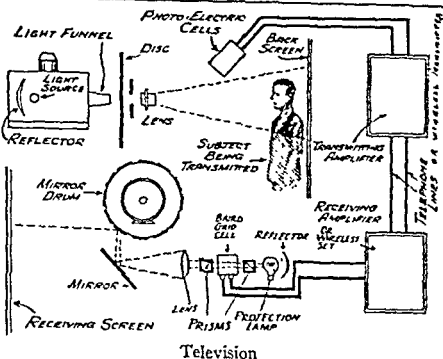
**Temesvar, Timisoara**, tn., W. Rumania; pop., 91,000; Gr. Orthodox and R.C. diocese; metal indust.; cattle market.

**Tempe, Vale of**, gorge in Thessaly, Greece, between mts. Olympus and Ossa, through which Riv. Peneus (Salambrina) flows into Aegean Sea.

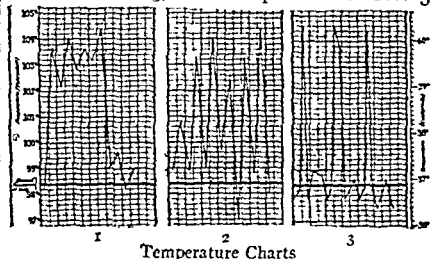
**Tempelhof Aerodrome**, airport of Berlin (c. 4½ m. S.).

**Temperament**, characteristic combination of bodily, mental, and moral qualities; term originated with theory of anc. Gr. medical school that there are 4 humours in the body: sanguine, cheerful; phlegmatic, slow but strong; choleric, excitable; melancholic, sad, slow, and weak.

**Temperature**, (physiol.) degree of heat of a living organism; the human body is normally maintained at a temperature not exceeding 98.4° F. or 37° Centigrade. A bird's temperature is much higher, up to 41° C. (105.8 F.). Normal temperature of children often exceeds 98.4° F., and they show more fluctuation than adults. T. may be registered 1) orally (by mouth); 2) rectally (in anus); 3) axillary (in armpit). Rectal temperatures 0.4° higher than oral. **T. chart** shows the course of temperature over a series of days. In fever, the temperature is raised. Fig. No. 1 shows continued fever with a sudden drop on the 5th day; in



pneumonia, the drop is called the crisis. No. 2 shows temperature high in evening and low in morning, as in septicæmia. No. 3



Temperature Charts

shows a fever recurrent every few days, as in malaria.

**Tempera painting**, process in wh. use is made of colours mixed with diluted yolk of egg or gum applied separately on plaster or chalky ground; used chfly. for mural decoration.

**Tempering**, (tech.) of steel, after hardening steel by heating and quenching, any reqd. diminution in hardness (and brittleness) can be effected by heating to a suitable temp., formerly judged by colour of surface oxidation of steel (light straw to dark blue), now, by pyrometers (q.v.).

**Tempest**, Marie Susan (1866- ), Brit. actress and theatrical producer; toured in America, 1911; world tour, 1914-22; made famous appearance in *Becky Sharp*, 1901; among productions, *The Honeymoon* (Arnold Bennett), *Hay Fever* (Noel Coward), etc.

**Templars**, military order of knighthood, fndd. 1119, with headquarters in royal palace at Jerusalem on site of the Temple. Their object to protect pilgrims, they observed at first a very severe rule. Played a large and effective part in Crusades, wherein 20,000 were slain; received many privileges and acquired lands all over Europe. Their power, arousing jealousy, was destroyed in early 14th cent., their property being mostly given to the Hospitallers (q.v.).

**Template, templet**, 1) thin sheet of metal or other stiff material, cut to a certain shape, to serve as guide for working on, marking out, or gauging material. 2) Wedge under block on keel of a ship under construction.

**Temple, Frederick** (1821-1902), headmaster of Rugby, 1858-69; bp. of Exeter, 1869, London, 1885; Abp. of Canterbury, 1896; excited controversy as author of 1st of *Essays and Reviews*, 1860; advocated disestablishment of Irish Ch., 1868-70. 2) His son, **William** (1881- ), headmaster of Repton, 1910-14; rector of St. James's, Piccadilly, 1914-17; Can. of Westminster, 1919-21; Bp. of Manchester, 1921-28; Abp. of York, 1928; pres. of Workers' Educational Assoc., 1908-24. 3) **T., Sir Wm.** (1628-99), Eng. diplomat, statesman, author.

**Temple**, place set apart for worship; specif. sacred bldg. erected by ancient Jews: 1) **Solomon's T.**, 1st permanent bldg. for worship of Yahveh,

erected in place of movable Tabernacle (*q.v.*); commenced 981 B.C.; completed in 7½ yrs.; internal dimensions: 90 ft. long, 30 ft. wide, 45 ft. high; surrounded by inner and outer courts; former reserved for priests; burnt at destruction of Jerusalem (586 B.C.). 2) **Zerubabel's T.**, built by returning exiles according to instructions of Cyrus; completed 516 B.C.; larger than 1st T., but less splendid; Ark of Covenant missing. 3) **Herod's T.**, built by H. the Gl. on site of 2nd T.; more magnificent; begun in 20 B.C., additions made until A.D. 64; destroyed in sack of Jerusalem, 70 A.D.

**Temple, The**, Fleet St., London; ch. and 2 Inns of Crt. (*q.v.*) (Inner and Outer T.) on site occupied by Knights Templar; circular portion of ch. dates from 1180; contains 13th-cent. tombs. Inner T. Hall, 1870; Middle T. Hall, 1572. Shakespeare acted in *Twelfth Night* in latter, 1602. **T. Bar**, W. boundary of City of London; gate removed, 1879; commemorated by "Griffin" monument at junction of Fleet St. and Strand.

**Tempo**, (mus.) time, speed of rhythm.



Temple Church, London



Middle Temple Hall

**Tempora mutantur, et nos mutamur in illis** (Lat.), times change and we change with them.

**Tempus fugit** (Lat.), time flies.

**Tenancy in common**, estate in common; property held by several persons together. On death of one of parties his share descends to his heirs. Cf. JOINT ESTATE.

**Tenant**, one who has the occupation or temporary possession of lands or tenements whose title is in another; theoretically, in Eng. law, no one but the kg. can hold land except as the tenant of someone else. Tenancies may be *in fee simple*, entitling the T. to hold "to him and his heirs for ever"; *in tail*, granted to a man and the heirs of his body for so long as his posterity shall endure; *for life or for years*, binding the T. to hand over a property to the ultimate heir after a certain time or upon his death. In general use, a T. is one who pays rent to a landlord for temporary occupation of lands or habitation; such tenancy may be defined by a lease (*q.v.*) or by the terms of a written agreement or verbal understanding. Relations between landlord and T., including amount of rent payable and responsibility for repairs, etc., are a matter of mutual agreement, but are subject to certain regulations laid down by common law; see RENT RESTRICTION ACTS.

**Tenby**, tn. and seaside resort, Pembrokeshire, S. Wales; pop., 4,100.

**Tench**, fish of carp family, usually deep yellowish-brown colour, occasionally golden or greenish-brown; thick body covered with small scales and copious mucus, so that the fish can be transported alive in wet moss over a long journey without suffering serious inconvenience; there is a short barbel at each side of mouth. Common in Europe in lakes and rivers; less abundant in England; abt. 1½ ft. long, but has been known to attain 3 feet.



Tench

**Ten Commandments**: see DECALOGUE.

**Tender**, 1) small vessel in attendance on a large one for purpose of picking up passengers, removing cargo, conveying messages, provisions, etc. 2) Coal- and water-truck attached to locomotive engines. 3) (Tech.) Document in wh. a builder, engineer, etc., undertakes to execute specified work for a stipulated sum.

**Tendon**, (physiol.) the fibrous structure by wh. muscle is attached to bone.

**Tendrill**, a leafless organ by wh. climbing plants coil round other plants, trellis-work, etc.

**Tenebrae** (Lat.: darkness), name given in the R.C.Ch. to the *Matins* and *Lauds* (see HOURS, CANONICAL) of the last 3 days of Holy Week (*q.v.*), from the rite of successively extinguishing candles, one by one, until ch. is in darkness.

**Tenedos**, Turkish isl. off N.W. coast of Asia Minor, nr. entrance to Dardanelles; 16 sq.m.; pop., 1,635. Greek, 1920-23.

**Teneriffe**, **Tenerife**, largest of Canary Isles; 782 sq.m.; pop., 180,000; volcanic mtns., *Peak of Teneriffe* (Pico de Teyde), 12,162 ft.; health resorts; exports: lace, wine bananas; cap., *Santa Cruz de Tenerife*. Span. since 1495.

**Teniers**, 1) **David T.**, the Elder (1582-1649), and 2) his s. **David T.**, the Younger (1610-90), Flem. painters.

**Tenison**, Thomas (1636-1715), Eng. divine; Vicar of St. Martin's-in-the-Fields, London, 1680; Bp. of Lincoln, 1691; Abp. of Canterbury, 1694; one of lds. justices during absence of Wm. III, 1695; fndd. T.'s school for boys in Leicester Square, London, moved to new bldg. nr. Kennington Oval, 1928.

**Tenn.**, abbr. Tennessee.

**Tennessee**, 1) State, U.S.A., 42,022 sq. m.; pop., 2,610,000; lies betw. Alleghany Mtns. and Mississippi Riv.; cattle-breeding, maize, wheat, cotton, tobacco; cap., *Nashville*. 2) Trib. (950 m.) of Ohio Riv., rises in Alleghany Mountains.

**Tenniel**, Sir John (1820-1914), Brit. artist and cartoonist; illustr. *Alice in Wonderland*, 1865; on staff of *Punch*, 1851-1901.

**Tennis**, game for 2 or 4 players in a closed, covered court crossed by a net, with a roofed corridor (penthouse) running along 3 walls, and various openings (the "grille," "dedans," and "galleries"). Racquets and balls resemble those used in lawn tennis (*q.v.*).

**Tennyson**, Alfred, 1st bn. (1809-92), Eng. poet; Poet Laureate, 1850; *Idylls of the King*, 1859; plays: *The Cup* (1881); *Becket* (1884).

**Tenon**: see **MORTISE**. **T. saw**, small woodworker's saw with fine teeth and stiffened back, used for cutting tenons and other short cuts.

**Tenor**, (mus.) high-pitched male voice.

**Tenrec**, fam. of insectivorous mammals, fnd. in Madagascar; long-skulled, spiny, nocturnal; several species, whose members vary in size.

**Tense**, (gram.) time indicated by past, present, and future forms of verb.

**Tensile strength**, (phys.) resistance of a substance to breakage by T. stress. See **ELASTIC LIMIT**; **TESTING MACHINE**.

**Tenson**, **Tenzon**, competitn. in verse betw. 2 troubadours bef. a crt. of Love (*q.v.*); a subdivisn. of the chanson so composed.

**Tent**, 1) easily erected shelter, of water-tight canvas and *tent poles*; *tent pegs* are used for fastening it to the ground. 2) Span. red sherry, used before fermentation, as sacramental wine.

**Tentacle**, (zool.) long, slender, flexible organ or feeler; term freqtly. used to describe prehensile limbs of squids, zoophytes, etc.

**Tenter-hooks**, 1) (text.) hooks for gripping cloth on tenting frames, on which it is dried. 2) (Metaph.) *to be on T.-h's.*, to be in a state of acute suspense.

**Tenth**, (mus.) interval of ten degrees betw. two notes of the scale, *i.e.*, an octave and a third.

**Tenuis**, (phon.) voiceless end-sound as *p, t, k*.

**Teocalli**, pyramidal mound or edifice erected by pre-Columbian inhab. of Mexico and Centr. Amer. as temple or public building.

**Teplíce-Sanov**, tn., N. Bohemia, Czechoslovakia; pop., 28,900, in vall. of Riv. Biela; health resort: mineral springs; coal and iron.

**Teraphim**, (O.T.) images consulted as oracles; used by Israelites until time of Josiah, and again after the Captivity.

**Terblum**, (chem.) sym. Tb; at. wt. 159.2; rare metallic element present in monazite sand.

**Ter Borch**, Gerard (1617-81), Dut. painter: *The Guitar Lesson*.

**Terebene**, (chem.) mixture of dipentene and other hydrocarbons obtained from oil of turpentine; used as drug.

**Terebinth tree**: see **PISTACHIO**.

**Teredo**, **shipworm**, bivalve mollusc dwelling in long cylindrical holes wh. it bores in ships, submerged piles, etc.; length up to 3 ft.; sev. Brit. species.

**Terence**, P. Terentius Afer (c. 190-159 B.C.), Rom. writer of comedies: *Andria*; *The Eunuch*.

**Term**, 1) apptd. time or period. 2) (Finan.) **T. of a bill**, period for wh. a B. of Exch. is drawn.

**Terminology**, technical terms of any field of knowledge.

**Terminus**, end; usually signifies station where rly. line ends, *e.g.*, Euston, London.

**Termites**, order of insects commonly known as *white ants*. Like ants, they live in highly organized communities; but the males take an active part in the communal life. The community consists of sexed individuals, qn. and kg. (former with abdomen greatly enlarged by eggs), and workers with atro-



Tennyson



Winged Female



Soldier Worker

Termites

phied sexual organs, these being again divided into specialized forms, *e.g.*, the soldiers with powerful mandibles. Found in tropical

countries. Build mound nests as hard as stone, or burrow under-ground. Extremely destructive of woodwork, etc.

**Ternate**, Dut. residency, Moluccas, comprising T. Isl., Halmahera, parts of Celebes, Dut. New Guinea, etc.; 145,900 sq.m.; pop., 493,000.

**Terni**, tn., Umbria, It., in dept. Perugia; pop., 35,000; 13th-cent. cathed.; arms factory; textiles.

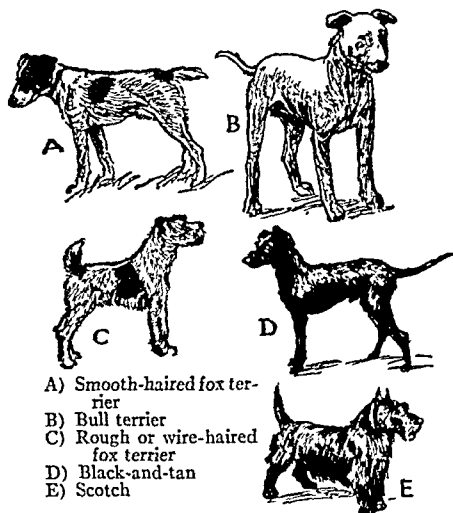
**Terns** (or *sea-swallows*), various swallow-tailed gulls of sub-family *Sterninae*. **Black t.** is best known of Brit. species; winters in Africa. **White-winged black T.** breeds in Europe and Asia, migrating in winter to Africa, S. Asia, and Australia. **Arctic t.** breeds chfly. in far N., migrates to S. Africa, Asia, and America.

**Terpenes**, aromatic hydrocarbons, empirical formula  $C_{10}H_{16}$ . Colourless liquids, boiling betw.  $150^{\circ}$  and  $180^{\circ}$ , pleasant odour. Oil of turpentine and many essential oils are mainly terpenes, but also contain derivatives of them (called camphors) containing other strongly smelling substances and oxygen.

**Terpsichore**, Muse of Choral Dance and Song.

**Terra** (Lat.), the Earth; **T.-cotta**, (bldg.) brick-like material of special clay and sand, burnt; sometimes formed into slabs, sometimes moulded or modelled into statues, etc. **T. incognita**, unexplored territory. **T. mare**, Bronze Age culture of N. Italy. **T. rossa**, or *red earth* (geol.), red ferruginous clay, orig. found on Adriatic coast. **T. sigillata**, pottery vessel, esp. of the Rom. Imperial period, with impressed factory marks.

**Terrace**, 1) (archit.) unroofed level



A) Smooth-haired fox terrier  
B) Bull terrier  
C) Rough or wire-haired fox terrier  
D) Black-and-tan  
E) Scotch

promenading or lounging space, on or before a building. 2) (Geol.) Flat, raised surface

with steep side, bordering a river or lake, marking the ancient water-levels.

**Terrain** (Fr.), ground, field.

**Terrapin**, name given to various reptiles of tortoise fam., esp. to certain N. Amer. species used as food, e.g., diamond-back terrapin.

**Terrarium**, glass cage for reptiles and amphibians.

**Terrazzo**, (bldg.) cement floor inlaid with small stones, e.g., marble; gen. polished, and of simple or no pattern.

**Terrier**, small agile dog, bred orig. for attacking foxes, badgers, etc., in their "caths." Now many varieties.

**Territorial Army**, in Gt. Brit., succeeded the *Volunteers* (q.v.) and Yeomanry. Voluntary milit. training by civilians for 3 years; drills and annual camp. Officers subject to milit. law; other ranks, only when on duty. Establishment, 1931-32, 183,500; but much below strength.

**Terror, Mount**, volcano, nr. Cape Bird, Victoria Quadrant, Antarctic regions.

**Terry**, Dame Ellen (1847-1928), Eng. actress; famous as Portia, and as Ophelia to Irving's Hamlet; D.B.E., 1925.



Ellen Terry

**Tertiaries**, *Third Order*: lay associates of certain R.C. relig. orders, esp. Franciscans, representative of a life intermediate betw. that of the world and the cloister.

**Tertiary Epoch**, one of the main geol. eras; see GEOLOGICAL FORMATIONS.

**Tertium quid** (Lat.); third something; medium between two incompatible alternatives.

**Tertullian** (c. A.D. 200), early patristic writer (q.v.); father of Chr. Latin literature.

**Terza rima**, stanza of 3 iambic verses of 11 sylls., 1st and 3rd rhymg. with 2nd of precedg. stanza and last verse with the 2nd of precedg. stanza.

**Terzetto**, (mus.) composition for 3 voices.

**Teschen**, 1) anc. duchy in S.E. Silesia (854 sq.m.), portioned (1920) betw. Poland and Czechoslovakia, the latter receiving the mining areas; pop., c. 150,000. 2) Tn., Poland, import. road and rly. centre; pop., 15,270.

**Tesla**, Nikola (1857- ), Amer. elec. inventor of Austrian birth, naturalized, 1884; worked with Edison; patented induction motor, 1888; discovered principle of rotary magnetic field; invented new forms of arc and incandescent lamps, dynamos, induction coils, etc.

**Tesla currents**, high-frequency elec. currents of very high tension prod. by T. transformer. Physiolog. harmless, on acct. of their high frequency. **T. transformer**,

(elec.) appar. for prod. high-tension high-frequency (Tesla) currents. Primary circuit of condenser, self-inductance, and spark-gap; condenser charged from suitable H.T. source to overcome spark gap. Secondary circuit closely coupled to primary self-inductance.

**Test Act, The** (1673), decreeing that all who held public offices must receive the Ch. of E. sacrament and renounce Transsubstantiation. Repealed 1828. **T. match**, a cricket match betw. representative teams of different countries. The following have played agst. England: Australia, since 1876; S. Africa, since 1888; West Indies, New Zealand, All India more recently; some of these also play agst. each other. **T. paper**, absorbent paper impregnated with a chemical, gen. a dye, e.g., litmus (q.v.), for determining reaction, acid or alkaline, of a chem. solution, or presence of any substance wh., by reacting with substance in paper, produces colour change; e.g., lead acetate paper for detecting sulphuretted hydrogen. **T. tube**, small thin glass cylinder, closed at one end, used for testing chem. substances.

**Testament**, declaration, witness, or will (q.v.). Old and New T.: see BIBLE. **Ts. of the Three Patriarchs** (i.e., Abraham, Isaac, Jacob), non-canonical wk. of Hebr. Scripture. **T. of the Twelve Patriarchs**, important apocr. writings containing dying wishes of 12 sons of Jacob.

**Testicles**, (anat.) sex-glands of males; produce semen and an internal secretion.

**Testing machine**, (phys.) machine for measuring extension under load, and ultimate tensile strength (q.v.) of materials by testing samples.

**Tetanus**, a generally fatal disease caused by infection of a wound with tetanus bacilli. One of the symptoms is lockjaw; death may be caused by asphyxia owing to a spasm of the muscles of respiration. T. is treated with tetanus anti-toxin; during the World War the rate of mortality among the wounded was greatly reduced by the injection of this anti-toxin in all cases, as soon as possible after the injury.

**Tetany**, disease characterized by convulsive twitchings; one cause is removal of parathyroid glands during operation for removing thyroid gland; may occur in conjunction with rickets.

**Tête-à-tête** (Fr.), head to head; private conversation, usu. between two persons.

**Tetragonal System**: see CRYSTALS.

**Tetragrammaton**, (Gr.) "four letters"; 4 Hebr. signs, transliterated as J H V H, or Y H W H, representing the name of God. The word is not pronounced, but as it is given the vowel marks of "Adonai" (Lord) this is said instead; written in Eng. Jehovah or Yahweh.

**Tetrahedrite** (or grey copper), a grey or black copper ore containing sulphur and antimony.

**Tetrahedron**, (geom.) a body contained by four equal triangles.



**Tetrameter**, line of 4 measures, each of 2 iambic (q.v.) or trochaic (q.v.) feet.

**Tetrarch** (Gr.), gov. of a part, orig. the fourth part, of a Rom. province.

**Tetrastyle**: see COLONNADE.

**Tetrazzini**, Luisa (1871- ). Ital. soprano; first appeared in opera at Florence, 1895; Covent Garden, 1907; pub. *My Life of Song*, 1921.

**Tetuan**, seapt., cap. of Spanish Morocco, on Mediterranean; pop., 45,000; leather manufacture.

**Teuthrania**, (anc. geogr.) S.W. part of Mysia (q.v.); formed part of kgdm. of Pergamon (q.v.).

**Teuton**, member of one of the peoples speaking any of the Teutonic or Germanic languages (see LANGUAGE SURVEY); the *Germani* (q.v.).

**Teutonic Knights**, relig. milit. order similar to Hospitallers and Templars (q.v.), fndd. by Bremen merchants at Acre, 1190; fought in Crusades and against pagans of E. Pruss.; chf. seat Marienburg. Declined after defeat at Tannenberg by Poles, 1410. Lands of the Order under Pol. suzerainty 1466, secularized 1525, becoming Duchy of E. Pruss. under last Grand Master, a Hohenzollern; 11 commanderies (q.v.) remained until 1806.

**Teviot**, riv., Roxburghsh., Scot., 37 m.; joins Riv. Tweed at Kelso.

**Tewkesbury**, munic. bor. Glos., Eng., on Riv. Avon, near its confluence with Riv. Severn; abbey ch.; pop., 3,400. *Battle of T.*, 1471, Yorkist victory, Wars of the Roses.

**Tex.**, abbr. Texas.

**Texarkana**, name of urban community formed by union of two cities on each side of boundary betw. Texas and Arkansas, U.S.A.; combined pop., c. 27,350 (Texas, 16,600; Arkansas, 10,750).

**Texas** ("Lone Star"), largest State, U.S.A., 265,896 sq.m.; pop., 5,820,000; on Gulf of Mexico; fertile prairies; cattle-breeding; most extensive cotton-growing dist. of N. Amer.; sulphur and mercury mines in S.; oil-wells. Cap., *Austin*.

**Texel**, Dut. isl., largest of the W. Frisians (70 sq.m.). Here Tromp was deftd. by the Eng. under Monk, 1653, and the frostbound Dut. fleet was captured by Fr. Army under Pichegru, 1794.

**Textile**, pertaining to weaving. *T. industry* comprises all processes of making fabrics of all kinds from yarn prepd. from fibrous materials (cotton, silk, wool, hair, artif. fibres, etc.). **Printing of textiles**

(coloured patterns), 1) by flat printing of design by hand with a press (calico printing); 2) by printing machines consisting of copper rollers; will print up to 20 colours together.

**Th**, (chem.) symbol of thorium.

**Thackeray**, William Makepeace (1811-63), Eng. novelist: *Vanity Fair*; *Pendennis*.



Thackeray

**Thaddaeus** (N.T.), one of 12 apostles (Matt. x, 3); see JUDAS; JUDE; LEBBAEUS.

**Thai, Shan**, race inhabtg. States on E. frontier of Upper Burma; see also SHAN.

**Thaler**, 1) Obsolete Ger. silver coin = 3 marks (q.v.) or 2s. 11d. (S.71) at par. 2) Obs. Aust. silver coin =  $\frac{1}{2}$  gulden (q.v.). See also DOLLAR.

**Thales**, of Miletus (640-546 B.C.), Gr. philosopher and astronomer; chf. of the Seven Sages; 1st of Ionian natural philosophers; regarded water as principle of all things; prophesied eclipse of sun for May 28, 585 B.C.; fndd. geometry of lines, i.e., abstract geometry.

**Thalia**, 1) Muse of Comedy. 2) One of the Three Graces (q.v.).

**Thallium**, (chem.) soft metallic element, sym. Tl, at. wt., 204.39; sp. gr., 11.85; m.p., 303.5°. Found in crookesite with selenium. The salts very poisonous; used in med. as depilatory in ringworm; also for destroying rats.

**Thallophyta** (bot.) see CRYPTOGAMS.

**Thallus**, mass of undifferentiated vegetable tissue. **Thallophytes** include algae, fungi, and lichens.

**Thames**, principal riv. in Eng., second-longest (210 m.); rises in Cotswolds, and flows past Oxford (where it is known as the *Isis*), Reading, Windsor, and London; discharges into North Sea by a wide estuary; mouth of riv. gen. held to be at the *Nore*, 4 m. N.E. of Sheerness. Chief tribs. (N.), Windrush, Cherwell, Thame, Colne, Lea; and (S.) Kennet, Wey, Mole. Canal communication with Riv. Severn and other rivers. Navig. for largest ships to Tilbury Docks, for smaller vessels to London Bridge, for riv. steamers to Oxford. Tidal to Teddington. Immensely important docks below London Bridge. **T. Tunnel**, thoroughfare under Riv. Thames, London, for use of pedestrians and vehicles. Original T.T., connecting Wapping and Rotherhithe (Brunel, 1843), was closed 1865 and sold to E. London Ry. Company. Other similar subways are: **Blackwall T.** (q.v.); **Rotherhithe T.** (1908),  $1\frac{1}{4}$  m. long, betw. Commercial Rd. and Rotherhithe, for pedestrians and vehicles; and **Greenwich T.** (1902), betw. Isle of Dogs and Greenwich, and **Woolwich T.** (1912), betw. N. and S. Woolwich,

both for pedestrians only. **Tower subway** (1870), passing under the river from Great Tower Hill to Horsleydown, since 1897, has been used only for gas mains.

**Thanatos**, (Gr. myth.) god of Death; the Rom. Mors.

**Thanet, Isle of**, N.E. corner Kent, Eng. (with N. Foreland), partially sep. from mainland by Riv. Stour; 9 m. by 5; contains Margate, Broadstairs, and Ramsgate.

**Thanksgiving Day**, gen. pub. holiday in U.S.A., observed since 1864, on last Thursday in Nov.; insttd. by Pilgrim Fathers, 1621, to celebrate 1st harvest in New World.

**Thapsus**, anc. tn. on N. coast of Africa; scene of victory of Caesar over partisans of Pompey (46 B.C.).

**Thasos**, mountainous isl. off coast of Macedonia, N.E. Greece; 152 sq.m.; pop., 15,000; olives; vineyards.

**Thatch**, roof-covering consisting of reeds or straw, arranged in bundles over a wooden framework, and pegged and tied down; used to roof country houses, cottages, hay-ricks, etc. The thatcher's art was handed down from father to son; it shows signs of dying out, but is still practised in country districts in Gt. Brit., notably in E. Anglia.

**Theatines**, R.C. order of "Regular Clerks," founded by St. Cajetan, 1524; members renounced all property, refused to ask for alms, relying on Providence and free-will offerings.

**Theatre**, space or bldg. set apart for production of stage-plays. Greek T. began as open space surrounding altar; developed into

rows of tiered seats arranged round circular orchestra for acting, with detached hut or tent behind for robing-room; Rom. T. introduced platform stage, with wall at back, though little painted scenery used, and occas.



Shakespeare Memorial Theatre

roofed bldg.; c. 1600, stage first curtained off from auditorium; little change in form until end of 19th cent., when tilted floor and smaller



number of balconies became general; since World War

greatly improved lighting effects, simplification of decoration, and technical improvements in scene-shifting, such as revolving stage. Eng. T. grew up at Renaissance; all were closed under Commonwealth (1642-1661). For licensing of T, see CENSORSHIP; LORD CHAMBERLAIN. **T. of war**, zone covered by milit. operations.

**Thebaine**, (chem.)  $C_{12}H_{15}NO_3$ , an alkaloid (q.v.) found in opium (q.v.).

**Thebaw** (1858-1916), Kg. of Burma; succ., 1878; reign marked by misrule, refusal to meet obligations, and hostility towards Gt. Brit.; dethroned, and Upper Burma annexed by Gt. Brit., 1885.

**Thebes**, 1) anc. cap. of Upper Egy., on Riv. Nile, 300 m. S. of Cairo; Homer's "hundred-gated" city; Luxor (tomb of Tutankhamen, q.v.) on part of site. 2) Tn., Boeotia, Greece (pop., 5,000), on site of anc. city of Thebes; legendary founder, Cadmus; kgdm. of Oedipus; chf. power in Greece under Epaminondas (379-362; defeat of Sparta at Leuctra); destroyed by Alexander the Great, 335 B.C.

**Theft**, act of stealing, performed either by removal of, or withholding, another's property; includes larceny, robbery, burglary, embezzlement, cheating, breach of trust, etc. Also, the object so stolen.

**Theism**, belief in a personal God who reveals Himself to man; gen. synon. with *monotheism*. **Theistic Church**, est. 1885, by Charles Voysey, formerly a Ch. of E. clergyman, to uphold a non-dogmatic worship and love of God as the Ruler of the moral order.

**Theiss**: see TISA.

**Theme**, 1) motive, directg. thought; object or topic on wh. pers. writes or speaks. 2) (Mus.) Basic melody on subject develpd. by variants.

**Themis**, (Gr. myth.) goddess of Law and Order.

**Themistocles**, (c. 527-459 B.C.), Athenian statesm.; deftd. Persians at naval battle of Salamis, and secured supremacy of Athens.



Themistocles

**Theobromine**,  $C_7H_5N_2O_6$ , alkaloid closely resemblg. caffeine; obtd. from the cacao tree; used in med. as a diuretic. See PURINE.

**Theocracy**, State ruled by priests.

**Theocritus**, Gr. lyric poet, 3rd cent. B.C.: *Idylls*.

**Theodicy**, philos. attempt to reconcile the presence of Evil with belief in God.

**Theodolite**, surveying instr. for measuring horizontal angles; rotation of telescope on its vertical axis is read on a finely divided horizontal dial by means of a *Vernier* or microscope.

**Theodora** (c. 548), actress and courtesan; m. Justinian, 523; Byzantine empress, 527; exercised grt. influence over her husband and took important part in administration of affairs of the Empire; supported the Monophysites.

**Theodoric the Great** (454-526), Kg. of Ostrogoths, 471; conq. It. and estab. capital in Ravenna.

**Theodorus**, name of 2 popes, of whom the more important, historically, is **T. I** (642-49), opposed Monothelitism; excomm. Pyrrhus, patriarch of Constantinople.

**Theodosia**, **Kaffa**, ice-free Russ. harbour and watering place, S.E. coast of Crimea; pop., 28,675. Mentioned c. 375 B.C.

**Theodosius** (379-395), last Emp. of undivided Rom. Empire, divided at his death into Eastern and Western Empires.

**Theology** (Gr.), study of nature and attributes of God, relig., and foundations of belief; Christian T. comprises: *systematic T.* (Dogmatics, Ethics, Apologetics, Moral T.); *historic T.* (study of Scriptures, Ch. History, Patristics, Symbolics); *practical T.* (Homiletics, Liturgy, Canon Law, etc.); *mystical T.* (study of soul's direct communion with God).

**Theophano**, Byzant. princess; d. A.D. 991; wife of Otho II, mother of Otho III, "the wonder of the world."

**Theophilus**, (N.T.) member of early Christian Ch. to whom Luke dedicated his Gospel and Acts of the Apostles.

**Theorbo**, obs. kind of lute, with double neck, used as bass instr. in orchestra in 16th-17th centuries.

**Theory**, general principle advanced to explain a group of phenomena; distinct from *hypothesis* (q.v.), wh. is an unverified assumption.

**Theosophy**, mystic form of relig. thought which aims at establishing direct relation betw. the individual soul and the divine principle, by contemplation and ecstasy; incorporates much Buddhistic and Hindu belief; founded c. 1875, by H. P. Blavatsky (q.v.). **Theosophical Society**, **The**, 1) instituted 1784 for propagation of teaching of Swedenborg (q.v.); later called "The New Jerusalem Church." 2) Modern body founded to promote Universal Brotherhood of Humanity, and to encourage study of comparative relig., philos., and science.

**Theotocopuli**, Domenico: see GRECO, EL.

**Thera**, **Santorin**, Gr. isl. in Aegean Sea, southernmost of the Cyclades; 35 sq.m.; pop., 20,000; volcanic; exports: wine and cement; cap., **Thera** (Phera). Remains of



Theodolite



anc. city (temples, theatre, vases, inscriptions).

**Theresa of Jesus, St.** (1515-82), Span. Carmelite Abbess, mystic and reformer; *The Way of Perfection*.

**Therm**, British unit of heat; see CALORIE.

**Thermae**, (Gr.) hot springs; specif. the springs connected with Rom. public baths; also the baths themselves.

**Thermal waters or springs**, natural warm medicinal springs, usu. containing carbonic acid or common salt, and sometimes *radio-active*.

**Thermidor**, 11th month in Fr. Repub. calendar (July 19th-Aug. 17th). Robespierre overthrown on 9th Thermidor (27 July, 1794).

**Thermionic valve**: see VALVE.

**Thermite welding process**, (tech.) consists in surrounding 2 iron or steel parts to be welded tog. by a finely powdered mixture of iron oxide and metallic aluminium wh., is then ignited; an extremely high temp., and also molten metallic iron, are prod., thus effecting a perfect weld.

**Thermo-chemistry**, science dealing with heat changes involved in chem. reactions.

**Thermodynamics**, science of conversion of heat into other forms of energy and vice-versa. Three Laws: 1) exact equivalence betw. heat and other forms of energy; impossibility of perpetual motion. 2) Heat can never be completely converted into other forms of energy; and none can be converted unless a "sink" (or outlet) is available at a lower temperature than the source of heat. 3) It is impossible to attain absolute zero temperature (*i.e.*, completely to remove heat). All three laws can be stated in various other equivalent forms. Chief results: *Degradation of energy*; in all transformations of energy some is irrevocably lost as low-temperature heat. The whole energy of universe tends to become uniformly distributed as heat. This is also known as the law of "Increase of Entropy." *Maximum efficiency* of conversion of heat into mechanical work or other forms of energy is given by difference between absolute temps. of source and sink of heat, divided by abs. temp. of source, *e.g.*, in steam engine, temp. of water in boiler minus temp. of cooling water in condenser, div. by temp. of boiler. This law depends on *Carnot's cycle*, imaginary, perfectly reversible engine, which is proved to give max. efficiency, in whatever form constructed. In this, heat never passes directly (by conduction) from high temp. to lower temperature. In all real engines this occurs, with loss of efficiency; *e.g.*, from fuel to water in steam-engine boiler, in petrol engine by conduction into cylinder walls. Important applications of Thermodynamics are: to all types of heat engine, to chemical processes, esp. large-

scale gas reactions; to meteorology; to fusion and vaporisation.

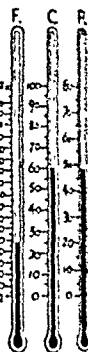
**Thermo-electricity**, elec. effect prod. by diff. of temp.; in a closed circuit made up of 2 diff. metals, a current flows if one of the junctions of the 2 metals is at a diff. temp. from the other. Circuit can be broken at any point of either. Metal for insertion of galvanometer (*q.v.*). If one junction is kept at a standard temp. current on galvanometer can be used to measure temp. (*T. pyrometry*) up to 1,600°C. A number of elements or pairs of junctions connected in series is called a **thermopile**; used for sensitive measurements, *e.g.*, radiation. T. elec. effect results from *Peltier* and *Thomson Effects* (*q.v.*).

**Thermometer**, appar. for measuring temp. (intensity of heat). Many types, commonest are: **mercury t.**, glass bulb with long stem, bulb and part of stem containing mercury, wh. expands and contracts with rise and fall of temp.; reading by level of mercury in tube. Alcohol, toluol, pentane used for very low temps. (mercury freezes at -38°C.). *Electric resistance T.*, *thermo-electric couple*, see RESISTANCE; **THERMO-ELECTRICITY**. For recording T., vapour pressure (ether and other liquids) acting on Bourdon gauge (*q.v.*), mercury in steel bulb, and bimetallic strip (ordinary thermograph). For scientific standard, *helium gas T.*, *maximum and minimum T.*, record highest and lowest points. Mercury pushes small iron rod in front of it, reset by magnet. *Clinical T.*, max. T. in wh. thread of mercury breaks near the bulb when T. cools, hence records max. temperature. Reset by shaking. **Thermometric scales**: range melting point of ice and boiling point of water at normal pressure, divided by Celsius into 100° (Centigrade) by Réaumur into 80°, by Fahrenheit into 180°. Celsius and Réaumur take ice point as 0°, Fahrenheit as +32°. Conversion formula  $\frac{1}{2}C. = \frac{1}{2}R. = \frac{1}{2}(F. - 32)$ ; or commonest,  $C. = \frac{5}{9}(F. - 32)$ ;  $F. = \frac{9}{5}C. + 32$ . *Absolute thermodynamic, or Kelvin (K) scale*, zero about -273° C. (at which all bodies cease to contain heat), otherwise C. degrees.

**Thermopile**: see THERMO-ELECTRICITY.

**Thermopylae**, pass in centr. Greece; scene of heroic stand of Leonidas and his 300 men agst. the Persians (480 B.C.).

**Thermostat**, apparatus for automatically regulating a source of heat or cold in such a way as to keep an enclosure (room, oven, etc.) or liquid at constant temperature. In simplest form, expansion with temp. of metal



Thermometer  
F) Fahrenheit  
C) Centigrade  
R) Réaumur

rod cuts off gas or electric current, or opens valve admitting cold air, water, etc. Large furnaces regulated by electrical pyrometers which control gas or air-supply by means of motor- or compressed-air-operated valves.

**Thersites**, in Homer's *Iliad*, quarrelsome, slanderous fellow, associate of Gks. at Siege of Troy.

**Thesaurus** (Lat.), treasury of words or knowledge; literary collection.

**Theseus**, legend. Kg. of Athens; slew the Minotaur (q.v.) with help of Ariadne; carried off Antiope, Qn. of the Amazons; figured in most of the great heroic expeditions. Assisted Pirithous at battle of Lapiths and Centaurs (q.q.v.).

**Thesis**, (acad.) treatise embodying original research by candidate for one of the higher degrees.

**Thespis**, indr. of Gr. tragedy, 6th cent. B.C.

**Thessalonians, Epistles to** [2] (N.T.) 1st *Epis.*, earliest of St. Paul's letters (c. A.D. 53).

**Thessalonica**: see SALONIKA.

**Thessaly**, prov. of N.E. Greece; 5,156 sq.m.; pop., 493,215; contains Mts. Olympus, Pelion, Ossa, Othrys; Vale of Tempe; watered by Riv. Peneus (Salambrina); agric., pasture.

**Thetis**, (Gr. myth.) sea-goddess; dau. of Nereus; mother of Achilles. See NEREIDS.

**Theunis**, Georges (1873- ), Belg. statesm.; Belg. rep. on Reparations Comm. 1919; Fin. Min., 1920; Pr. Min., 1921-25; Pres., World Econ. Confer., Geneva, 1925.

**Theurgy** (Gr.), divine work, miracle; also magic (q.v.).

**Thibet**: see TIBET. **Thibetan**: see LANGUAGE SURVEY, Indo-Chinese.

**Thiepval**, former vill. (obliterated in World War), Somme, Fr.; Brit. nat. memorial to 73,500 missing.

**Thiers**, Adolphe (1797-1877), Fr. histor. and statesm.; signed Treaty of Frankfurt with Germany; first Pres. of 3rd Repub., 1871-73.

**Thing, Ding, Ting**, among anc. Germanic peoples, tribal council, now parl. in Scand. (e.g., Norweg. *Storting*).

**Thiocyanates**, salts of extremely unstable thio-cyanic acid (HCNS). Commonly called sulphocyanides; used in dyeing; found in "gas liquor" from gas works. **Mercury t.**, Hg(CNS)<sub>2</sub>, formed as insoluble precipitate by adding mercuric chloride solution to potassium t.; forms when dried and made into pills, **Pharaoh's Serpents**, the pills, when set alight, burning with formation of long, serpentine tubes of ash.

**Thionville, Diedenhofen**, tn. in Lorraine, Fr., on Riv. Moselle; pop., 13,040; brewing; wine; Fr. after 1659; Ger., 1871-1918.

**Third**, (mus.) 3rd degree of the scale and corresp. interval. **T. degree** (U.S. police), incessant examination of prisoner to extort a confession. **T. party**, term applied in Eng. law to any person appearing in a case other than the two principals.

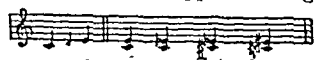
**T. P. risks**, risks of damage to persons not specified in an insurance policy; Eng. Road Traffic Act, 1930, made it compulsory for motorists to insure agst. such risks.

**Thirlmere**, lake, Cumb., Lake Dist., Eng., 4 m. long; reservoir for Manchester Corp'n. Waterworks.

**Thirteen-nine Articles**, **The**, statements put forth in 16th cent. embodying doctrinal standpoint of the Ch. of E., and with which every cleric of the Ch. must avow his general agreement at his ordination.

**Thirty Tyrants**, rulers set up by Sparta after her defeat of Athens (404 B.C.). **Thirty Years' War** (1618-48), betw. Prot. and Cath. princes of Ger., originating in the revival of Hussite Movement in Bohemia and resistance to absolutism of Ferdinand II of Austria. Frederick V, Elector Palatine and Kg. of Bohemia, def. near Prague (1620); Wallenstein and Tilly, Imperialist generals, conq. N. Ger., Edict of Restitution (1629). Swed. intervention under Gustavus Adolphus (1630), resulted in fall of Magdeburg, defeat of Tilly at Breitenfeld (1631), and of Wallenstein at Lützen, when Gustavus Adolphus was slain (1632). In 1635 Fr. made war on Austria. Peace of Westphalia (1648) resulted in territorial gains to Fr. (Alsace), Brandenburg, and Swed., independ. of Switz. and Netherlands, equal rights for both creeds, confirmation of Peace of Passau (1552) and Peace of Augsburg (1555).

**Thistle**, general name for the *Cynaroccephala* wh. incl. burdock, saw-wort and common field thistles (*Carduus*). The **Scotch t.** is *Onopordium acanthium*. **Order of T.**, second order of knighthood in Gt. Brit.; one class, limited to the sovereign and sixteen knights; fndd. by James II, 1687, suspended after the Revolution, and revived by Qn. Anne, 1703. Motto: *Nemo me impune lacessit* ("no one provokes me with impunity"). Star: St. Andrew's Cross, with thistle surrounded by motto; collar of gold; mantle of green velvet; badge (St. Andrew before, Thistle on the back); hat of



Theunis



Thistle

black velvet; ribbon, dark green; chapel of the Order in St. Giles' Church, Edinburgh. See Ill., KNIGHTHOOD, ORDERS OF.

**Thomas, (N.T.)** Apostle, Galilean fisherman; expressed doubt of resurrection of Christ (John xx); commem., 21 December.

**Thomas, Albert** (1878-1932), Fr. statesm.; director Internat. Labour Office of L. of Nations (q.v.) 1920. **T., Ambrose** (1811-96), Fr. operatic composer: *Mignon*. **T., Arthur Goring** (1850-92), Eng. composer;



The Doubting Thomas: after Rubens

operas include *Esmeralda*; *Nadeshda*, etc. **T., Brandon** (1849-1914), Eng. actor and playwright; wrote: *Comrades*, 1882; *The Colour-Sergeant*, 1885; *Charley's Aunt*, 1892, etc. **T., (Philip) Edward** (1878-1917), Brit. poet and critic; killed in World War; pub. *George Borrow*, 1912; *Poems*, 1917; *The Last Sheaf*, posthum. 1928, etc. **T., James Henry** (1875-



J. H. Thomas

), Eng. statesm.; started as rly. employee, became engine driver (G.W.R.); member of Labour Govt. cabinets since 1924; Secretary of State for Dominions in National Govt. (1931). **T., Sidney Gilchrist** (1850-85), Eng. chemist, origntd., with his bro. **Percy**, Thomas process (q.v.).

**Thomas à Kempis**, name by wh. Ger. mystic and writer T. Hammerken (1380-1471) is known; *Imitation of Christ* gen. attribtd. to him, although authorship has been disputed. **Thomas Aquinas, St.** (1225-74), "Doctor Angelicus," Ital. theolog. and scholastic philos.; Thomist philos., *Summa theologiae*. **Thomas of Canterbury**: see BECKET.

**Thomas process**, inventor S. G. Thomas (q.v.), for freeing cast iron from phosphorus by fusion in a converter lined with basic material (dolomite), wh. combines with phosphoric acid to form *basic slag*; used for *manure*.

**Thompson, Francis** (1859-1907), Eng. poet and critic; contrib. to *Academy* and *Athenaeum*; poems: *The Hound of Heaven*, 1893; *Sister Songs*, 1895; *New Poems*, 1897; prose: *Essay on Shelley*, 1889 (1st pubd. 1908); *Health and Holiness*, 1905. **T., Sylvanus Phillips** (1851-1916) Brit. physicist, researches in and wrtgs. on elec., magnet., etc. **T., William** (1783-1833), Irish socialist: *Labour Rewarded*, 1826. **T., Sir William** (1824-1907): see KELVIN.

**Thomson, Christopher Birdwood**, 1st bn. (1875-1930), Brit. soldier and statesm.; instructor, milit. school, Chatham, 1902-05; milit. attaché and chf. of milit. mission, Rumania, 1915-16, Palestine, 1917; member of Supreme Council, 1918; Air Min. in Labour Govts., 1924, 1929; cr. Bn. Thomson, 1924; perished in Rior disaster, Oct. 5, 1930. **T., Hugh** (1860-1920), Brit. artist and book illustrator; worked for *English Illustrated Magazine* from 1884; illus. for Jane Austen's novels, Mrs. Gaskell's *Cranford*, works by Thackeray, George Eliot, etc. **T., James** (1700-48). Brit. poet; pubd. *The Seasons* (*Winter*, 1726; *Summer*, 1727; *Spring*, 1728; *Autumn*, 1730); *Castle of Indolence*, 1748, etc.; plays: *Sophonisba*, 1730; *Agamemnon*, 1738; masque, *Alfred*, 1740 (in conjunction with Mallet), etc. **T., James** (1834-82), Brit. poet; wrote over signature "B.V."; known as the "Poet of Despair"; pubd. *City of Dreadful Night*, 1870-74; *A Voice from the Nile*, 1884, etc. **T., Sir Joseph John** (1856-), Eng. physicist; investigated elec. conductivity of gases; Nobel Prize (Physics), 1906.

**Thomson effect**, one of the constituents of *thermo-electric effect*; there is a diff. of elec. potential betw. parts of same metal at diff. temps. See THERMO-ELECTRICITY.

**Thor, Donar**, thunder-god of Nordic mythology.

**Thorax**, upper part of body in vertebrates bounded below by diaphragm, in front and at sides by ribs, and behind by middle section of vertebral column; T. contains heart, lungs, and two large blood-vessels.

**Thoreau, Henry David** (1817-62), Amer. writer; friend of Emerson; imprisoned for refusal to pay taxes; *Walden, or Life in the Woods*, 1854.

**Thorium**, (chem.) rare earth metal, sym., Th; at. wt., 232.15; sp. gr., 12.16; m.p., abt. 1700°. Radio-active (half-period  $1.65 \times 10^{10}$  years); parent of Th series, ending in isotope of lead (at. wt. 206). Chief source monazite sand. Used (as nitrate) in manuf. of incandescent gas mantles.

**Thorn**, (Poland): see TORUN.

**Thorn**, spiky excrescence or spine growing from stems and boughs of certain plants; an aborted branch. **T. apple**, Jimson weed, nightshade, *Datura stramonium*, grows c. 12 in. high; white flower, egg-shaped, spinous fruits; used in med. (action similar to belladonna); the smoke from the burning leaves is used to relieve asthma.

**Thorndike, Sybil** (1885-), Eng. actress; with Ben Greet co. toured U.S.A. in Shakesp. repertory, 1903-07; with Miss



Types of Thorn

Horniman, Manchester, 1908-09, 1913; "Old Vic" co., London, 1914-18; chf. rôles: Joan of Arc in Bernard Shaw's *St. Joan*; Lady Macbeth.

**Thornycroft, Sir John Isaac** (1843-1928), Brit. naval archit.; estab. shipb. works at Chiswick, 1866, later at Woolston, Southampton; constructed 1st Brit. naval torpedo-boat, 1877; introd. turbine propellers, etc. His bro., **Sir Wm. Hamo** (1850-1925) sculptor; R.A., 1888; *Prof. Sharpley*; *Teucer*; *Gladstone*, etc.



Thorn-apple

**Thorough bass**, *basso continuo*, sequence of bass notes written with figures above them to indicate the harmonies of an accompaniment when (esp. in 16th, 17th, and 18th cents.) the composer did not write out the chords in full. See FIGURED BASS.

**Thoroughbred**, animal of pure breed, with pedigree for several generations officially recorded; chfly. applied to horses and dogs.

**Thorpe**, Sir Edw. (1845-1925), Brit. chemist; prof. of chemistry at Glasgow, 1870; Leeds, 1874; London, 1885-94, 1909-12; director of Govt. Labs., 1894-1909; with Sir A. Rücker, carried out magnetic survey of Brit. Isles; responsible for prodn. of Dictionary of Applied Chemistry, 1890, 1927.

**Thorwaldsen**, Bertel (1770-1844), Dan. sculptor: *Christ*; *Ganymede* (Th. Museum, Copenhagen).

**Thoth**, Egypt. god of wisdom and writing; ibis-headed.

**Thought, laws of**, (logic) abstract statements of the princ. implied in all valid reasoning: 1) *L. of Identity*, e.g., "Man is a biped"; 2) *L. of Contradiction*, e.g., "Man is not both a biped and not a biped"; 3) *L. of Excluded Middle*, e.g., "Man is either a biped or not a biped."

**Thousand and One Nights**: see ARABIAN NIGHTS' ENTERTAINMENTS.

**Thousand Guineas** (race): see GUINEAS.

**Thousand Islands**, group c. 80 isls., Dut. E. Indies, betw. Java and Sumatra; included in residency of Batavia.

**Thrace**, dist., S.E. Balkans, N.E. of Macedonia; divided betw. Greece (S.W. Thrace), Bulgaria (N.W. Thrace), and Turkey (E. Thrace); inclds. E. section of Rhodope Mtns.; watered by Riv. Maritsa; cattle-breeding; tobacco.

**Thrale, Mrs.:** see PIOZZI.

**Thread** (of a screw), obtd. geomet. by helical rotation of a triangle or quadrangle; in engineering, an exterior thread is cut by means of a die, a short threaded piece of hard steel with thread cut away radially in 4 places to form cutting edges; an interior thread by a screw-tap, a threaded plug sim. cut away. Large screws, and all accurate screws, are cut on a lathe. See SCREW.

**Threadneedle Street**, thoroughfare in City of London betw. Bishopsgate and Mansion House; Bank of England (*q.v.*) (S. side of wh. occupies part of street) has been called "Old Lady of Threadneedle St."; here is also Merchant Taylors' Hall, orig. built in 14th cent., pres. bldg., 1844.

**Thread-worm**, a nematode worm, parasitic in the human intestine during childhood. The eggs discharged from the alimentary canal of their host may again enter humans through the mouth in connection with food or impure water.

**Three-card Trick**, or "*Spot-the-Lady*," sharpers' game, in wh. victim is invited to pick qn. from 3 cards placed face-downwards.

**Three-colour process**, photographic method of reproducing a picture, drawing, or subject direct from nature in colours with only 3 separate printing plates; 1 each for red, yellow, and blue. Three photogr. negatives are made of the subject, focused exactly alike, through 3 diff. colour schemes which serve to cut out the colours not required, a green filter (green = yellow and blue) being used for the red negative; with these negatives three half-tone (*q.v.*) plates are made which are printed from in red, yellow, and blue ink. In direct three-col. proc., the negatives are made direct from nature. Process not to be confused with purely photogr. proc. of colour photography.

**Three Emperors, League of the**, alliance betw. emperors of Ger., Aus., and Russ., 1873-79; renewed 1881, 1884.

**Three Holy Children, Song of the**, (Apocr.) thanksgiving hymn of 3 companions of Daniel for deliverance from Nebuchadnezzar's "fiery furnace"; used as canticle (*Benedicite, omnia opera*) in Bk. of Common Prayer. See SHADRACH. **Three-mile zone**, area at sea under dominion of a Power; holds good for 3 miles from coasts of Power; protected by internat. treaties. **Three-phase current**, prod. by 3 equal alternating voltages, differing in phase by  $\frac{1}{3}$  of their period. See MULTIPHASE CURRENT. **T.-p. motors** have the advantage that they can be built without brushes.

**Three Rivers**, tn., Quebec, Canada, at confluence of St. Maurice and St. Lawrence rivs.; pop., 65,000; exports: iron, lumber, grain, cattle.

**Threnody**, ode or song of lamentation.

**Thresher, or fox-shark**, var. of shark with very elongated tail fin, fnd. in Atlantic and Mediterranean; small-toothed; alleged to attack whales.

**Threshing machine**, (agric.) power-driven implement for separating grain or seed of cereals from husks; revolving drum with inclined flails. Threshing orig. carried out by hand; 1st machine used c. 1786.

**Threshold value**, (phys.) minimum per-

ceptible value of any scientific observation (sensation, reaction, etc.).

**Thrift**, ladies' cushion, cushion pink, *Armeria maritima*, small bushy plant with pink flowers; grows near seashore.

**Throat**, external part of the neck betw. the chin and collar-bone; internal parts include the gullet, pharynx, oesophagus, larynx, trachea; see all these headings.

**Throgmorton Street**, thoroughfare in City of London betw. Lothbury and Old Broad St.; contains *London Stock Exchange* (blt. 1854) and *Drapers' Hall* (blt. 1667; restored 1866).

**Thrombosis**, formation of a blood-clot in the heart or a blood-vessel, e.g., after operations or child-birth; in the latter case it is gen. in a vein of the leg. **Thrombus**, a blood-clot in the heart or a blood-vessel; may be carried by the circulation into the lung. See EMBOLISM.

**Throttle**: see VALVE.

**Thrush**, 1) (med.) inflammation of mouth, accomp. by white patches on the inside of the mouth; common in infancy. 2) (Vet.) A degenerative condition of the wedge-shaped horny layer of the sole of the horse's foot, caused by inflammation.

**Thrushes**, large family of passerine birds, which includes, besides the familiar song-thrush and blackbird, the robin, blue-throats, redstarts, and chats, and a large number of tropical genera, such as the shamas and dhazal birds of India.

**Thucydides** (c. 460-400 B.C.). 1st Greek critical histor.: *Peloponnesian War*.

**Thug**, member of fraternity of assassins in N. India, who robbed and strangled travellers in honour of goddess Kali or Durga; suppressed by Lord W. Bentinck (c. 1835). Hence, any assassin or ruffian.

**Thule** (*Ultima Thule*), most northerly land or island known to Greeks and Romans; probably Shetland Isles.

**Thulium**, rare chem. element of yttrium grp.; sym. Tm; at wt., 169.4.

**Thumbscrew**, instrument of torture by which the thumb was crushed or broken; used by the Inquisition in Spain, and during the persecution of the Covenanters (q.v.) in Scotland.

**Thun**, tn. and health resort, Switzerland,

in canton of Berne, on Riv. Aar, at foot *Lake of Thun* (19 sq.m.; 11 m. long; max. depth, 708 ft.; alt., 1,860 ft.; traversed by Riv. Aar).

**Thunder**, loud, crashing, or rumbling sound caused by electr. disturbance in the air, effect of wh. is visible in lightning (q.v.).

**Thunderbolt**, discharge of lightning and accompanying clap of thunder, formerly thought to be a bolt hurled by a god; certain kinds of stone or fossil supposed to have fallen from clouds as result of lightning discharges. See also BELEMNITES.

**Thurgau**, canton in N.E. Switzerland; 389 sq.m.; pop., 142,000; dairy farming, fruit-growing, fishing on Lake Constance; cap, *Frauenfeld*.

**Thurible**, a censer (q.v.).

**Thurifer**, acolyte who carries the censer.

**Thuringia, Thüringen**, repub., centr. Germany; 4,542 sq.m.; pop., 1,607,300 (92% Lutherans); main portion bounded N. and W. by Prussia, S. by Bavaria, and E. by Saxony; detached N. portion surrounded by Prussia. Surface is 33% forest (see THURINGIAN FOREST), 45% arable land, 10% pasture; mkt. gdns. in valls. of the Saale and Unstrut; lignite, potash, slate, rock-salt; textiles, machinery; cap., *Weimar*; univ. at Jena. Formed in 1919 by union of seven Thuringian States. **Thuringian Forest, Thüringer Wald**, mtn. chain of centr. Germany, from Riv. Werra to the W. of Eisenach; ridge c. 75 m. long; woods; slate-quarries; iron ore; health resorts; *Grosser Beerberg*, 3,229 feet.

**Thursday**, 5th day of week, named after Thor, Norse god of war and thunder.

**Thurso**, police burgh and seapt., Caithness, Scot.; fisheries; pop., 2,900.

**Thwart**, (naut.) seat for oarsman, placed at rt. angles to fore and aft centre line.

**Thylacine**, carnivorous marsupial of wolf-like appearance, ind. only in Tasmania; greyish brown, with black stripes; somewhat smaller than Europ. wolf; mainly nocturnal.

**Thyme**, arom. herb. **Wild T.** (*Thymus serpyllum*), woody stem, purple flower. **Garden T.** (*T. vulgaris*) has a stronger odour than wild variety.

**Thymol**, (chem.)  $C_{10}H_{13}OH$ , crystalline phenol present in oil of thyme; strong antiseptic; used in mouth washes and as a preservative in pharmacy.

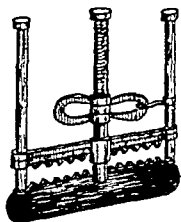
**Thymus**, organ situated behind upper part of breast-bone in man; undergoes atrophy about the age of 14. Its function is not known; probably produces internal secretion.



Missel Thrush



Thucydides



Thumbscrew



Thurible



Thyme

**Thyratron**, special type of three-electrode tube containing a small amount of inert gas, so that an arc-discharge passes from anode to cathode, the potential applied to the grid causing the arc to start.

**Thyroid cartilage**, largest cartilage of the larynx (*q.v.*); forms a prominence in front of neck, known as *Adam's apple*. **T. gland**, ductless gland, situated in front of the wind-pipe in the neck; produces internal secretion wh. has an important effect on metabolism. Swelling of the thyroid gland is known as goitre (*q.v.*). *Thyroid treatment* used in myxoedema (*q.v.*) and obesity, by administration of preparation from the thyroid gland.

**Thyrus** (Gr. legend), wand of Dionysus, (*q.v.*); entwined with ivy and vine-leaves, terminating in a pine-cone.

**Ti**, chem. symbol of Titanium.

**Tiara**, 1) ancient Persian headdress. 2) Official headdress of Pope, high conical cap surmounted by 3 crowns, emblematical of his temporal, spiritual, purgatorial sovereignty. 3) Jewelled head ornament worn by women.

**Tiber**, longest riv., centr. Italy (250 m.); flows from Tuscan Apennines through the Campagna and Rome to its mouth at Ostia, on Tyrrhenian Sea.

**Tiberias**, tn. in Palestine, on Sea of Galilee; pop., 6,950.

**Tiberius**, Claudius Nero, Rom. gen.; Emp. A.D. 14-37; assassinated.

**Tibet**, **Thibet**, country, Centr. Asia; nominal dependency of China; bounded S. by *Himalayas* (India, Nepal, Bhutan), W. by *Karakoram Mtns.* (Kashmir), N. by *Kunlun Mtns.* (Sinkiang), and E. by Szechuan; world's highest country; plateaux 13-16,000 ft., peaks 24-26,000 ft., passes up to 19,000 ft.; climate extreme; c. 440,000 sq.m.; pop. (one-fifth monks), c. 1,700,000, Lamaist Buddhists, ruled by Dalai Lama. N. and N.W. barren; marshes and lakes without outlet (Kuku-Nor, etc.); in S. and E. are sources of Indus, Brahmaputra and Yangtze-Kiang; fauna include yaks, camels, musk-deer; some fruit (apricots, pears). Exports to China and India: camel-hair, furs, musk, gold. Cap., *Lhasa*. Brit. military expedn. to Lhasa (1904) produced trading treaty betw. T. and Brit. India. Chin. suzerainty recognised by Anglo-Russian Convention of 1907; Chin. expedition (1910) caused Tibetan hostility to China and friendliness towards Gt. Britain. Chin. representative expelled 1912.

**Tibullus**, Albius (c. 54-18 B.C.), Rom. elegiac poet.

**Tic douloureux**, severe stabbing pain associated with neuralgia of the trigeminal nerve affecting the side of the face.

**Ticino**, 1) riv. (154 m.), Switzerland and It., left trib. Riv. Po; rises Lepontine Alps; flows through L. Maggiore to join the Po nr. Pavia. 2) Southernmost canton of Switzerland; 1,086 sq.m.; pop., 154,000; health resorts: Lugano, Locarno; cap., *Bellinzona*.

**Tick**, blood-sucking parasite of the group *Arachnida*; attacks mammals and birds; some species known to be carriers of certain diseases; eggs usually laid on herbage; young attach themselves to passing animals.

**Ticker**, machine which prints telegraphic messages in ordinary type; development of the tape-machine, which printed in a single line on paper tape. In common use in clubs, etc., to receive latest news, share quotations, etc.

**Ticket of leave**, licence granted as reward for good conduct and industry in prison to convict who has served greater part of sentence of penal servitude (*q.v.*) and is released under supervision, on condition of reporting periodically to police until expiry of orig. sentence.

**Ticking**, strong cotton matl.; twill.

**Ticonderoga**, vill., New York State, U.S.A., on outlet of L. George; scene of fierce but unsuccessful assault by Brit. and Colonials on French under Montcalm, 1758 (Seven Yrs. War), and of siege and defeat of Americans by Brit. under Burgoyne, 1777 (War of Independence).

**Tide**, alternate rise and fall (ebb and flow) of the surface of the sea; caused by attraction exercised by the moon and, to a less degree, the sun. **Neap ts.**, those at end of 1st and 3rd quarters of lunar month, when distance betw. high-water and low-water marks is shortest. **Spring ts.**, those occurring at new and full moon, when distance betw. high-water and low-water marks is greatest. **T.-waiter**, custom-house official who boards vessels and watches landing of cargoes, to secure payment of duties.

**Tie** (rly.): *see* SLEEPER. **T.-beam**, (bldg.) princ. cross-beam of a roof framework; ties the feet of rafters.

**Tien-shan**, **Celestial Mountains**, mtn. range in Centr. Asia, on Russo-Chinese frontier; rises to 23,950 ft. (Khan-Tengri); large glaciers.

**Tientsin**, treaty port, prov. Chihli, China; pop., 880,700; at junction rivs. Peiho and Hunho; univ.; commrc. centre.

**Tiepolo**, Giov. Battista (1696-1770), Ital. painter; *Frescoes* in Abp.'s Palace, Würzburg, and many Venetian churches.

**Tierce**, Brit. and U.S. 1) wine-meas., 42 gallons; 2) wt., 320 lbs.

**Tierra del Fuego**, isl.group, S. extremity



Tiberius



Tiepolo

of S. America; c. 27,800 sq. m.; pop., 3,000; separated from mainland by Strait of Magellan; S. continuation of Chilean Andes in W. (*Mt. Darwin*, 7,054 ft.); forests; prairies; cattle and sheep rearing; W. part belongs to Chile; E. part, with chf. settlement of Ushuaia, to Argentina. At S. point of southernmost isl. is *Cape Horn*.

**Tiers état** (Fr.), third estate: see *ESTATE*.

**Tiffanyite**, blue or bluish-white Brazilian diamond; has property of emitting light after exposure to sun or other strong light.

**Tiflis**, cap., Georgian S.S.R., admin. tn. Transcaucasian S.F.R., on Riv. Kura; pop., 294,075; Sion Cathed. (5th cent.); univ.; national theatre, mus.; tobacco, leather indus.; imp.-port. trade centre.

**Tiger**, largest and most magnificent of the great cats, occasionally exceeding 12 ft. in length; ranging from India to China and Siberia. Coat orange or tawny, with double, transverse black stripes. Entirely carnivorous, extraordinarily powerful and savage. **T.-beetle**, carnivorous beetle; the larvae live in narrow pits in the ground. Several varieties; some tropical; others fnd. in temperate regions. **T. lily**, var. of lily, native to China; flowers, orange with black spots.



Tiger

**Tigli tree**, *Croton tiglium*, spurge-like plant of trop. Asia; seeds produce *croton oil*, a very powerful cathartic.

**Tigré**, prov. N. Abyssinia; cap. *Aduwa*.

**Tigridia**, *tiger-flower*, bulbous plant of Centr. and S. Amer., of iris family, with spotted white or yellow flowers.

**Tigris**, riv., Asia Minor and Iraq; rises in two head-streams in Kurdistan and

Armenia; flows past Diarbekr, Mosul, and Bagdad; joins Euphrates 45 m. above Basra, to form Riv. Shatt-al-Arab; length, 1,220 miles.

**Tilbury**, urb. dist., Essex, on Riv. Thames; pop., 16,800; docks, enlarged 1928-30, under P.L.A.; scene of milit. review by Qn. Elizabeth, 1588.

**Tilbury**, light, two-seated, two-wheeled carriage with collapsible hood.

**Tilde**, accent ~ in Span., ñ indicating sound ny; in Port., ã, ê, ô, indicating nasal pronunciation.



Tiger Beetle



Bridge over Tigris

**Tile**, (bldg.) thin slab of baked clay; used for roofing, paving, lining ovens, etc.; also of earthenware and porcelain, gen. ornamented.

**Tillotson**, John Robert (1630-94), Eng. divine; dean of Canterbury (1672), and of St. Paul's; clerk of the closet to Wm. III; succ. Sancroft as abp. of Canterbury, 1691; ed. John Wilkins' *Principles of Natural Religion*, 1675; his *Complete Works* were pubd. 1752.

**Tilly**, Joh. Tserclacs, Ct. von (1559-1613) Flem. soldier; gen. of Catholic League, atcr, cdr. of Imperial forces in Thirty Years' War.

**Tilmanstone**, vill., Kent, 5 m. S.W. Sandwich; centre Kentish coalfield.

**Tilsit**, tn., E. Prussia, on Riv. Niemen; pop., 55,700; iron foundries; engineering works; manuf. cheese. **Treaty of T.**, betw. France and Russia, July, 1807; betw. Fr. and Prussia, Sept., 1807; reduced Prussia temporarily to status of a second-class power.

**Timber**, 1) wood cut up into pieces of some length and bulk, esp. for house-building and shipb., pit-props, etc. 2) Growing trees cultivated for commercial use. 3) Structural element of wood in a house, ship, etc. See *WOOD*.

**Timbuktu**, **Timbuctoo**, tn., Fr. Sudan, N.W. Africa, 10 m. N. of Riv. Niger (canals to riv. port of Kabara); trading centre (400 caravans yearly); pop., 7,200.

**Time**, 1) fundamental conception involving recogn. of idea of duration (past, present, and future); see also *RELATIVITY*. 2) Definite portion of duration, with a beginning and an end; ant., *eternity*. **Divisions of T.**, time is divided in different ways for different purposes; e.g., geologically, into vast periods (see *GEOLOGY*); in prehistory (*q.v.*), into Stone, Bronze, Iron ages; with reference to development and output of art and literature, into Golden, Silver, Augustan ages; historically, into rough periods, Ancient, Dark Ages, Mediaeval, Modern. See these headings; also *CENTURY*; *YEAR*; *MONTH*; *WEEK*; *DAY*; *ZONE STANDARD TIME*.

**Time deposits**, term applied in U.S.A. to *DEPOSIT ACCOUNTS* (*q.v.*). **T.-keeper**, official who records time of a race, length of round in boxing, etc. **T.-rates**, of wages, are reckoned by the hr., day, or week; ant.: *piece-rate wages* (*q.v.*). **T.-signals**, signals conveyed at specified periods, usually from mast of observatory, by cannon shot, or by dropping of time-ball. Latterly conveyed by wireless telegraphy.

**Timeo Danaos et dona ferentes** (Lat.), I fear the Greeks even when bearing gifts; gifts coming from an unfriendly source should be regarded with suspicion.

**Times**, **The**, principal London daily newspaper, began (1785) as *Daily Universal Register*; title changed 1788; steam-printing adopted, 1814; owned by Walter family

until 1908, when control acquired by Lord Northcliffe, after whose death (1922) it was vested in body of independent trustees (including the Lord Chf. Justice, the Presidents of the Roy. Soc. and Inst. of Chartered Accountants, and the Governor of the Bank of England), with Major Astor, M.P., as controlling proprietor; publishes weekly *Literary, Educational*, and *Engineering* supplements, a weekly edition, and reprints of its law reports.

**Timid money**, term which has come into use in recent years to describe funds deposited in banks of a country on short term for the purpose rather of being safe than of earning the highest interest. During financial crises (especially 1931-32), large funds have shifted from one centre to another as political and economic conditions in different countries seemed comparatively more or less stable or likely to deteriorate or improve. Cf. EXCHANGE EQUALISATION ACCOUNT.

**Timisoara**: see TEMESVAR.

**Timok**, riv., Yugoslavia (106 m.), rt. trib. of Riv. Danube; rises in Balkan Mtns.; lower reaches form frontier between Yugoslavia and Bulgaria.

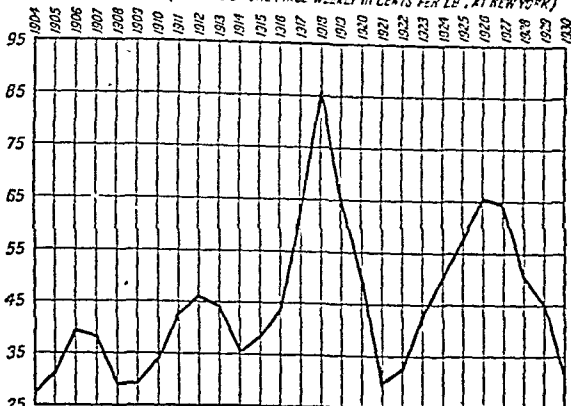
**Timor**, isl., Malay Archipelago, largest of Lesser Sunda isls.; separated from Australia by shark-infested *Timor Sea*; 12,700 sq.m.; pop., 820,600 (Papuan; 885 whites); W. part Dut. (5,400 sq.m.; pop., 371,050); cap. and port Kupang (pop., 6,240); E. part Portuguese (7,300 sq.m.; pop., 449,550); cap. and port, Dilli (pop., 3,100). Exports coffee, copra, sandalwood, wax.—On England-Australia air route.

**Timothy**, (N.T.) close friend of St. Paul; his companion during imprisonment. *Epistles to T.*, (2), Pastoral epistles (q.v.) from St. Paul to T.; 2nd cntg. personal details.

**Timur**: see TAMERLANE.

**Tin**, chem. element; metal; symb. Sn; sp.gr., 7.3; at. wt., 118.7; melting-point, 231.9°C. Lustrous, silver-white, highly malleable and ductile, takes high polish, almost unaffected by atmosphere; found in small quantities in native state; principal sources are *tinestone* or cassiterite, the oxide, and *tin pyrites* or stannite, the sulphide; tin ores found in Cornwall and many other places; used for plating sheets of iron (*tinplate*) and for making many alloys, e.g., bronze, pewter. **Tinfoil**, tin rolled out to thinness of paper, used for packing. Rapidly being displ. for most purposes by aluminium. **T-**

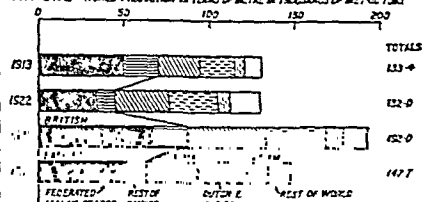
# PIG TIN PRICES (AVERAGE OF ONE PRICE WEEKLY IN CENTS PER LB. AT NEW YORK)



Fluctuations of price due to: 1. Changes in demand and to expense and therefore rise in price of tin. 2. Demand or supply may cause fluctuations in price.

**pest**, (metall.) gradual change of white metallic tin into *grey tin*, wh. is the more stable form at ordinary temperatures. Contact with grey tin causes the transformation to begin and continue; a precaution is to cool tin (pewter) objects quickly after casting,

## TIN ORE. WORLD PRODUCTION IN YEARS OF METAL IN THOUSANDS OF METRIC TONS



Post-war production affected by restriction schemes; when these ceased to operate production advanced rapidly

also to avoid contact with "infected" objects. **Tinplate**, thin sheet iron or steel ("black" plate) coated with pure tin by dipping into molten metal. Largely used for "tin" cans, boxes, etc., cheap household utensils, toys, etc. **T.-plate printing**: see LITHOGRAPHY. **Tinsel**, glittering matl. composed of thin strips or shreds of metal, used for trimmg., esp. of theat. costumes; thin textile matl. interwoven with metal threads.

**Tincture**, (med.) alcoholic solution of a drug, more dilute than an extract, e.g., T. of myrrh.

**Tinder**, inflammable material, esp. that formerly used to obtn. light from a spark-stuck from flint and steel; dried, scorched wood or fungus or scorched linen impregnated with saltpetre. See FIRE.

**Tine**, prong of antler of deer, etc.

**Tinning**, (tech.) process by wh. sheet-iron is coated with tin by dipping it in a bath of



molten tin; used chfly. in manuf. of tin-plate: smaller articles in the mass are coated by electroplating them with tin, or boiling with acid potassium tartrate and granulated tin.

**Tintagel**, par., on coast N. Cornwall, Eng.; pop., 1,320; ruined cas. (Norman walls), tradl. b.-place Kg. Arthur.

**Tintern Abbey**, Cistercian ruin (1131), Monmouthsh., Eng., on Riv. Wye.

**Tintoretto** (Ja- Tintoretto, Self-portrait  
**copo Robusti**) (1518-94), Ital. painter; frescoes in Scuola di San Rocco.

**Tip-lorry**, a vehicle that can be unloaded by tipping up one end of body. **T.-wagon**, appliance for automatic unloading of railway trucks.

**Tipperary**, 1) co. in prov. of Munster, I.F.S.; area, 1,642 sq. m., div. into *N. Riding* and *S. Riding*; surface generally level, but contains *Galtee Mtns.* (3,000 ft.) in S.W.; agric. and dairy-farming (esp. in fertile *Golden Vale*); cap., *Clonmel*. 2) Tn. in Co. Tipperary; pop., 5,550; dairy produce.

**Tippoo Sahib** (1753-82-99), Sultan of Mysore; succ. his father, Hyder Ali, 1782; provoked 2nd Mysore War by attacking Travancore, 1789-90; deftd. by Cornwallis, 1791; ceded half his territory; killed in storming of Seringapatam, 1799.

**Tipton**, urb. dist., Staffs, Eng., 8 m. N.W. Birmingham; manuf. tn.; pop., 35,800.

**Tirah**, mountainous dist., N.W.F.P., India, S. of the Khaibar Pass; inhab. by Afridis and Orakzais; pacified by Brit. in T. campaign, 1897.

**Tirana**, 1) Cap. of Albania; pop., 12,455. 2) Albanian prov.; 328 sq.m.; pop., 57,790.

**Tirconail:** see DONEGAL.

**Tiresias**, famous blind seer of Thebes in anc. Greece.

**Tirnov:** see TRNOVO.

**Tiro**, Marcus Tullius, Rom. freedman and private sec. of Cicero; took down his speeches in short-hand of own inv. (*Notae Tironianae*), the 1st known system of short-hand.

**Tirol:** see TYROL.

**Tirpitz**, Alfred von (1849-1930), Ger. adm., creator of Ger. Imperial Navy; enlarged Kiel Canal for passage of battleships; advoc. unrestricted submarine warfare, 1917.

**Tirso de Molina** (1571-1648), Span. dramat.: *Don Juan*; *El Burlador de Sevilla*.

**Tiryns**, anc. Achaean city, Peloponnesus, Greece, on E. side of Argolic Plain; prehis-

toric fortress built on a natural ridge; cyclopean walls with galleries; royal palaces (16th-13th centuries B.C.); resemblance to "House of Odysseus" in Homer); excavated by Schliemann and Dörpfeld in 1884, and by Ger. School in Athens since 1908. Trad. fndd. by Proetus, brother of Acrisius, Kg. of Argos; his successor Perseus fndd. Mycenae; declined after Dorian invasion (c. 1100 B.C.); destroyed by Argos, 468 B.C.

**Tisa, Theiss**, riv. (596 m.), centr. Europe. left trib. of Danube; rises in N.E. Carpathians, flows through lower Hungary; navig. 285 m.; fishing.

**Tishbite, The**, (O.T.) designation of Elijah (q.v.).

**Tisiphone**, one of the Eumenides (q.v.).  
**Tissue**, (physiol.) distinct organic structure formed of a collection of similar cells.

**Tisza**, Istvan, Ct. (1861-1918), Hung. statesm.; Pr. Min. 1903, '13-17; murdered by soldiers in Ct. Karolyi's Revolution.

**Titanic**, British White Star liner (45,000 tons), in its time largest ship afloat; sunk on maiden voyage across Atlantic after striking iceberg (15 Apr., 1912); 1,503 lives lost of 2,224 on board, among them being W. T. Stead (q.v.) and C. M. Hays, pres. of the Grand Trunk Railway.

**Titanium**, rare chem. element; sym. Ti; at. wt., 47.9; sp. gr., 4.5; occurs as an oxide; used for purifying steel; also as **T. white**, purified oxide, a pigment of increasing importance.

**Titans**, Gr. divinities, children of Gaea (Earth) and Uranus (Heaven).

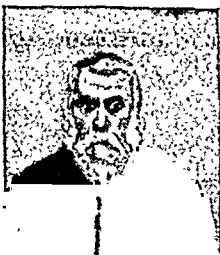
**Tithe**, (eccles.) inheritance attached to an estate of land and due to eccl. personage; originally roth part of all fruits due to God and conseq. to His Church for its maintenance.

**Tithonus**, (Gr. myth.) beloved of Eos (Dawn), who obtained for him gift of immortality, but without perpetual youth; acc. to one legend he became a grasshopper.

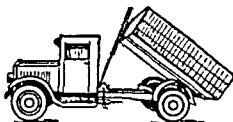
**Titian** (**Vecellio**) (1477-1579) Ital., painter: *Assumption of Our Lady*; *The Tribute-Money*; *Venus*; *Sacred and Profane Love*.

**Titicaca**, lake in S. Amer. on frontier of Peru and Bolivia, 12,506 ft. abv. sea-lvl. (most elevated nvgl. lake); 3,245 sq. miles.

**Titlark**, or meadow-pipit: see PIPIT.



Tintoretto, Self-portrait



Tip-lorry



Tirpitz



Titian, Self-portrait

**Title**, 1) inscriptn. put over anythg. as name by wh. it is known, esp. name of lit. or artistic work; heading descriptive of a statute by wh. it is known. 2) Appellation of dignity, distinctn. or honour. 3) That wh. constitutes a just cause of exclusive possessn.; right.

**Titration**, (chem.) method of determining amount of any substance in given volume of liquid, e.g., amount of acid in water. To measured volume of liquid is added gradually a "standard" solution of some substance, e.g., alkali, which reacts with substance, amount of wh. is to be determined. When the "end-point" is reached (determined by colour, indicator or electr. method), exact amount of standard solution has been added to react with unknown amount of substance. Standard solution is added from graduated burette, so that amount used can be at once read off, and corresponding amount of substance calculated. Standard solutions are made so that equal vols. are equivalent. A normal solution contains the molecular weight in grams of a mono-basic acid or alkali in 1 litre; deci- and centi-normal solutions, 10 and 100 times weaker, are also used (designated N/10, N/100).

**Tits**, a numerous family of small, brightly plumaged passerine birds occurring throughout Europe, Africa, Asia, N. and Centr. Amer., but not Australia. Typical British species are the great, blue, cole, crested, and marsh tits; all active, engaging little birds, and most valuable as being devourers of vast numbers of insects.

**Tittoni**, Tommaso (1855- ), Ital. statesm.; For. Min., 1919; deleg. on Council and Assembly, L. of Nations.

**Titular**, in title alone, e.g., **T. Prince, Bishop**, etc., one who does not perform the functions of the nominal office.

**Titus**, 1) (N.T.), Gentile assistant of St. Paul. *T. Epistle to*, pastoral epist. (q.v.), from St. Paul, with instructions as to eccles. organisation and discipline. 2) **T. Flavius Sabinius Vespasianus** (c. A. D. 40-81) Rom. Emp., (79-81) s. of Vespasian (q.v.); captured Jerusalem.

**Tiu**: see TUESDAY.

**Tivoli**, **Tibur**, tn. on Riv. Anio (waterfalls 315 ft.), 18 m. E. of Rome; pop., 15,000; in antiq. pop. resort of wealthy Romans; Hadrian's Villa; Villa d'Este; cathed.; 15th-cent. castle on site of Rom. amphitheatre.

**Tl**, (chem.) symbol of thallium.



Great Tit



Emp. Titus

**Tlemcen**, tn., Algeria, 70 m. S.W. Oran; pop., 46,100; alt. 2,500 ft.; mosques; ruins in suburbs; trading centre; manuf. cloth, carpets, leather goods; fl. 13th-15th cent.; taken by Fr. 1842.

**T.N.T.**, abbr. for Trinitrotoluol (q.v.).

**Toad**, tailless amphibian, like a frog in general shape, but usually with a warty skin; terrestrial in habit except during breeding season. Widely distributed over greater part of world. Two British species are: **Common t.** (*Bufo vulgaris*) and the **Natterjack t.** (*B. calamita*). Useful on account of large number of insects, worms, and slugs they devour. See also MIDWIFE TOAD. **T.-**



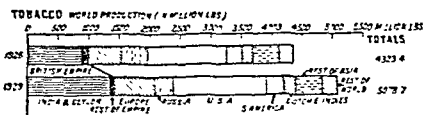
Toad]

**flax**, *Linaria vulgaris*, European plant with grass-like leaves and yellow flowers; grows about 2 feet high; also known as *butter-and-eggs*. **T. in the hole**, slices of meat, sausages, chops, or steaks, laid in batter and baked in the oven.

**Toadstool**, popular name for various fungi, other than mushrooms; esp. applied to those wh. are poisonous.

**Toast**, to drink a person's health; so called from anc. custom of placing piece of toast in bottom of glass. **T.-master**, official at pub. dinners who calls names of those to be *toasted*.

**Tobacco**, solanaceous plant, *Nicotiana tabacum*, annual, with large ovate or lanceo-



Increase in world production due to incr. in Brit. Empire; now close rival of U. S. A.

late leaves and pink or white flowers. Cultivtd. in N. Amer. (Virginian), Cuba (Havana), Macedonia (Turkish), and elsewhere. Leaves are dried and allowed to ferment, and are then subjected to various processes before being used for smoking in form of cigars, cigarettes, or as pipe T.; also made into *snuff* (q.v.). Contains the poisonous alkaloid *nicotine*, used to some extent in medicine, but chfly. as insecticide in horticulture. See also diagrams next page.



Tobacco-plant

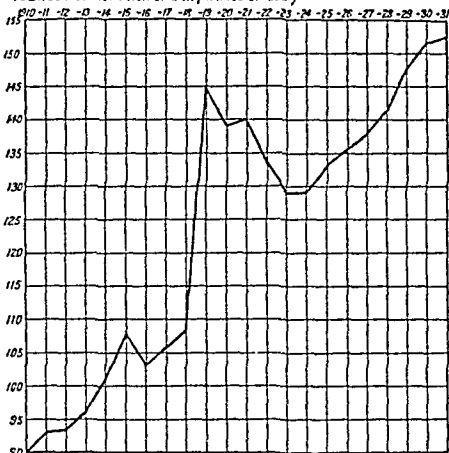
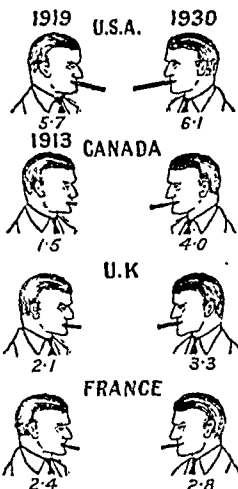
**Tobias**, centr. fig. of apocr. bk. of *Tobit*. **Tobit**, **Book of**, (Apocr.) story of adventures of T. and his son Tobias, Israelites of the Assyrian captivity.



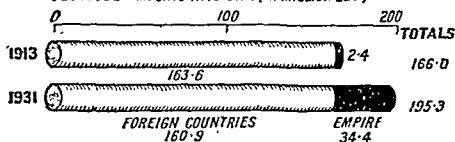
Toboggan

**Toboggan**, hand-sledge, for coasting down snow-slopes, etc.

TOBACCO CONSUMPTION OF U.K. (IN MILLION LBS.)

TOBACCO: CONSUMPTION  
IN LBS. PER HEAD OF POPULATION

TOBACCO: IMPORTS INTO U.K. (IN MILLION LBS.)



Consumption of Canada and U.K. considerably higher than pre-war. U.S.A. heaviest smokers, proportion of total used for chewing, though absolutely large, being relatively insignificant. During World War U.K. consumption rose suddenly, and incr'd. smoking of women has brought total to a new high level. Meanwhile proportion of Empire tobacco consumed steadily increases.

**Tobolsk**, tn., Uralsk, Russian R.S.F.S.R., on Riv. Irtysh; pop., 20,485. First place of banishment of Tsar Nicholas II, 1917.

**Toby jug**, tankard or jug of porcelain in form of squat man dressed in 18th-cent.

costume, wearing three-cornered hat wh. forms brim of vessel; used for ale in 18th century.

**Tocantins**, riv. (1,500 m.), Brazil; rises in Goyas Highlands, flows into Para estuary, N. Atlantic.

**Toccata**, (mus.) free composition for organ or piano, generally to display performer's "touch" or virtuosity.

**Toc H**, popular name for *Talbot House* (from signallers' method of pronouncing T.H.), orig. a soldiers' club, indd. at Poperinghe (1915) in memory of Gilbert Talbot, s. of Bp. of Winchester. Under Rev. Philip Clayton, C.H., became rest centre during World War; London house establd. by him, 1920, as settlement and centre of good works for men of all denominations, whence branches (*Marks*) set up throughout England. Incorp'd. by Royal Charter, 1922. Lamp of Maintenance burning in every branch; flame renewed annually by Pr. of Wales, patron of movement.

**Tocqueville**, Alexis, Ct. de (1805-59), Fr. politic. histor.: *Democracy in America*.

**Tod** (wool wt.), 28 lbs., or 1 quarter.

**Toddy**, 1) var. of palm-tree, closely allied to date-palm, ind. in E. Indies; juice boiled down for date sugar, and also distilled to form *arrack* (q.v.). 2) Drink of strong spirits, usu. rum, with hot water and sugar.

**Tödi**, peak of the Glarner Alps, in canton of Grisons, N.E. Switzerland; 11,887 feet.

**Todmorden**, mkt. tn., border of Lancs and Yorks; pop., 22,200; iron foundries; cotton manufactures.

**Toga**, woollen robe of anc. Rom.; gen. white; **T. virilis**, worn after age of 14 as symb. of manhood.

**Toggle joint**, (mechan.) link-motion by which small force can be made to produce great pressure. Consists of two links pivoted together, and at their outer ends to one or two movable pieces. Force is applied at right angles to length of links, and at point at wh. they are linked together.

**Togo**, Heihachiro, Ct. (1847-1912), Jap. Adm.; destroyed Russ. Baltic Fleet at Tsushima (q.v.), 1905.

**Togoland**, terr., W. Africa, betw. Gold Coast and Dahomey; former Ger. colony, now divided under mandate betw. Britain and Fr.; *E. Togoland* (20,100 sq.m.; pop., 765,000; cap., *Lomé*) admin. by Fr. as separate colony; *W. Togoland* (13,040 sq.m.; pop., 188,100; cap., *Ho*), admin. by Britain as part of Gold Coast; exports cocoa, raw cotton, palm-oil.

**Toise**, old Fr. linear meas., 2.10 yds. (1.92 metre).



Toby Jug



Toga

**Tokay**, tn., N.E. Hungary, at conflu. rivs. Tisa and Bodrog; pop., 5,000; vineyds. produce Tokay wine.

**Token coinage**; see COIN.

**Tokushima**, 1) Prefecture of Shikoku, Japan, (1,596 sq.m.; pop., 689,815). 2) Sept. on N. coast of Shikoku; pop., 74,550; enamel and lacquer.

**Tokyo, Yedo**, 1) Prefecture of Hondo, Japan (827 sq.m.; pop., 4,485,000); tea plantations. 2) Cap. of Japan, on Bay of T., E. coast of Hondo; pop., 2,294,600; palace; Buddhist and Shinto temples; univ.; parks and gardens; manuf. metals, textiles, silks, almost destroyed by earthquake, Sept., 1923. **Greater T.** (1932), now third largest city in the world (pop., 5 millions).

**Toledo**, 1) cap., prov. of T., Spain, on Riv. Tagus (Moorish bridges); pop., 26,400; 13th-cent. cathed.; Alcazar; silk and arms factories (*Toledo blades*). Cap. of Castile, 1087-1560. 2) Tn., N.W. Ohio, U.S.A., on S.W. extremity of L. Erie, at mouth of Maumee Riv.; pop., 290,700; rly. junctn.; commerc. centre; coal, clover seed, grain, oil, iron.

**Tolerance**, 1) forbearance in reg. to acts or opinions of others, esp. in relig. matters. 2) (Med.) Ability, owing to habit or constitut. to take large doses of drugs without injury. 3) (Phys.) Latitude allowed in weight, dimensions, etc.; should be indicated on all specifications and drawings. Of essential importance in mass production of parts to be interchangeable.

**Toleration**, disposition to allow freedom of belief, opinions, etc. to others. **T. Act** (1689) granted T. to Protestant Nonconformists in Eng.; extended to Caths. by Cath. Emancipation Act (1829).

**Toll**, tax or duty paid for some privilege; esp. for right to pass along a road, or over a bridge, for use of a market, etc. Also, a portion of grain kept by miller in payment for grinding; this now almost entirely replaced by money payment. **T-gate**, gate placed across high road, kept closed to prevent persons and vehicles from passing until the toll is paid; see TURNPIKE.

**Toller**, Ernst (1893-), Ger. Socialist and dramat.: *Masses and Man*; *Hinkemann*.

**Tolstoi**, Ct. Leo Nicolaiévitch (1828-1910), Russ. author, philos., and soc. reformer on Chr. lines; chf. works—novels: *War and Peace*, *Anna Karenina*, *The Kreutzer Sonata*, *Popular Tales*; plays: *Power of Darkness*, *The Living Corpse*.

**Toltects**, anc. Mexican people, fl. 7th-11th cent. A.D.



Leo Tolstoi

**Tolu, Balsam of**, obtained from *Myrrylon punctatum*; used in perfumes and cough medicines.

**Toluidine**, amido-methyl-benzol,  $\text{CH}_3\text{C}_6\text{H}_4\text{NH}_2$ . Three isomers: **ortho-t.** b.p. 197°; **meta-t.**, b.p. 199°; **para-t.**, b.p. 198°; made by reducing nitrotoluenes; important in chemistry of dyes.

**Toluol, toluene**, (chem.) sym.  $\text{C}_6\text{H}_5\text{CH}_3$ ; b.p. 110.3°. Derivative of benzol (q.v.), inflammable liquid used as a solvent; when nitrated, forms trinitrotoluol (T.N.T.), a high explosive.

**Tom**, 1. trib. of Riv. Ob, W. Siberia; rises Alaskan Mts.; flows thr. Tomsk; frozen mid-Nov. to mid-May; 520 m.

**Tomahawk**, Amer.-Ind. battle-axe; stone or iron.

**Toman**, Pers. gold coin and money of account; equiv. to 10 kran (q.v.), or about 4s. od. (Sr.00).

**Tomato**, *Lycopersicon lycopersicum*, plant of the nightshade fam. from Peru; high climbing plant with yellow flowers and large, edible red or yellow fruit. Formerly called *love apple*.

**Tomback**, copper alloy with a high percent. of zinc.

**Tombigbee River**, right trib. of Mobile Riv., Alabama, U. S. A.; 500 miles.

**Tomsk**, tn., Siberia, Russian S.F.S.R., on Riv. Tom; pop., 92,275; univ., techn. instit., com. and industrial centre; gold, iron, coal deposits.

**Tom-tom**, Indian gong, made of metal.

**Ton**, measure of weight, 20 cwts. (2,240 lbs.). Colloquially, a large quantity. **Short T.**, 2,000 lbs. See METRIC TON.

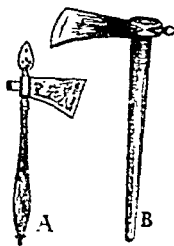
**Tonbridge**, urb. dist. and mkt. tn., Kent, Eng., on Riv. Medway; castle; pop., 16,300; public school for boys, fndd. by Sir Andrew Judd, 1553, contains 490 boys.

**Tonga or Friendly Islands**, archipelago, S. Pacific, 400 m. E. Fiji Is.; Brit. protectorate; 380 sq.m.; pop., 28,500 Tongans, 600 Europeans; exports copra; cap., *Nukualofa*.

**Tongaland**, coastal dist., part of Natal, betw. Swaziland (W.), Zululand (S.), and Port. E. Africa (N.); annexed by British, 1895.

**Tongking, Tonkin**, prov. of French Indo-China; c. 44,750 sq.m.; pop., 7,402,500 (mainly Annamite Buddhists; 500,000 R.C.); mountainous interior; gold, copper, tin, coal; rice-fields in delta of chf. riv., Songkoi; exports: raw silk, rice, coal; cap., *Hanoi*.

**Tongs**, tools for holding firmly gen. hot objects, e.g., blacksmith's, crucible tongs.



Tomahawk

Also, tool for shaping material, *e.g.*, *curling t.* for waving hair.

**Tongue**, (anat.) long, narrow, muscular, sensitive, mobile organ in the mouth, by means of which act of licking is performed and wh. plays a part in swallowing; in man, is princ. organ of taste and helps in mastication and articulation. In many illnesses the tongue is covered with a grey-white coating; in serious diseases (uraemia, typhus, peritonitis, etc.), it is dry and coated with yellow; in scarlet fever, after removal of coating, T. is raspberry red. **T. and groove**, method of joining planks together, each plank being thinned at one edge and having a groove cut in the other, into which thinner edge of next plank fits. *Matchboarding* (*q.v.*) has, in addition, a bead cut on the tongue side.

**Tonic note**, (mus.) principal note of a key and chord based upon it. **Tonic sol-fa method**, a notation adapted from the sol-fa and brought to perfection by Rev. J. Curwen.

**Toning**, (photog.) changing tone or colour of print by subjecting it to various processes, which replace the metallic silver forming the image by various substances, *e.g.* gold, platinum, silver sulphide, mercury sulphide; copper uranium, iron and vanadium compounds.

**Tonka bean**, seeds of *Coumarouna odorata* from Brazil; contain coumarin, used in perfumery and to scent tobacco.

**Ton-miles**, (rls.) weight of freight loaded  $\times$  number of miles carried.

**Tonne**, the metric ton (*q.v.*).

**Tonsillitis**, inflammatory infection of the tonsils, which often become covered by a whitish membrane; accompanied by fever and swelling of the lymphatic glands in the neck; often due to streptococci. T. occurs in diphtheria, scarlet fever, and other diseases.

**Tonsils**, small masses of lymphatic tissue covered by mucous membrane, wh. lie, one on each side, at the back of the throat.

**Tonsure**, act or result of shaving all or part of crown of the head; rite administered in R.C.Ch. to a person on first admission to clerical state or to a monastic order.

**Tontine**, method of insurance by wh. a number of persons divide income accruing from a common fund, the shares of survivors being increased on death of any member, until all are deceased.

**Toole**, John Lawrence (1832-1906), Eng. comic actor; 1st. appd. in London, 1854; appd. at Gaiety Theatre, 1869-74; leased Folly Theatre (Toole's), 1879-1895.

**Tooling**, decoration of leather, etc., by heated tools which give a smooth sunk design. **Blind t.**, simple uncoloured impression; in **gold t.** design is filled in with gold leaf.

**Toowoomba**, inland tn. (2,000 ft.), on Tooling Downs, S.E. Queensland, Australia;

pop., 26,200; health resort in pastoral and agric. district.

**Topaz**, semi-precious stone; aluminium fluosilicate; various colours; red T., *Brazilian ruby*; blue T., *Brazilian sapphire*; smoky T. is a quartz (*q.v.*).

**Topeka**, cap., Kansas, U.S.A., on Kansas Riv.; pop., 64,100; cathed., Washburn Coll. (fndd. 1865); flour mills; printing and publishing.

**Tophet**, (O.T.), place at S.E. end of Vall. of Hinnom near Jerus.; where human sac. offered to Moloch; hence applied to perdition, hell. *See* GEHENNA.

**Topography**, systematic, detailed description of a particular place, as distinguished from geography, wh. deals with larger areas.

**Torah**, (Hebr., law) Jew. name for the Pentateuch (*q.v.*).

**Torbanite**: *see* BOGHEAD COAL.

**Tor Bay**, inlet S. coast of Devon,  $4\frac{1}{2}$  m. wide; on N. Side is Torquay, on S., fishing vill. of Brixham.

**Torch**, source of light, made of resinous substances or tow soaked in oil or tallow; gen. carried in the hand; hence any lamp or light so carrd., esp. if raised aloft. **Torchlight procession**, processions of people carrying Ts. on festive occasions. or, esp. in U.S.A., as polit. demonstration.

**Toreador** (Span.), bullfighter; now called *torero*.

**Tormentil**, trailing, yellow-flowered herb; root used in folk medicine for diarrhoea, dysentery and toothache; also in tanning.

**Tornado**, violent, narrowly localised cyclone (*q.v.*); rotary storm accompanied by whirlwind and cloud resembling waterspout, occurring in W. Africa at begn. and end of rainy season; circles round areas of low atmospheric pressure, leaving the centre calm; reaches speed of *c.* 125 m.p.h.; often causes destructive tides. *See also* HURRICANE; TYPHOON; WATERSPOUT.

**Toronto**, cap., Ontario prov., Canada, on L. Ontario; cathed., univ.; shipping, industrial, commercial, and financial centre; pop., 652,000.

**Torpedo**, submarine projectile with independent motive-power (usu. compressed air) for piercing the hull of an enemy ship below the water-line; the T. has sev. chambers: head with explosive charge, buoyancy chamber, air chamber, engine-room with motive power, depth-gear, steering-gear, freq. reversing-gear operating after a fixed distance has been covered, and sinking-gear. **T.-boat**, small, fast warship low in the



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water with high manoeuvring capacity; up to c. 1,000 tons; fitted with torpedo tubes. **T-b. destroyer** (T.B.D.), large, very fast torpedo-boat.

**Torquay**, munic. bor., S. Devon, Eng.; favourite seaside resort on Tor Bay; pop., 49,200.

**Torque**, (mechan.) turning moment; see **MOMENT**; **COUPLE**.

**Torquemada**, Thomas de (1420-98), Span. friar; Inquis.-Gen. 1483.

**Torrens**, salt lake, S. Australia, W. of Flinders Range; 130 m. by 20; disc. by Eyre, 1841.

**Torres Strait**, channel (c. 80 m.) betw. New Guinea and Australia (Cape York); many isls. and shoals; sailed by Span. adm., Luis Vaes de Torres, 1606.

**Torres**

**Vedras**, tn.,

**Estrema-**

**dura**, Portu-

**gal**, 25 m.

**N.W. of Lis-**

**bon**. **Lines**

**of T.V.**, fort-

ified lines betw. tn. and Riv. Tagus, constructed by Wellington and occupied by Allies in winter of 1810-11.

**Torricelli**, Evangelista (1608-47), Ital. physicist; inv. the **Torricellian Tube**, 1st barometer.

**Torsion**, (mech.) twisting; resistance to twisting of a circ. wire or bar varies as 4th power of diam. for same material. **T. balance**, (phys.) instr. for measuring very small forces, wh. act upon an arm suspended by a wire, T. of wh. measures force on arm. Used for electricity and magnetism (Coulomb), gravity (Cavendish, Eötvös).

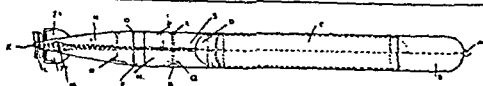
**Torsk**, fish of cod family, usually about 18 in. long, occasionally over 3 feet. Colour on back greyish, tinged with yellow; scales minute; colour very pronounced on margins of fins. Range from Spitzbergen to latitude of Grimsby; abundant in Shetlands, also on N. American coast as far S. as Cape Cod.

**Torso** (in sculpt.), trunk of body without limbs or head; fragment.

**Tort**, civil wrong independent of contract.

**Action in t.**, action in respect of a wrong, not founded on contract.

**Torticollis**, or stiff neck, gen. results from rheumatism; attacks children more of-



Torpedo

A) Pistol. B) Head containing 500 lbs. T.N.T. C) Air chamber, containing air compressed to 2500 lbs. per sq. inch. D) Water chamber. E) Gear for setting depth. F) Generator. G) Gyroscope. H) Buoyancy chamber. J 1) and 2) Vertical rudders. K) Propeller shaft L) Propellers. M) Horizontal rudders. N) Fuel. O) Steering-gear. P) Engine-room. Q) Pendulum weight. R) Hydrostatic valve. S) Balance chamber.

ten than adults; should be treated by application of liniment and avoidance of chill and draughts.

**Tortoises**, oviparous reptiles, having their bodies enclosed in a more or less dome-shaped case of bony armour into which the head and limbs can be contracted when the creature is alarmed or attacked. The different species vary greatly in size, shape, and habit, some living in arid surroundings, others spending much of their time in water; some are carnivorous, others vegetarian. While the period of life varies in different species, the now nearly extinct giant tortoises of the Mascarene and Galapagos isls. were probably the longest lived; and apparently authentic records of upwards of a century exist.



Tortoise

**Tortoiseshell butterfly**, widely distributed. species (*Vanessa*). **Large t.b.**, *V. polychloros*, has red-and-black wings; larvae feed on leaves of trees. **Small t.b.** (*V. urticae*), more brightly coloured; larvae feed on stinging nettles. Both species found in temperate regions.

**Torun, Thorn**, tn., Poland, cap. prov. of Pommerellen, on rt. bank Riv. Vistula; pop., 39,425; metal and leather works. Fndd. by Teutonic Order, 1231; Polish, 1466; Prussian, 1793-1807 and 1815-1918.

**Tory**, name given, at first in derision, to Crt. party in Eng. twds. end of 17th century.

After acc. of Geo. I (1714) div. into Hanoverian Tories and Jacobites. Superseded by Conservative abt. time of Reform Bill (1832). Ant.: *Whig*.

**Tosca**, opera by Puccini (q.v.), 1900.

**Toscanini**, Arturo (1867 - ), Ital. conductor.

**Total**, (math.) number which expresses addition of several quantities.

**Totalisator** ("Tote," or "Pari-mutuel"), equipment for system of betting which dispenses with bookmakers. Stakes received in an official registry, and the total (less a percentage) divided among winning backers in proportion to stakes. See Ill. next page.



Torquay



Torsk



Greek Torso of a Woman (Louvre)



Toscanini

**Total reflection**, (phys.) law by wh. light can only pass from a medium of higher re-

sensitive as some other parts, e.g., the centre of back; degree of sensitiveness in any part is ascertained by an *aesthesiometer*, an instrument consisting of two compass joints which can be set at graduated distances from each other, so as to ascertain smallest separating distance at which they can be distinguished as two points.

**Touch-me-not**, *Impatiens noli-mechere*, yellow balsam; flowers pale yellow, orange spotted; so called because the valves of the capsule curl when touched.

**Touchstone**, *Lydian stone*, material for testing quality of gold alloys, by comparing colour of streak made upon hard black stone with that made by alloys of known composition.

**Touchwood**, woody fungus, *fn.* on trees; used as tinder.

**Toujours perdrix** (Fr.), always partridge; tedious repetition; too much of a good thing.

**Toul**, fortified. tn. in dépt. of Meurthe-et-Moselle, Fr.; pop., 12,000; on Riv. Moselle and Rhine-Marne canal; lace and faience factories.

**Toulon**, fortified port, S. France, dépt. Var, on Mediter.; pop., 115,000; naval base, docks, arsenal, shipb.; fisheries; exports salt, fruits, wine.

**Toulouse**, city, S.W. Fr., cap. dépt. of Haute-Garonne, on Riv. Garonne and Canal du Midi; pop., 180,800; abpric.; univ. (since 1229); veterinary and agric. schools. In 5th cent. seat of Visigoth kings. **Battle of T.**, last battle of Peninsular War; allied victory, 1814.

**Toulouse-Lautrec**, Henri de (1864-1901), Fr. painter and illustrator.

**Toupée**, top part of a wig; a small wig; frame of false hair for top of head.

**Touraine**, old prov. of Fr., roughly corresponding to dépt. of Indre-et-Loire. Last duke, Francis duc d'Alençon, d. 1584.

**Tourcoing**, industr. tn. in dépt. of Nord, Fr.; pop., 81,400; cotton, linen.

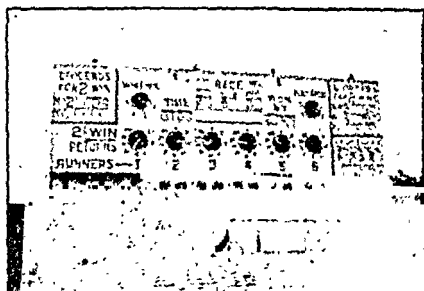
**Tour de force** (Fr.), feat of skill or strength.

**Tourmaline**, a composite mineral, the various coloured varieties of wh. are used as gems; often transparent; has property of polarising transmitted light and is used for making certain optical instruments, e.g., T. tongs.

**Tournai, Doornik**, tn., prov. of Hainaut, Belgium, on Riv. Scheldt; pop., 36,000; cathed.; textile industry. Ancient seat of Merovingian kings.

**Tournament, tourney**, mediaeval sport, consisting of mock combats, esp. tilting with lances. Now a contest in games of skill (e.g., tennis tournament).

**Tourniquet**, device for applying pressure to an artery by means of a screw, in order to arrest bleeding.



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Totalisator

fractive index (density) to one of lower if angle of incidence is less than *critical angle of total reflection*; otherwise it is totally reflected back into the denser medium. Glass to air, the angle is c. 42°.

**Totaquin**, see CINCHONA.

**Totem**, species of animal, plant, or inanimate object assoc., among primitive peoples, with social units such as the clan; members of same totemic group often believed to be descended from common ancestor mystically linked with them; hence cannot intermarry; rituals and tabus (e.g. prohib. of eating) gen. connected with totem. **Totemism**, body of beliefs, customs, and practices bound up with possession of totems.

**Totnes**, munic. bor. and mkt. tn. on Riv. Dart, Devon; pop., 4,500; Norman castle.

**Tottel's Miscellany**, earliest Eng. poetical anthology, a collection of "Songes and Sonnettes written by the ryght honorable Lorde Howarde, late Earle of Surrey and others," pubd. by Tottel, 1557.

**Tottenham**, urb. dist., Middx. Eng., part Greater London; pop., 157,800.

**Tottenham Hotspur**, Eng. association football club; began as a schoolboys' club, 1882; adopted professionalism, 1895; won Assoc. Cup 1901 and 1921.

**Touat**, group of oases in N.W. Sahara.

**Toucans**, large birds of Centr. and S. Amer., remarkable for their large, parti-coloured bills and curious feathery tongue, the bill light in structure, being composed of empty cellulose. Though possessing typical scansorial (climbing) foot, T. does not climb like the woodpecker, but proceeds by great hops. Sociable; forest dwellers, feeding on fruit.



Toucan

**Touch**, sense by which the contact, pressure, and temperature of a body is perceived and distinguished by sensory nerves situated mainly upon the surface of the skin and tongue; varies in acuteness at various parts of the body, the tongue being abt. 60 times as

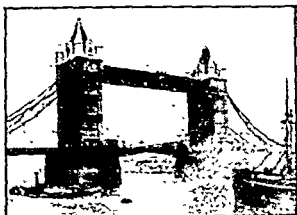
**Tours**, cap. dépt. of Indre-et-Loire, Fr., on Riv. Loire; pop., 77,200; abpric.; mediaeval bldgs.; cloth, iron, and silk manuf. Decisive victory of Charles Martel over Saracens, 732; seat of Fr. Provisional Govt. (Franco-German War), Sept.-Dec., 1870.

**Toussaint l'Ouverture**, Dominique François (1743-1803), W. Ind. Negro leader; commander of revolution in Haiti, 1797, expelled Fr., Brit. and Spaniards, and brought peace and prosperity to the isl.; captured by Fr., 1802; d. in captivity.

**Tout comprendre c'est tout pardonner** (Fr.), to understand all is to forgive all. **T. court** (Fr.), shortly; abruptly. **T. ensemble** (Fr.), general effect as a whole. **T. est perdu fors l'honneur** (O. Fr.), all is lost save honour; words attributed to Francis I after his defeat at Pavia (q.v.).

**Tow**, (naut.) 1) to draw (a barge, etc.) along, esp. in canal or narrow riv., by a rope pulled by horse or person on bank; used also of a ship or motorcar that draws another when disabled or in difficulties. 2) Short, uncombed waste from flax or hemp; used for coarse materials, packing, caulking, stopping up cracks, cleaning (gun-barrels).

**Tower Bridge**, bridge spanning Thames below T. of London (q.v.); blt. 1885-94; footway 142 ft. above water level (now closed); roadway beneath, with central span of 200 ft., can be raised to admit passage of vessels.



Tower Bridge

**Tower of London**, on bank of Thames, just outside city walls; fortress, palace and prison, begun by William I, added to by successive monarchs; covers 88 acres; museum of arms and armour; Crown jewels. Wardens



Tower of London

of Tower ("Beef-eaters") wear 16th-cent. uniform. Garrisoned by Foot Guards. **Tower Subway**: see THAMES.

**Towing path**, path alongside rivers and canals for animals, people, or tractors, towing barges.

**Town**, large group of houses and other bldgs. distinguished by a definite name, larger than a *village*, but not entitled by charter or usage to the name of *city*. **T. clerk**, chief official in borough. Orig. clerk to governing body, and in modern times usu. a lawyer; tends to become gen. manager of town's business. **T. council**, governing body of town or city. **T. crier**, person employed by a municipality to make public announcements. **T. hall**, building in wh. business of a municipality is transacted. **T. planning**, orderly development of urban areas to secure suitable and artistic distrib. of buildings, streets, and open spaces; cities have been systematically planned from early ages, e.g., anc. Babylon, Cyrene, Pompeii, Alexandria; mediaeval town gen. picturesque rather than symmetrical; much interest in T.P. in 17th cent., as in Wren's plan for rebuilding London after Great Fire; Washington, U.S.A., planned (1791) by L'Enfant; in 19th cent., with growth of railways, city bldg. tended to formlessness; Paris replanned under Haussmann, c. 1853; interest in T.P., esp. in Ger. and Sweden, revived in early 20th cent., and has grown everywhere since World War; attempts now being made in Eng. and Amer. to check disorderly growth of suburbs round large towns; in Eng. comprehensive provision made for schemes by *Town and Country Planning Act* (1932).

**Townsend, Mount**, peak, Kosciusko group, Australian Alps; highest mtn. Australia; 7,350 feet.

**Townshend**, Sir Ch. Vere Ferrers (1861-1924), Brit. gen.; com. 6th Div. in Mesopotamia; captd. Kut, 1915; besieged and surrendered to Turks, 1916.

**Townsville**, port, Queensland, Australia, on Cleveland Bay, pop., 31,800.

**Towton**, vill., W. Riding, Yorks, Eng. *Battle of Towton*, Yorkist victory, 1461.

**Towy**, riv., S. Wales; rises Cardiganshire, flows past Llandovery and Carmarthen into Carmarthen Bay; length, 68 miles.

**Toxicology**, science of poisons. **Toxin**, poison, e.g., bacterial poison.

**Toynbee**, Arnold (1852-83), Brit. economist; tutor at Balliol College, Oxford, 1878; lectures to working men pub. as *Industrial Revolution*, 1884; **T. Hall**, social settlement and centre for adult education, in Whitechapel, London, fndd. 1885 to commemorate him.

**Toyokuni**, Utagava (1769-1823), Jap. artist; coloured woodcuts of *Actors*.



General Townshend



**Tracery**, (archit.) decorative, open stone-work, usu. in upper part of windows; fnd. esp. in Gothic archit., also in Eastern, e.g. pierced marble screens of Taj Mahal (q.v.).



Tracery

**Trachea**, (biological) wind-pipe; part of air-passage in vertebrates betw. lungs and back of mouth; respiratory tubes of insects and other Arthropoda.

**Tracheid**, (bot.) spiral or annular vascular tissue of plants.

**Tracheotomy**, (surg.) operation of opening the trachea or wind-pipe; a tube leading to the outer air is placed in the wind-pipe, so that the patient is not suffocated by obstruction in the throat. T. is performed in cases of diphtheria affecting the larynx.



Trachea

**Trachoma**, highly contagious disease of conjunctiva of the eyes; prevalent in Egypt.

**Trachyte**, light-coloured volcanic rock free from quartz; readily decomposes; has very rough surface when fractured; mostly of Tertiary period; often forms isolated round-topped mountains.

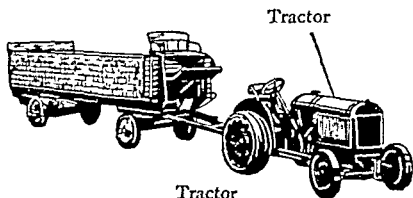
**Tracing**, reproductn. of drawing on thin transparent paper or linen, by laying same on drawing and repeating lines by hand. **Tracing cloth**, fine transparent linen, with glazed (or otherwise prepared) surface to take ink.

**Track**, 1) permanent way for rly. trains, or tramcars; 2) course upon which any kind of races take place.

**Tract**, 1) indefinite extent of land or water. 2) Written discourse or dissertatn., esp. short treatise on practical relig.; hence relig. pamphlet, distributed by relig. tract associations.

**Tractarian movement**: see OXFORD MOVEMENT.

**Tractor**, locomotive engine, steam or internal combustion; used for driving ploughs,



Tractor

Tractor

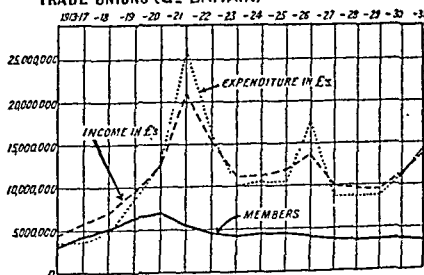
threshing-machines, etc., and for drawing heavy loads. See also CATERPILLAR VEHICLES.

**Trade associations**, combinations of producers and traders constttd. for protec. of their common interests; e.g., Mining A. of

Gl. Britain. **T. bill**, term used for bill of exch. drawn in connec. with actual commercial transactn. to distinguish it from accommodation b. or bank b. (qq.v.). **T. board**, joint body of employers and workmen set up in Gl. Brit.; in certain industries, to fix minimum wage rates for labour and oversee industrial conditions, estab. under Acts of 1909 and 1918 and supervised by Ministry of Labour. **T. customs**, usual procedure in commercial intercourse; T.C. are taken into acct. by crt. in legal disputes; and may be valid even if not known to the parties. **T. Indemnity company**: see CREDIT, INSURANCE. **T. mark**, registered name, symbol, or device used to distinguish goods made by one manufacturer from those made by others. See PATENTS. **T. policy**, whole body of State measures taken to regulate and encourage trade, esp. foreign trade (commercial treaties, consulates, etc.). Two main directions of T.P.: 1) *Free Trade*, based on the principle that each country shall specialise in production of those goods wh. it can produce best and most economically, and that these goods be exchanged free from tariffs betw. the nations; 2) *Protective tariff system*, intended in 1st place to encourage and strengthen home produc.; hence duties levied on importation of foreign products. At present time, almost all States adhere to Protective T.P.; see CUSTOMS DUTIES; MERCANTILISM. **T. school**, school in wh. instruction is confined to preparation for partic. industry.

**Trade unions**, assocs. of employees for collective action and bargaining with em-

TRADE UNIONS (GT BRITAIN)



World War brought rapid increase in membership. Expenditure and income largely dependent on industrial situation: in years of strikes or heavy unemployment, expenditure goes ahead of income, as seen in 1921, 1926, and 1937. In such years recourse is made to reserves.

employers concerning wages, hrs., etc.; acting also as friendly socs., organising polit. representation of labour, and aiming at general improvement of indus. conditions. **HISTORY**: T.U. movement began early in 18th cent., and was greatly stimulated by Indus. Revolution (q.v.). **Combinations Act** (1799) made existence of any combination for improvement of indus. condns. illegal; 1825, unions legal-

ised for discussion of wages and hrs. of work only; many unions formed but attempt at federation (1834) failed; 1860 *sqq.* revival of T.U.s. in form of highly disciplined, well-to-do skilled unions; 1871; united action "in restraint of trade" legalised, and union funds protected by registration as "Friendly Soc.s."; 1874, "peaceful picketing" permitted; 1889, great Dock Strike led to inclusion of unskilled labour in T.U. movement; 1900, *Taff Vale* decision held unions liable for damage committed by their members, causing T.U.s. to enter politics in support of Lab. party; 1906, decision revoked by *Trade Disputes Act*, giving T. unions immunity from such actions; 1909, *Osborne judgment* decided that union funds might not be used for polit. purposes; *Trade Union Act* (1913) permitted use of Union funds for any "lawful purpose," but polit. expenses must be met from special fund from wh. members might claim exemption ("contracting out," for which "contracting in" was substituted, 1927); 1927, Gen. strike made illegal, indir. members of T.U.s. made liable for damage by strike. In 1932 there were 1,098 T.U.s. in U.K. with total membership of 4,441,000.

**Trades Union Congress**, Brit. annual conference of delegates from most T.U.s., establ. 1868. The *Gen. Council* of the T.U.C., created 1920, and elected ann., is the exec. body of T.U. movement. In 1933 delegates were sent by 208 unions; membership, 3,368,000.

**Tradescantia**, Amer. ornamental plant; some varieties used in Europe as decorative hanging plants.

**Trade winds**, characteristic winds blowing almost continuously on tropical seas; from the N.E. betw. 10° and 30° N., from the S.E. between 0° and 25° S.; the Doldrums (*q.v.*) lie betw. these. See MONSOONS.

**Trade, World**, value in both impts. and expts. has increased since 1913, but the wide diff. betw. figs. of 1913 and 1924 is chfly. due to fall in purchasing power of money. The diagrams, pp. 1070 and 1071, and table are based on the official returns of 175 countries or trading areas; in using them it must be remembered that boundary changes and the creation of new states since the World War have, in some cases, caused trade wh. was formerly "domestic" to be recorded as "external," and vice versa, with the consequence that—quite apart from changes in val. of money, wh. tend to vitiate comparison betw. years—figs. for 1913 are not strictly comparable with those for post-war years. Currencies in all cases have been reduced to sterling at par values.

Since 1929 contraction in World Trade has

been progressive and excessive, as the statistics for the foll. countries show:

In milln. £s.	1930	1931	1932
U.K. Imports	1045	861	703
U.K. Exports	571	390	365
U.S.A. Imports	791	500	356
U.S.A. Exports	965	634	400
France Imports	423.6	340.5	240.8
France Exports	345.7	245.6	158.7

**Trading companies**, private companies occupied with overseas trade, esp. in 16th and 17th cents.; often granted comprehensive powers and rights (own militia) for purpose of carrying out colonial economic policy. Famous example: *East India Company (q.v.)*.

**Traducianism**, theol. doctrine that the soul is procreated in the act of generation together with the body; cf. CREATIONISM.

**Traduttore traditore** (Ital.), a translator is a traitor; i.e., no translation can faithfully represent the original.

**Trafalgar**, Cape, Span. promontory betw. Cadiz and Gibraltar, on the Atlantic. **Battle of Trafalgar**, naval victory of Nelson (himself slain) over combined French and Spanish fleets, 21 Oct., 1805.

**Trafalgar Square**, large open space betw. Strand and Pall Mall, London; Nelson Column, 142 ft. high (1840-43), bearing statue of Nelson (17 ft.); National Gallery (*q.v.*); S. Africa House (see STRAND).

**Traffic**, term embracing all trade and commerce; usu. limited to the movements of persons, beasts of burden, and vehicles along roads, railways, waterways, and air routes. Increase in Gt. Brit. in number of motor vehicles, and consequent congestion of roads, esp. in urban areas, led to appointment in 1928 of Royal Commission to consider this problem, and many of their recommendations were embodied in the Road Traffic Act, 1930; see ROAD. See also LONDON PASSENGER TRANSPORT BOARD.

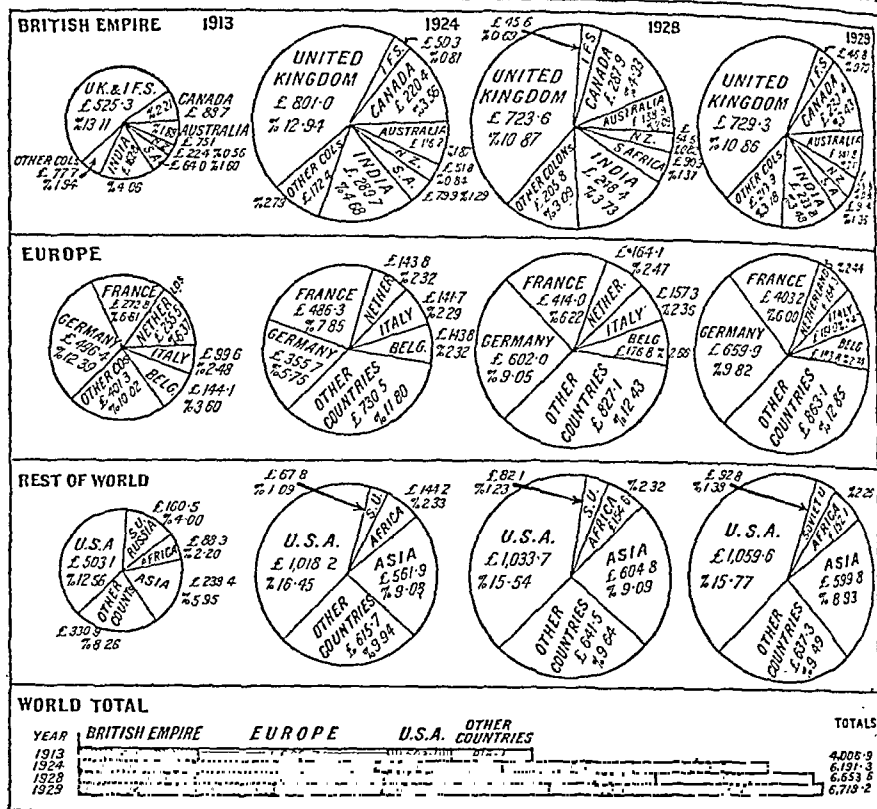
**Traffic commissioners**, officers apptd. under Road Traffic Act (1930), to control omnibuses and motor coaches in Eng. and Wales. One commissioner for London; elsewhere bodies of 3 commissioners cover groups of counties.

**Tragacanth**, gum obtained from a leguminous and shrublike plant having papilionaceous flowers, *Astragalus gummifer*. Used in pharmacy to suspend emulsions, in confectionery, and as a size in calico-printing, etc.

**Tragedy**, orig., like comedy, fm. Athenian festivals in honour of Dionysus (*q.v.*); drama in prose or verse w. elevated theme and diction and unhappy ending.



Tradescantia



World Trade: Exports

**Tragi-comedy**, drama partakg. of nature of both T. and C. i.e., with tragic situations wh. right themselves and end happily, e.g., Shakespeare's *Much Ado about Nothing*.

**Tragopan**, large species of pheasant, fnd. in N. India and China; very brilliantly coloured, with two fleshy blue horns above eyes in male bird.

**Trail**, part of gun-carriage (q.v.) extending to the rear. Fitted with a *spade* to give firm purchase; sometimes split so that the piece may fire at a higher angle. Hooked on to limber (q.v.) or tractor in transport.

**Trailers**, goods-carrying vehicles attached to motor cars or tractors.

**Train bands**, companies of trained citizens assoc. for defence; originated in London in 14th cent.; on Parliamentary side in Civil War (prominent at battle of Worcester); controlled by the kg. after the Restoration; forerunners of the militia (q.v.).

**Train ferry**, suitably constructed steamship which, moored to a corresponding quay, allows a railway train to run aboard, and to be run on land again after passage across water. See FERRY.

**Training college, or normal school**, institution for training teachers, esp. for ele-

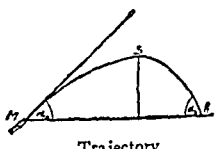
mentary schools; first provided by local educ. authorities under Educ. Act, 1902 (Gt. Brit.), previously by vol. associations. **T. ship**, ship in wh. boys are trained for R.N. or Mercantile Marine, e.g. "Conway," Birkenhead; "Worcester," Greenhithe; "Mercury," Southampton, etc., in Gt. Britain.

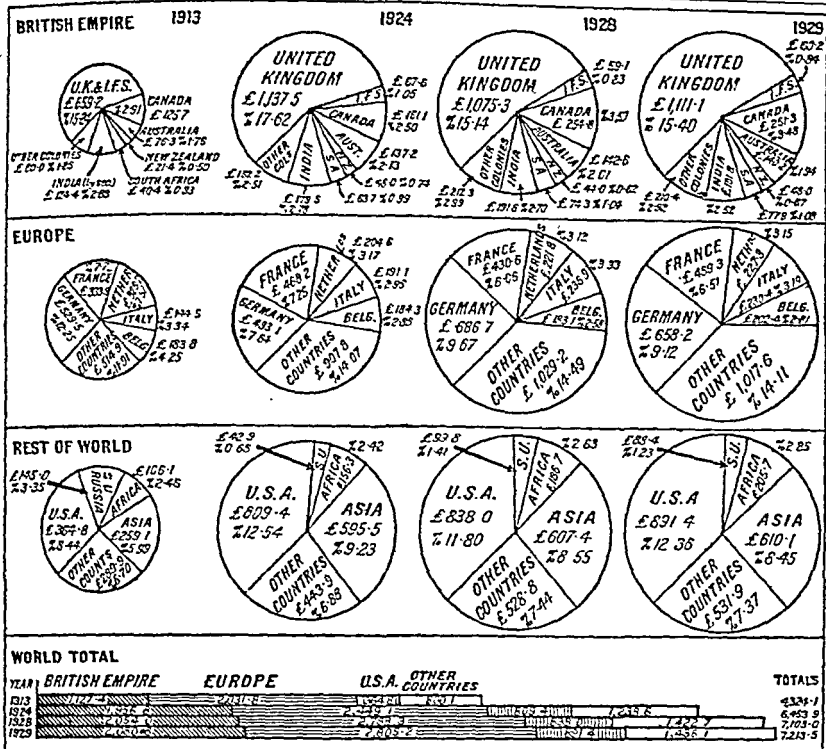
**Trajan**, Marcus Ulpius Trajanus (53-117), Rom. Emp., A.D. 98; greatest extension of empire in his reign.

**Trajectory of projectile**, (phys.) path of a body thrown or fired at any angle. Compounded of uniform horizontal velocity, and vertical velocity diminishing accdg. to laws of falling bodies; result in parabolic path, with vertex of parabola at highest point. Farthest horizontal distance with given velocity achieved with



Trajan





World Trade: Imports for Domestic Consumption

projection at 45°; all shorter distances reached by 2 angles (in ballistics, high-angle and flat fire.)

**Tralee**, cap. Co. Kerry, Munster, I.F.S.; on Riv. Lee; pop., 10,500.

**Tramp**, (naut.) steamship not following regular course or line, but picking up cargo from port to port.

**Tramway**, railed street track for public cars, formerly drawn by horses but now universally electrically driven; power either from

carrying its own power). Track usu. standard gauge—4 ft. 8½ in.; speed, av., 10 m.p.h.

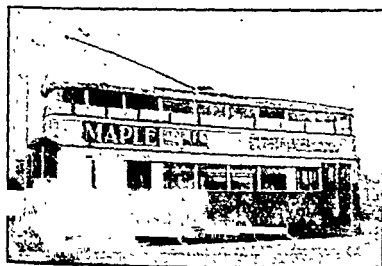
**Transalpine**, situated beyond the Alps from the Ital. point of view.

**Transcaucasia**, Soc. Federated Sov. Rep., created March, 1922, consists of Georgian, Armenian, and Azerbaijan republics; c. 71,200 sq.m.; pop., 6,428,100. Mtns.; natural wealth (naphtha, manganese ore); tea, wine, tobacco; 47,000 acres under cotton. (1930). Cap., Tiflis (q.v.). See CAUCASIAN AREA, NORTH.

**Transcendental**, term applied in philos. to human experience of a character that is intuitive, or to knowledge acquired by intuition as opposed to empirical knowledge.

**T. number**, (math.) A no. is T. when it is not algebraic; i.e., when it cannot be the root of an algebraic equation,  $x^n + Ax^{n-1} + Bx^{n-2} + \dots Lx + M = 0$  where  $n$  is any positive integer, and co-efficients A, B, C, ..., L are all integers, or zero, M being other than zero, e.g., "e" and "π".

**Transcendentalism**, philos. theory propounded by Kant (1724-1804), emphasising the *intuitive* as contrasted with *empirical* elements in thought and knowledge.



Tramcar with Overhead Cable

overhead cable (usu.), or by one of sev'l. underground methods (in a few cases by car

**Transcription**, (mus.) adaptation of a comp. for another instrument or for several others.

**Transept**, (archit.) transverse portion of cruciform churches.

**Transfer**, 1) (finan.) to sell, to cede rights, e.g., shares in a company, goods, etc.; in case of real estate, term used in conveyance. 2)

**T. of shares** (Stk. Exch.), when shares are sold, they must be transferred from buyer to seller; bearer bonds, etc., are transferred by mere delivery; registered stocks by formal T. (deed); inscribed stocks (*q.v.*) by entries in record books. A *T. fee* is charged by the company.

**Transfer pictures**, colour-print pictures on gummed paper, transferable to other surfaces.

**Transfer problem**, (finan.), arises in connection with pymts. of reparations and intergovnmtl. debts or large interest pymts. on foreign loans. Funds may be raised in debtor countries, by taxation, etc., comparatively easily, but difficulties arise when these sums are transferred to creditor countries bec. rates of exch. will be markedly affected unless reverse pymts. into debtor country (e.g., for goods expd.) counteract heavy demand for currency. T.P. is one of chf. factors causing world econ. crisis of 1929-32; under Dawes Plan (*q.v.*) a *T. committee* was establd. to deal with T. of reparation payments.

**Transferable vote**, vote wh., at voter's direction, may be given to 2nd candidate if one primarily supported does not need it to secure election. See PROPORTIONAL REPRESENTATION.

**Transfiguration**, (N.T., Matt. xvii.) change in appearance of Jesus, undergone in presence of Peter, James, and John, on a mountain (prob. Hermon or Tabor).

**Transformer**, (elec.) apparatus for transforming alternating current of one voltage into another voltage. Based on *induction* (*q.v.*). A pair of insulated coils (primary and secondary) are wound on a laminated soft iron core wh. forms a complete ring of iron; current to be transformed is fed into one coil (primary) and magnetises iron, this induces currents in other coil (secondary) having a diff. voltage if the windings are different. Used to "step-up" voltage from dynamos at station before feeding high-tension transmission line, and to step it down again before supplying to consumers. See MOTOR GENERATOR; ROTARY CONVERTER. **Frequency t.**, for altering frequency in an alternating current.

**Trans-Himalaya**, centr. Asiatic mountain-range; see HEDIN MOUNTAINS.

**Transit**, (astron.) passage of an inferior planet (Mercury or Venus) over sun's disk, or of star across celest. meridian of a place. **T. circle**: see ASTRONOMY. **T. traffic**, through

traffic of goods, e.g., goods shipped Liverpool to N. York in *transit* Chicago.

**Transjordan**, territory, Asia, E. of Palestine, under Brit. mandate; 33,400 sq.m.; pop., 280,700; cap., Amman.

**Transkei**, part of Kaffraria (*q.r.*), Cape Prov., S. Africa; 2,500 sq.m., pop., (white), 2,500; lies E. of Kei River.

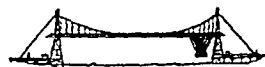
**Transmigration of souls**: see METEMPSYCHOSIS.

**Transmutation of elements**, change of one chemical atom into another; the dream of the Alchemists, who sought to accompl. T. by purely chem. means, was realised by Rutherford who showed that the particles of radio-active substs. shattered other atoms when they struck the nuclei of the latter. Recently, Cockcroft and Halton have shown that canal rays of hydrogen (protons) prodd. in vacuum tube have suff. power at a few thous. volts to transmute elements. Since nucleus occupies 100,000 part of diam. of atom, and must be struck fairly, only a minute fraction of protons score a hit; hence, no present prospect of prodt'n. of one element from another on a commercial scale.

**Transom**, (bldg.) horizontal division of window-frame.

**Transport, Minister of**, member of Brit. Govt. charged with supervision of rlys., road traffic, harbours, river and canal navig., ferries, bridges, etc., and elec. supplies. Ministry first constituted under Act of 1919.

**Transportation**, exile legally imposed as a punishment for crime; in 17th and first half of 18th cent., Eng. criminals sent to the American colonies; convicts first arrived at Sydney, N.S.W., 1788, where their number grew to such an extent as to become a menace; transportation to N.S.W. suspended and diverted to Van Diemen's Land, 1840; this temporarily suspended for two years, 1846, and never resumed. France has deported convicts to Fr. Guiana since 1763, and, as well as some other countries, still continues the system.



Transporter Bridge

**Transporter Bridge**, bridge supptd. at either end on pylons, having a travelling cradle beneath on wh. passengers, vehicles, etc., are conveyed.

**Transpose**, (mus.) to render in another key.

**Trans-Siberian Railway** (c. 5,400 m.), opened 1903; runs from Moscow via Cheliabinsk, Omsk, Irkutsk, Chita, Manchuria to Vladivostok (see Map, next page).

**Transsubstantiation**, R.C. doctrine, complementary and supplementary to that of the *Real Presence* of Christ in the Eucharist, that the sacramental elements (*q.r.*) of bread and wine change their substance at

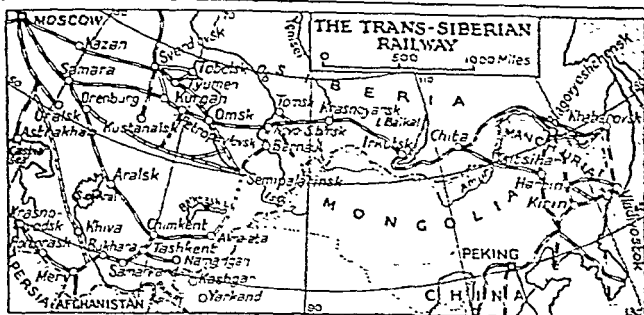
consecration, and become the actual Body and Blood of Christ, only their external properties, or "accidents," i.e., shape, taste, etc., remaining. Acceptance or denial of this doctrine has had far-reaching religious and political consequences. Luther's theory of *Consubstantiation* was that the bread and wine were still present after consecration, but that the substance of Christ's Body was also present. Others (e.g., Zwingli) have maintained that the Body and Blood of Christ are only symbolically represented by the elements of bread and wine.

**Transvaal**, inland prov. in N.E. of Union of S. Africa, bounded N. by S. Rhodesia, W. by Cape Prov. and Bechuanaland, S. by Orange Free State and Natal, E. by Portug. E. Africa and Swaziland; 110,450 sq.m.; pop., 2,100,000 (696,000 Europeans); surface an undulating plateau; High Veld (6,000 ft.), treeless pastureland, broken by kopjes or isolated hillocks; Low or Bush Veld, covered with scrub; Drakensberg Mtns., in E. Witwatersrand; in W.; rivs., Limpopo, Vaal; climate hot and dry; cattle-breeding; agriculture; maize, tobacco; chf. exports: gold, wool, diamonds, skins, and hides; cap., *Pretoria*; largest tn., Johannesburg. **HIST.**: First settlers (1838) Boers opposed to Brit. rule; annexed by Gt. Brit., 1877; granted self-govt., 1881; semi-indep., 1884; re-annexed after Boer War, 1899-1901; re-granted self-govt., 1906; entered Union of South Africa, 1910.

**Transverse oscillations**, or waves, (phys.) take place when the direction of any periodic disturbance (e.g., particles of liquid, electromagnetic field) is at right angles to its direction of propagation as a wave. Electromagnetic radiation (light, heat, X-rays, wireless waves) and waves on water surface are of this kind.

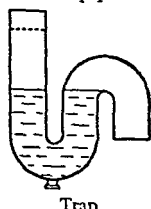
**Transylvania**, *Ardeal*, *Siebenburgen*, territory, Rumania, betw. Transylvanian Alps and Carpathians; 22,313 sq.m.; pop., 2,860,000; fertile wooded plateau (1,250 ft.) drained by rivs. Maros (Muresul) and Szamos (Somesul); wheat, maize; vineyards; cattle, sheep, pigs; gold, silver, iron, lead, salt; min. springs; timber, leather, textiles, chemicals; cap., *Cluj*. Hungarian, 1003; part of Habsburg monarchy, 1690; Rumanian, 1918.

**Transylvanian Alps**, mtn. range, Rumania; W. and S.W. continuation of the Carpathians; Negoiu, 8,334 feet.



**Trap**, (tech.) S-shaped tube or similar device attached to water drains or soil-pipes of water-closets, waste-pipes, etc. As long as liquid is in the bend, foul air cannot pass from sewer into house. Often called *siphon*.

**Trap-ball**, old Eng. game (early 14th cent.), also called "knur and spell," now confined to children; the "knur," a hard wooden ball about as big as a walnut, is thrown into the air by a "spell," or trap, operated either by a spring or by striking a lever; the object is then to hit the ball as far as possible with a "tripstick," or bat.



**Trap (or clay pigeon) shooting**, sport of shooting at clay discs released from traps at varying speeds and angles.

**Trapani**, fortified port and provincial cap., Sicily, pop., 84,000; see of bishop.

**Trapeze**, cross-bar suspended by ropes, for gym. exercises, acrob. displays, etc.

**Trapezium**, (geom.) quadrilateral fig. which has one pair of opposite sides parallel and the other pair not.

**Trapezoid**, (geom.) quadrilateral fig. which has no two sides parallel.

**Trappists**, branch of *Cistercians* (q.v.), fndd. by Abbot de Rancé (1663), named after parent monastery *La Trappe*; special features: strict silence and wholly vegetarian diet.

**Trasimenus, Lake (Trasimene, Lago di Perugia)**, lake, W. of Perugia, Italy. Victory of Hannibal over the Romans, 217 B.C.

**Tras-os-Montes**, inland prov., N. Portugal, N. of Riv. Douro; 4,160 sq.m.; pop., 435,100.

**Trass**, a volcanic earth, used as a hydraulic cement.

**Travancore**, native State, S. India, in Madras States; 7,600 sq.m.; pop., 5,100,000 (Hindus and Christians); lagoons and canals on coast; surface undulating. Cardamoms (q.v.) in E.; rice, tapioca, pepper, tea, coffee, coconuts, spices; cap. *Trivandrum*.

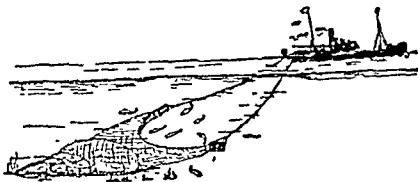
**Traveller's Joy:** see CLEMATIS. **T. tree,** *Ravenala madagascariensis*, tall tree indigenous to Madagascar; the long, straight stem, c. 30 ft. high, has at the top a fan-like growth of leaves in the base of wh. water collects in large quantities.

**Traverser,** (rly.) construction on wheels used for transferring rolling stock on to parallel rails; also with vertical motion.

**Travertine,** hard, calcareous deposit of hot springs; see SINTER; used in It. for building.

**Traviata, La,** opera by Verdi (q.v.), 1853.

**Trawler,** vessel now usu. steam-driven, used for trawling, method of deep-sea fishing



Steam Trawler with drag-net

by means of nets drawn on, or near, the sea bottom (see drag-net). Brit. T.s were used as mine-sweepers in World War. See SEINING.

**Treacle,** thick, syrupy substance wh. drains out of sugar in process of refining; molasses (q.v.).

**Treadle press:** see PLATEN-PRESS.

**Treadmill,** means of penal discipline; a mill turned by prisoners treading on steps upon the periphery of a large horizontal cylinder; introd. in England, 1818, they existed as late as 1901.

**Treason,** disloyalty, treachery to one's kg. and country; any attempt to overthrow govt. to wh. allegiance is due. **High t.,** outrage offered to person of kg. or his consort or heir; attempt to depose kg. or levy war on him. **Petty (petit) t.,** formerly used of murder of a master by his servant or of a husband by his wife. In U.S.A., T. consists in "levying war agst. the states or giving aid and comfort to their enemies."

**Treasure Island,** adventure story by R. L. Stevenson (q.v.), 1883.

**Treasure-trove,** gold or silver money, plate, or bullion found buried or hidden. Prop. of Crown unless ownership established.

**Treasury,** dept. of Brit. Govt. charged with State finance, under Chanc. of Exchq. (q.v.); *Lords of T.* are govt. officials without departmental duties, available as "whips" (q.v.); Pr. Min. is usu. First Lord. **T. bills,** issued by Govt. for money borrowed for 3, 6, 9, or 12 mnths.; one of the means by wh. Brit. Govt. effects short-term borrowing. Usu. issued wkly., in accord. with govt.'s reqmts., *bids* being in units of £5,000 and £10,000. *Offers* are made by *tenderers,*

whose terms depend on the prevailing conditions of the money market. **T.B. form,** part of floating debt (q.v.). **T. bonds;** NATIONAL DEBT. **T. notes:** see CURRENCY NOTES.

**Treaty ports,** port. esp. 50 in China, open to for. commerce under the terms of a treaty.

**Trebizond,** *Trapezus*, Turkish seapt. and vilayet (c. 1785 sq.m.; pop., 293,000) on Black Sea; pop., 24,635; exports ores. Scene of fighting betw. Russ. and Turk. troops, World War 1915, '16, and '18.

**Treble,** the higher range of musical notes, the middle C being taken as the point of division betw. this and bass; in singing, the highest of the four parts, as sung by boys' voices, equiv. to the soprano of women; term derived from former practice in plain song (q.v.) of assigning the *third* part to the highest voices, the tenor taking the chief melody and the altos the second part.

**Tredegar,** munic. bor. and mkt. tn., Monmouth; pop., 23,200; mining; ironworks.

**Tree,** Sir Herb. Beerbohm (1853-1917), Eng. actor; propr. and manag. of His Majesty's Theatre; noted revivals of Shakes.; establd. school of dramatic art in London, 1907.

**Tree,** 1) (bot.) perennial plant with strong, woody main stem or trunk and boughs. 2) (Genealogy) A family t., diagram showing descent from a common ancestor. **T.-creeper,** small brown-and-white climbing bird, with long, slender bill; common throughout British Isles in districts suiting its tree-loving habits. Creeps up and round trunks, seeking spiders and other insects on which it feeds. **T.-fern,** fern with a tree-like wooden stem, the fronds being at the top. Grows in the tropics of Australia and New Zealand. **T.-frogs,** tailless Amphibia having tips of toes expanded into disks, enabling them to climb trees and shrubs with ease; numerous species, all inhabiting warm and tropical regions. **T.-porcupine,** species of small arboreal porcupine, confined to forest districts of trop. Amer.; characterised by long, prehensile tail, short, many-coloured spines, and light build; not so nocturnal in habit as the ground-dwelling species.

**Trefoil,** 1) (bot.) altern. name for clover (q.v.). 2) (Archit.) Any carved ornament or tracery in three-lobed form.

**Treitschke,** Heinrich von (1834-96), Ger. histor.; *History of Germany in the Nineteenth Century*, 5 vols., 1879-95 (unfin., ends at 1847).

**Treloar,** Sir William Purdie (1843-1923), 1st bnt. (cr. 1907); Eng. merchant and philanthropist; Lord Mayor of London (1906-07); fndd. cripples' hospital at Alton, Hants.

**Trematodes,** or flukes, parasitic flat-worms; e.g., liver fluke (q.v.).

**Tremolite**, mineral of amphibole group,  $\text{CaMg}_3(\text{SiO}_3)_4$ ; white or grey monoclinic crystals.

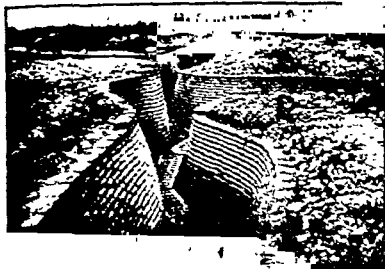
**Tremolo**, (mus.) quivering, quick repetition of the same note; *see* VIBRATO.

**Tremor**, muscular shaking, may be due to fright, hysteria, over-exertion, or to disease.

**Trench**, Richd. Chenevix (1807-86), Brit. divine, poet, and philologist; Dean of Westminster, 1856; abp. of Dublin, 1864-84; pubd. *Notes on the Parables*, 1841; poem, *Story of Justin Martyr*, 1835; *English Past and Present*, 1855; etc.

**Trenchard**, Hugh Montague Trenchard, 1st bn. (1873- ); Brit. soldier; served in S. Afr. War (1899-1902) and in World War; Maj.-Gen., 1916; Air Marshal, 1919; Chief of Air Staff, 1918-29; Air Chief Marshal, 1922; raised to peerage, 1930; Commr. of Metropolitan Police, 1931.

**Trenches**, (milit.) defensive positions to protect troops agst. enemy fire; ditches, gen. reveted with sandbags or hurdles. **Fire-t.**,



Trench at Vimy Ridge

battle positions, gen. with **support** and **reserve t.**, **communication t.**, to the rear.

**Trent**, Jesse Boot (1850-1931), 1st. bn. (cr. 1929); Eng. industrialist and philanthropist; fndr. of Boots (Cash Chemists), Ltd.; benefactor of city and univ. of Nottingham.

**Trent**, riv., Eng.; rises in N. Staffs; passes Stoke-upon-Trent, Burton-upon-Trent, Nottingham, Newark-upon-Trent, and Gainsborough; joins Riv. Ouse to form Humber; length 170 miles.

**Trent, Trento, Tridentum**, city, It., cap. of Trentino (S. Tyrol), on R. Adige; pop., 63,000. Seat of prince-bishop, 1027-1803; Austrian, 1814-1919. **Council of T.** (1545-1563), Oecumenical Council, convoked by Pope Paul III, in endeavour to suppress Protestantism; dealt (*Tridentine Decrees*) with relative authority of Scripture and the Ch., authority of Ch. Fathers, original sin, authority of Vulgate, Divine origin and forms of the sacraments, veneration of saints, reformation of clerical life, and other matters of contention.

**Trente et Quarante**: *see* ROUGE ET NOIR.

**Trentino**, mountainous dist., N. It.,

watered by Riv. Adige; formerly part of Austr. Tyrol, now in Venezia Tridentina; cap. *Trent*; scene of intense fighting betw. Italians and Austrians in World War.

**Trenton**, cap., New Jersey, U.S.A., on Delaware Riv.; pop., 123,000; arsenal; iron and steel works; porcelain factories. Fndd. by William Trent, c. 1720; battle of T. (Dec., 1776-Jan., '77) one of Washington's first victories in War of Independence.

**Trepan**, **trephe**, (surg.) instrument used for, and the operation of, removal of a circular piece of bone, usually from the skull.

**Trepang**, **bêche-de-mer**, or **sea cucumber**, holothurian marine animal fnd. on coral reefs in Pacific and on Californian coast; dried and used in soups by eastern peoples.

**Trespass**, wilful injury with violence, actual or implied, either to person or to property.

**Trestle**, bar of wood resting upon divergent legs at each end, suitably cross-braced. Used as support for table top, bridge, etc.

**Trevelyan**, George Macaulay (1876- ), Eng. historian; prof. of Mod. History, Camb. 1927; chmn., Estates Committee, Nat. Trust; pubd. *England under the Stuarts*, 1907; *Garibaldi and the Making of Italy*, 1911; *John Bright*, 1913; *British History of the 19th Cent.* (1882-1901), 1923, etc.

**Treves**, Sir Frederick (1853-1923), Brit. surgeon; prof. of pathology, R.C.S., 1881, and of anatomy, 1885; consulting surgeon, S. African War, 1900; surgeon to Qn. Victoria, Edw. VII, George V, and Qn. Alexandra; helped to fnd. Brit. Red Cross.

**Trèves, Trier**, city, Rhenish Prussia, on Riv. Moselle, cap. dist.

of T. (area, excl. Saar Territory, 2,198 sq. m.; pop., 475,000); Rom. remains (amphitheatre, Porta Nigra); cathed. (6th cent.); museums; pop., 71,700.

**Treviso**, cap. prov. of T. (957 sq.m.; pop., 586,400), N. It.; pop., 58,000; hardware, cloth.

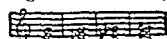
**Trevithick**, Richd. (1771-1833), Brit. engineer; constructed high-pressure, non-condensing steam-engine, 1800; patented road steam carriage, 1802; constructed locomotives for tramways, 1804; applied high-pressure engine to rock boring and breaking and to dredging; 1st to recognise importance of iron in constructing large ships.

**Triad**, (mus.) chord consisting of tonic, third, and fifth.

**Tria juncta in uno** (Lat.), three joined in one (motto of the Order of the Bath).



Trèves: Porta Nigra



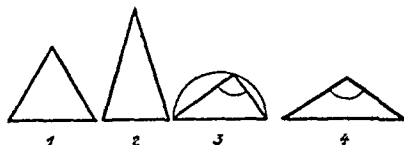
Major  
Minor  
Diminished  
Augmented



**Trial**, (legal) the formal examination of the matter in issue in a cause before a competent tribunal; sometimes incorrectly applied to a re-hearing by a court of appeal. Trials in Eng. may, according to the nature of the cause and of the court, be conducted by judge with jury, by judge without jury, by judge with assessors, or by an official referee. Acc. to Eng. usage, each of the parties may be represented by solicitor in inferior, by counsel in superior, crts.; after the pleadings comes statement of case for plaintiff or prosecution followed by examination and cross-examination of witnesses; case for defendant follows with similar procedure; final speeches for defence and prosecution are delivered; when a jury is present, the judge sums up, explaining the legal aspects of the case to the jury, whom he leaves to decide on questions of fact; jury then return a verdict, in accordance with which the judge discharges, or pronounces sentence upon, the prisoner or defendant; in trials without jury, judgment as regards both fact and law rests with the judge, with or without the aid of assessors, or with the official referee.

**Trial balance**: see ROUGH BALANCE.

**Triangle**, 1) (geom.) figure bounded by three straight lines; differentiation is made betw.: *acute-angled T.*, each angle less than 90 degrees (Fig. 2); *obtuse-angled T.*, one angle



Forms of Triangle

1) Equilateral; 2) Isosceles; 3) Right-angled; 4) Obtuse

more than 90 degrees (Fig. 4); *right-angled T.*, one angle = 90 degrees, the adjoining sides being called catheti, the one opposite, hypotenuse (Fig. 3); *equilateral T.*, with 3 equal sides and angles (Fig. 1); *isosceles T.*, with 2 equal sides and adjoining angles (Fig. 2). 'Content of T. equals height multiplied by base divided by 2. T. [on the surface of a sphere bounded by arcs of great circles: *spherical T.* Calculation of T. by aid of trigonometry (q.v.). 2) (Mus.) Instr. made of a steel rod bent in form of T.; high-pitched, vibrating tone. 3) (Astron.) see TRIANGULUM.



Triangle

**Triangulation**, in land surveying, measurement of the angles of great triangles on earth's surface, for purpose of calculating lengths of their sides and thence size and shape of the land. The corners of the triangles are called *T. points*.

**Triangulum**, or *T. Boreale*, Northern

Triangle, constell. betw. Andromeda and Perseus (Pl., ASTRONOMY, N.C.H., A). *T. Australis*, the Southern Triangle, constell.; see Pl., ASTRONOMY, S.C.H., C.

**Trianon**, **Grand T.**, villa built for Madame de Maintenon, **Petit T.** for Madame Dubarry, both in park at Versailles (q.v.). In *Grand T.* (1920) treaty of peace betw. the Entente and Hung., the latter losing Croatia, Slavonia, Transylvania, and the Banat.

**Triassic system**, oldest of the Mesozoic rock-formations, preceding the Jurassic; see GEOLOGICAL FORMATIONS.

**Tribunal**, in anc. Rome, raised platform from wh. legal decisions were given.

**Tribunes**, from c. 490 B.C.; repres. of Rom. peoples (*plebs*) had power of invalidating decrees of Senate by means of veto.

**Tribute**, annual or stated payment in money or kind as acknowledgmt. of submissn. or as price of peace and protection.

**Trichiniasis**, a severe, and often fatal disease caused by the parasite *Trichinella spiralis* attacking the digestive tract and muscles. The parasite occurs in muscular system of pigs and develops in man, after infected flesh has been eaten. Prevented by strict inspection of meat at slaughter-houses, etc.

**Trichinopoly**, cap. dist. of T. (4,300 sq.m.; pop., 1,900,000), Madras, Brit. India, on Riv. Cauvery; Rock of T., 273 ft.; manuf. cheroots, soap; pop., 141,600.

**Trichromatic printing**, the three-colour process (q.v.).

**Triclinic system**: see CRYSTALS.

**Tricolour**, flag of three colours, esp. that of the Fr. Republic—blue, white, and red in vertical stripes.

**Tric-trac**, French name for backgammon (q.v.).

**Trident**, three-pronged spear of Neptune (q.v.).

**Trier**: see TRÈVES.

**Trieste**, seapt., It., on Gulf of T. (Adriatic), cap. prov. of T. (470 sq.m.; pop., 340,000) in dist. of Venezia Giulia; pop., 255,000; cathed. (14th cent.), museums, Rom. remains; shipb.; docks; headqrs. Trieste Lloyd Steamship Co. Austr., 1382-1919.

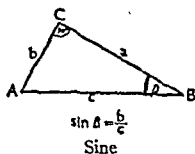
**Trifels**, ruined castle in Bavarian Palatinate, Ger.; abode of Ger. emperors in Mid. Ages; Richard Cœur de Lion imprisoned here, 1193-94.

**Trigeminal nerve**, three-branched sensory nerve of the face. **T. neuralgia**, acute nerve-pains of the face.

**Triglyph**, (archit.): see COLUMN.

**Trigonometry**, mensuration of triangles, section of elementary geometry, dealing with the relationship betw. sides and angles of a plane triangle, or of a spherical triangle, the latter being one formed on surface of sphere

and bounded by arcs of great circles. The trigonometric functions are aids to T.: *Sine* (abbr. *sin.*) of an angle is relationship of the side opposite the angle (perpendicular) to the hypotenuse in a right-angled triangle; *cosine* (*cos.*): or adjacent side to the hypotenuse; *tangent*, (*tan.*): perpendicular to the adjacent side; *cotangent* (*cot.*), *cosecant* (*cosec.*), and *secant* (*sec.*) are respectively reciprocals of tangent, sine and cosine. Versed sine or versine =  $1 - \cos$ . Trigonometrical calculation is done almost exclusively with logarithm tables (*q.v.*). T. esp. developed by Ptolemy, Regiomontanus, and Euler.



**Trilobites**, extinct marine arthropods found as fossils in Palaeozoic rocks; many species, world-wide distrib.; generally resemble wood-louse, but with two marked furrows length-wise on back.

**Trilogy**, series of 3 tragedies on one continuing theme; extended to set of 3 lit. compositions, each complete in itself, but with a common theme.

**Trillion**, in U.K., one million raised to the 3rd. power, represents. by 1 fold. by 18 noughts =  $10^{18}$ ; in Fr. and U.S.A., one million squared ( $10^{12}$ ), represents. by 1 fold. by 12 noughts.

**Trim**, cap. Co. Meath, Leinster, I.F.S., on Riv. Boyne; pop., 1,400.

**Trimeter**, metre consists of 3 measures; *Iambic trimeter*, iambic line, of 6 ft., occurs freq. in anc. Gr. dramatic dialogue.

**Trinacria**, anc. name for Sicily (*q.v.*).

**Trincomalee**, seapt., N.E. Ceylon; pop., 9,500; natural harbour.

**Tring**, urb. dist. and resid. tn., Herts, in Chilterns; pop., 4,400; zoolog. museum in *T. Park* (Lord Rothschild).

**Trinidad**, Brit. isld., West Indies, 7 m. off coast Venezuela; 1,860 sq.m.; pop., 413,000; interior mountainous; petroleum, asphalt (from Pitch Lake; 110 ac.), cocoa, sugar, rum, copra; cap., *Port of Spain*.

**Trinitarians**, monastic order founded by St. John of Matha (1198) for liberation of Christians held captive by Saracens; now devoted to missionary and educational work; white habit, red and blue cross on breast.

**Trinitrophenol**: see PICRIC ACID.

**Trinitrotoluol**, (T.N.T.), powerful explosive made from toluol (*q.v.*).

**Trinity**, combination of 3 objects or persons considered as forming a unity; characteristic of the conception of the Deity, common in varying forms, to many relig.; esp. (in Christianity) the Holy Trinity, the union in one Godhead of three Persons, the Father, the Son, and the Holy Ghost; doctrine elaborated most fully in *Athanasian Creed*, and

not accepted by the Unitarians (*q.v.*). **T. Coll.**, 1) *Cambridge*; fndd. 1546, by Henry VIII, absorbing several earlier institutions; library built by Wren. Long list of historic names among its alumni, including Isaac Newton, Macaulay, Thackeray, Stanley Baldwin. 2) *Oxford*; fndd. 1555, by Sir Thomas Pope, of Tittenhanger, Hertfordshire. John Henry Newman was a commoner at the college. **T. Hall**, Cambridge; fndd. 1350, by Bp. of Norwich. Library has famous collection of law books. **T. House**, Corp. having charge of lighthouses on Brit. coasts, and supplying naut. assessors for maritime cases in Probate, Divorce, and Admiralty division. Governing body called "Elder Brethren." **T. Sunday**, the Sunday following Whit-Sunday, when the feast of the Holy Trinity is observed.

**Trinity River**, Texas, U.S.A., empties into Galveston Bay; 535 miles.

**Trió**, (mus.) comp. for 3 instruments (e.g., piano, violin and 'cello); the quiet middle section of a march or minuet.

**Trioleto**, a stanza of 8 lines on 2 rhymes, e.g., abaaabab, lines 1, 4, 7 are identical, and 2 and 8 are also identical.

**Tripe, chitterlings, calf's pluck**, entrails, or stomach of cattle.

**Triplane**, aeroplane with three pairs of wings arranged one above another.

**Triple alliance**, alliance betw. three Powers; e.g., Eng., the Netherlands, and Swed., agst. Louis XIV, 1668. Betw. Ger., Aus., and It., 1883; renewed several times but revoked by It. in 1915. **T. Entente**, assoc. of three Powers, orig., 1907, by the accession of Russ. to Franco-Brit. *Entente Cordiale* (*q.v.*).

**Triplet**, (mus.) 3 notes having the time-value of 2 of the same kind.

**Tripod**, in anc. Greece, 3-legged stool of prophetess Pythia at Delphi; any 3-legged stand.

**Tripoli**, 1) Cap. of Tripolitania, N. Africa; pop., 70,700; Rom. bldgs.; caravan trade. 2) Or **Tarabulus**, tn. in Lebanon, Syria; pop., 35,800; E. coast of Mediterranean.

**Tripolis**, inland tn., Peloponnesus, Greece, cap. of Arcadia; pop., 14,500. Cap. of the Morea under the Turks.

**Tripolitania**, W. prov. of colony of Libya Italiana, N. Africa, c. 348,000 sq.m.; pop., 550,000; cap. *Tripoli*. Rom. prov. 46 B.C., later under Caliphs and Turks; Ital. since 1911.

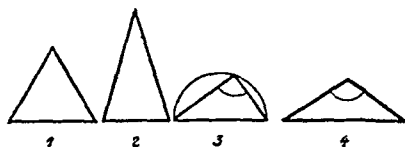
**Tripes**, final honours exam. for B.A. degree at Cambridge Univ.; or one of 3 classes in wh. successful candidates are arranged.

**Triptych**, (archit.) tablet of 3 leaves, hinged together and fixed to walls, usu. in churches; both surfaces bear paintings; on folding, alternative picture is presented; form of altar-shrine; see DIPYCH.

**Trial**, (legal) the formal examination of the matter in issue in a cause before a competent tribunal; sometimes incorrectly applied to a re-hearing by a court of appeal. Trials in Eng. may, according to the nature of the cause and of the court, be conducted by judge with jury, by judge without jury, by judge with assessors, or by an official referee. Acc. to Eng. usage, each of the parties may be represented by solicitor in inferior, by counsel in superior, crts.; after the pleadings comes statement of case for plaintiff or prosecution followed by examination and cross-examination of witnesses; case for defendant follows with similar procedure; final speeches for defence and prosecution are delivered; when a jury is present, the judge sums up, explaining the legal aspects of the case to the jury, whom he leaves to decide on questions of fact; jury then return a verdict, in accordance with which the judge discharges, or pronounces sentence upon, the prisoner or defendant; in trials without jury, judgment as regards both fact and law rests with the judge, with or without the aid of assessors, or with the official referee.

**Trial balance**: see ROUGH BALANCE.

**Triangle**, 1) (geom.) figure bounded by three straight lines; differentiation is made betw.: *acute-angled T.*, each angle less than 90 degrees (Fig. 2); *obtuse-angled T.*, one angle



Forms of Triangle  
1) Equilateral; 2) Isosceles; 3) Right-angled;  
4) Obtuse

more than 90 degrees (Fig. 4); *right-angled T.*, one angle = 90 degrees, the adjoining sides being called catheti, the one opposite, hypotenuse (Fig. 3); *equilateral T.*, with 3 equal sides and angles (Fig. 1); *isosceles T.*, with 2 equal sides and adjoining angles (Fig. 2). 'Content of T. equals height multiplied by base divided by 2. T. [on the surface of a sphere bounded by arcs of great circles: *spherical T.* Calculation of T. by aid of trigonometry (q.v.). 2) (Mus.) Instr. made of a steel rod bent in form of T.; high-pitched, vibrating tone. 3) (Astron.) see TRIANGULUM.



**Triangulation**, in land surveying, measurement of the angles of great triangles on earth's surface, for purpose of calculating lengths of their sides and thence size and shape of the land. The corners of the triangles are called *T. points*.

**Triangulum**, or *T. Boreale*, Northern

Triangle, constell. betw. Andromeda and Perseus (Pl., ASTRONOMY, N.C.H., A). *T. Australis*, the Southern Triangle, constell.; see Pl., ASTRONOMY, S.C.H., C.

**Trianon**, **Grand T.**, villa built for Madame de Maintenon, **Petit T.** for Madame Dubarry, both in park at Versailles (q.v.). In *Grand T.* (1920) treaty of peace betw. the Entente and Hung., the latter losing Croatia, Slavonia, Transylvania, and the Banat.

**Triassic system**, oldest of the Mesozoic rock-formations, preceding the Jurassic; see GEOLOGICAL FORMATIONS.

**Tribunal**, in anc. Rome, raised platform from wh. legal decisions were given.

**Tribunes**, from c. 490 B.C.; repres. of Rom. peoples (*plebs*) had power of invalidating decrees of Senate by means of veto.

**Tribute**, annual or stated payment in money or kind as acknowledgmt. of submissn. or as price of peace and protection.

**Trichiniasis**, a severe, and often fatal disease caused by the parasite *Trichinella spiralis* attacking the digestive tract and muscles. The parasite occurs in muscular system of pigs and develops in man, after infected flesh has been eaten. Prevented by strict inspection of meat at slaughter-houses, etc.

**Trichinopoly**, cap. dist. of T. (4,300 sq.m.; pop., 1,900,000), Madras, Brit. India, on Riv. Cauvery; Rock of T., 273 ft.; manuf. cheroots, soap; pop., 141,600.

**Trichromatic printing**, the three-colour process (q.v.).

**Triclinic system**: see CRYSTALS.

**Tricolour**, flag of three colours, esp. that of the Fr. Republic—blue, white, and red in vertical stripes.

**Tric-trac**, French name for backgammon (q.v.).

**Trident**, three-pronged spear of Neptune (q.v.).

**Trier**: see TRÈVES.

**Trieste**, seapt., It., on Gulf of T. (Adriatic), cap. prov. of T. (470 sq.m.; pop., 340,000) in dist. of Venezia Giulia; pop., 255,000; cathed. (14th cent.), museums, Rom. remains; shipb.; docks; headqrs. Trieste Lloyd Steamship Co. Austr., 1382-1919.

**Trifels**, ruined castle in Bavarian Palatinate, Ger.; abode of Ger. emperors in Mid. Ages; Richard Cœur de Lion imprisoned here, 1193-94.

**Trigeminal nerve**, three-branched sensory nerve of the face. **T.**

nerve-pains of the face.

**Triglyph**, (archit.): see CC

**Trigonometry**, mensur. section of elementary; the relationship betw. plane triangle, latter being c

cathed.; winter resort; gold, silver, and copper smelting.

**Tudor**, Eng. royal dynas. (of Welsh extraction); Henry VII and VIII, Edward VI, Mary, and Elizabeth; 1485-1603.

**Tuesday**, 3rd day of week; named after Tiu (Tyr), Norse god of war and son of Odin.

**Tufa**, cellular or porous rock of volcanic origin; also known as *tuff*.

**Tufter**, (stag-hunting) hound used to drive the stag from cover.

**Tug**, (naut.) small motor- or steamship used to tow barges in canals, or large vessels into harbour, by means of hawsers.

**Tug-of-war**, (athlet.) trial of strength betw. 2 teams pulling on a rope.

**Tugan-Baranovski**, Michael (1865-1919), Russ. socialist, pol. economist.

**Tugela**, largest riv. of Natal (300 m.), partly forming boundary betw. Natal and Zululand; flows from *Drakensberg Mtns.*, past Colenso, into Indian Ocean. Scene of heavy fighting before battle of Spion Kop (q.v.) in 2nd. Boer War.

**Tuilleries**, formerly royal residence in Paris; built for Catherine de' Medici, c. 1564 and added to subsequently. In Fr. Rev. Louis XVI was taken there as prisoner (1789) and National Assembly held its meetings in the riding-school; residence of Napoleon as First Consul and later as Emperor. Restored by Louis Philippe, who was in the palace when it was attacked by the mob in 1848; home of Napoleon III, 1851-70; bldg. destroyed by fire in Commune, 1871. The portion wh. remained has been restored and is used as a museum.

**Tuke**, Henry Scott (1858-1920), Eng. painter; R.A., 1914; noted for sea subjects; *All Hands to the Pumps* is among pictures bought by Chantrey Trustees.

**Tula**, chf. tn., prov. T. (c. 10,000 sq.m.; pop., 1,816,544) Europ. Russia, on Riv. Una; pop., 147,875; metal indus. (samovars, firearms); noted for *Tula silverware*; mineral, coal, and iron-ore deposits.

**Tulip**, liliaceous plant, orig. from E.; single, handsome flower on long stalk; cultivated princ. in Holland and grown in gardens generally. Some magnif. var. have been prod.; in 17th cent., when the plant was first cultivated in Holland, fantastic prices were paid for single bulbs. **T. tree**, N. American magnoliaceous tree (*Liriodendron tulipifera*), yellow tulip-like flower, also *Michelia fuscata*, similar tree grown in China. The timber is known as white-wood.



Tulip



Tulip-tree

**Tullamore**, co. tn., Offaly, Leinster, I.F.S., on Grand Canal; ruined Shragh Castle (1588) in neighbourhood; pop., 5,000.

**Tulle**, soft, net-like matl. used for makg. or trimming dresses.

**Tullus Hostilius**, tradit. 3rd Kg. of Rome, 672-640 B.C.; carried on war with Alba.

**Tulsa**, city, Oklahoma, U.S.A., on Arkansas Riv.; pop., 141,250; centre of agric. country; and of oilfields.

**Tumbler**, 1) drinking glass without a foot, holding abt.  $\frac{1}{2}$  pt. 2) (Eng.) Loose part of a machine wh. operates by gravity, moving suddenly on reaching a cert. position. 3) Part of internal mechanism of a lock (q.v.), one of sevl. wh. are made to occupy a cert. position by means of a key, in order to shoot the bolt. 4) **T. pigeon**, kind of pigeon wh. makes movements resembling somersaults when in flight.

**Tumours**, swellings or new growths (neoplasms); may be benign or malignant. **Benign t.**, offer no danger to life; e.g., fibroid of the uterus. **Malignant t.**, cause death, sooner or later, according to rate of growth; they are commonly called cancer, though this term should be reserved for those growths arising from epithelial tissues, technically called carcinomas. Cancers arising in muscle are known as sarcomas (q.v.).

**Tun**, 1) large barrel. 2) Wine meas., 2 pipes or 4 hogsheads, or 252 gallons.

**Tunbridge Wells**, royal bor., Kent, Eng., inland watering-place, esp. popular in late 18th. cent.; "Pantiles"; chalybeate spring; pop., 35,400.

**Tundra**, barren plain in N. Russia or other Arctic region; frozen or partially frozen desert, only vegetation of wh. is moss and lichen.

**Tungsten**, rare metallic element, found in combination with other minerals; grey and very hard, fusible only at very high temperatures; used in an alloy of steel and for making filaments of incandescent electric lamps.

**Tungu**: see LANGUAGE SURVEY, *Altai*. **Tunguses**, Mongol. race, divided into *Manchu* (q.v.) and *T. proper* (c. 100,000). Nomadic hunters, fishers, and horse-breeders, living betw. Arctic Oc., the Yenisei Riv., and the Pacific.

**Tunic**, white woollen undergarment,  $\frac{3}{4}$  length, with short sleeves, worn by anc. Rom.; now applied to  $\frac{3}{4}$ -length upper garm. worn by women, also to regimental coat worn by Brit. army-officers and soldiers.

**Tunicata**, marine animals closely allied to Amphioxus; stand at the base of the vertebrate animals, having, in place of a bony backbone, a cartilaginous rod or notochord. See SEA-SQUIRT.

**Trireme**, anc. Gr. ship with *three* banks of oars, one above another.

**Tristan and Isolde**, T., a knight of the Round Table, and Isolde, princess of Ireland, unwittingly drink love-potion intended for Kg. Mark and I. on their bridal night; their love revealed to M. by treacherous friend. T. fights and kills betrayer, but, mortally wounded, is taken to Brittany. I. is summoned to heal him, but arrives too late. Subject of Breton prose romance (12th cent.); epics by Eilhard von Oberge and Gottfried von Strassburg (12th cent.); part of Malory's *Morte d'Arthur*; poems by M. Arnold, Swinburne, etc.; opera by Wagner, 1865.

**Tristan da Cunha**, volcanic isl. (16 sq.m.), S. Atlantic, largest of a group of four isls., betw. Cape of Good Hope and S. Amer.; almost surrounded by cliffs (over 1,000 ft.); centr. cone, 7,650 ft.; pop., 130.

**Tristram, Sir of Lyonesse**, the Tristan of Tristan and Isolde (*q.v.*).

**Triton** (Gr. myth.), sea-god; half man, half dolphin. **Triton-shell**, large gastropod mollusc of the family *Totoriidae*, attaining greatest size in tropical seas; shell still used by natives as a primitive trumpet.

**Triumph of Time and Truth** (*Trionfo del tempo*), oratorio by Handel (*q.v.*), 1757.

**Triumphal Arches**, in anc. Rome, gateways decorated with reliefs, set up as monuments of victory.

**Triumvirate**, in anc. Rome, coalition of three leaders for government in common: 1) 60 B.C. Pompey, Caesar, and Crassus; 2) 43 B.C., Antony, Octavian, and Lepidus.

**Trivandrum**, city, on S. Indian coast, cap. of Travancore; pop., 72,800; res. of agent of Madras States Agency.

**Trivium et Quadrivium**, the 7 "liberal arts" taught in schools and Univs. in Mid. Ages; (Tri.): grammar, dialect (logic), rhetoric; (Quad.) geometry, arithmetic, music, astronomy.

**Trnovo**, anc. city, N. Bulgaria; cap. Second Bulgarian Empire, 1185-1393; pop., 12,000.

**Troad**, (anc. geogr.) divn. of Mysia, N.W. Asia Minor; contained city of Troy (*q.v.*).

**Trochee**, Gr. met. foot consisting of long (stressed) syllable followed by a short (unstressed) syllable: - ~.

**Troglodytes**, cave-dwellers, name used by anc. writers for a number of primitive tribes, mainly in Africa.

**Troika**, Russian carriage or sledge with a three-horse yoke.

**Troilus**, legend. Trojan prince; lover of Cressida; slain by Achilles. Poem by Chaucer.



Troika

**Troitskosavsk**, tn., Buriat-Mongol A.S.S.R., on Riv. Kiakhta; pop., 9,100; trading centre for Siberia and Mongolia; tea, furs, gold, osmiridium. Massacre of 800 Bolsh. prisoners by Cossacks, 1920.

**Troll**, goblin of Norse legend.

**Trollhättan**, tn., Sweden (pop., 15,500), dist. of Elfsborg, on Riv. Göta, by the *Trollhättan Falls* (108 ft. in 1 m.); power station; falls avoided by T. Canal (four locks).

**Trolling**, meth. of fishing resembling spinning (*q.v.*), but the bait is caused to dart up and down instead of revolving.

**Trollope**, Anthony (1815-82), Eng. novelist, chfly. memorable for the "Barchester" series, including *Barchester Towers* (1857), dealing with clerical life.

**Trombone**, brass wind instr., with full, deep tone.

**Tromp**:

name of 2  
Dut. admls.:

1) **Martin**

(1597-1653)

deftd. English fleet, 1652; 2) his son, **Cornelius van** (1629-91) led Dut. fleet agst. Eng., 1673.

**Tromsö**, port on Arctic Ocean, N. Norway, cap. dist. of Troms (10,420 sq.m.), on isl. of Tromsö; pop., 11,165; whaling; trade fish.

**Trondhjem**: see NIDAROS.

**Troop**, small cavalry unit,  $\frac{1}{4}$ - $\frac{1}{3}$  of a squadron (*q.v.*); gen. commanded by a subaltern.

**Troostite**: see STEEL.

**Trophy**, pile of arms taken from vanquished enemy, or represent. in marble or on medals, etc.; anything taken from enemy as memorial of victory.

**Tropics**, the two latitudes 23° 27' N. (*T. of Cancer*), and 23° 27' S. (*T. of Capricorn*); the whole area Torrid Zone, betw. these, comprising that part of the earth on each side of the Equator, hence having hottest climate. At all points of the T. the sun stands in the zenith at the solstices.

**Troposphere**, the isothermal layer of the atmosphere, lying next below the stratosphere (*q.v.*).

**Troppau**: see OPAVA.

**Trot**, medium gait of horses, etc., with legs lifted in diagonal pairs.

**Trotting-race**, race for trotting horses, drawing a light 2-wheeled vehicle (*sulky*).

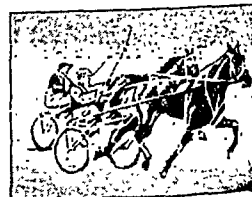
**Trotsky**, formerly *Gatchina*, tn., Russia, in



Trollope



Trombone



Trotting

dept. Leningrad, former residence of Tsar; pop., 17,860.

**Trotsky (Bronstein), Leo** (1877- ), Russ. statesm. and Bolshevik leader; with Lenin, led Russ. revol. 1917; created Red Army; in exile since Jan. 1928; *My Life; Hist. of Russ. Revolution.*

**Troubadours**, class of poets of chivalric love, 1st appear. in Provence; flourished from 11th-13th century.

**Trout**, popular name for many species of the salmon family, including the silvery species migrating to the sea, and all the yellow species inhabiting fresh waters. The latter are common to most lakes and rivers of temperate and cooler regions of Northern Hemisphere.

**Common t.**, widely distributed in Eastern Hemisphere, in lakes and rivers of British Isles and N. Eur.; **Lochleven t.** found in Lochleven in Scotland; **Great Lake t.** (*Salmo ferox*), found in some of the larger lakes in Britain, Ireland, and Scandinavia. Numerous species in N. America. Valued for their delicate flavour.

**Trouvères**, Med. narrative and epic poets of N. France.

**Trovatore, II**, opera by Verdi (q.v.), 1853.

**Trowbridge**, urb. dist. and mkt. tn., Wilts; pop., 12,000; manuf. broadcloth; burial-pl. Geo. Crabbe (q.v.; rector, 1814-32).

**Troy**, 1) anc. fortified tn. in N.W. Asia Minor. Gr. epic: *The Trojan War* (Homer's *Iliad*). The remains of Troy, dating back to the 3rd mill. B.C., and revealing 9 successive cities of wh. the 6th is that of Homer, were excavated by Schliemann (q.v.) near Turk. vill. of Hissarlik. 2) Tn., New York State, U.S.A.; at confluence of Mohawk and Hudson rvs.; pop., 72,300; mech. engineering and ironworks; collar and shirt manufacture.

**Troy** (from Troyes, Fr.), system of wts. for gold and silver; one pound troy = 12 oz. See **AVOIRDUPOIS** and **APOTHECARIES' WEIGHT**.

**Troyes**, cap. dépt. of Aube, Fr.; pop., 58,400; on Riv. Seine; cathed.; cotton mills.

**Treaty of T.** (1420) provided that Henry V was to marry Katharine (dau. of Charles VI of France), and to become regent and heir of France.

**Truce**, cessation of hostilities betw. opponents, by mutual agreement. See **ARMISTICE**. **Truce of God**, in M.A., prohibition from private warfare agst. eccles. authority; orig. (990) absolute prohibition; later (11th cent.) from noon Sat. to prime Monday, or from Wed. evng. to Monday morning.

**Truck**, open rly. wagon; tip-car on field

railway. **T. system**, (econ.) payment of workmen in goods or by-tickets entitling them to goods in employers' shops; virtually abolished by Truck Act, 1896.

**Trudgeon**, or **trudgen**, (swim.) double over-arm stroke. See **ILL. SWIMMING**.

**True-love**, herb-Paris, true love-knot, *Paris quadrifolia*; plant growing in woods; c. 12 in. high; green flower.

**Truffle**, subterranean fungus, highly esteemed as a delicacy; those from Périgord (*Tuber melanosporum*) being reckoned the best. They are "hunted" by dogs or pigs, and are generally found under oak trees.

**Trumpet**, hollow brass instr. with brilliant and resounding tone.

**Trumpeter**, 1) *Psophia crepitans*, S. Amer. bird, named from its characteristic note; about size of domestic fowl; plumage black, legs green. 2) *Latris lineata*, Austr. and N.Z. fish; table delicacy.

**Trumps**, (cards) suit ranking above all others for one game or "hand."

**Truro**, 1) city, Cornwall, 8 m. N. Fal-mouth; mod. cathed. (1880); pop., 11,100. 2) Tn., Nova Scotia, 54 m. N.E. Halifax; pop., 7,600.

**Truron.**, abbr. *Truronensis* (Lat.), of Truro (signature of bishop).

**Truss**, 1) (surg.) appliance wh. usu. consists of a metal belt with attached pad, worn as support in cases of hernia (q.v.). 2) (Tech.) Wooden or iron construc. in form of a triangle or trapeze, on wh. horizontal supporting beams of rly.-line are carried; also used for spans of great width in construc. of ceilings, roofs, and bridges. 3) Hay and straw wt.; 36 lb. straw, 56 lb. old hay, 60 lb. new hay.

**Trust**, capitalist combination of undertakings of same nature for purpose of monopolising market by amalgamation. **T. companies** (investment), see **INVESTMENT TRUST**; **MONOPOLY**.

**Trustee**, person entrusted with property to be dealt with in accordance with the wishes of creator of trust. He must not make personal profit from its management. If specific directions for investment of trust's funds are not made, T. must invest in securities wh. meet requirements of *Trustee Act* (1925), called *Trustee Investments* or *Trustee Stocks*, wh. incl. Govt. securities, certain railway debentures, specified public utility securities, and investments prescribed by Colonial Stock Act (1900) wh. gives *trustee status* to stocks issued by Colonial and Dominion Govts.

**T. savings banks**, under consolidated T.S.B. Act (1863), may be formed under sanction of Commissioners for Reduction of National Debt. A depositor may not have deposits in more than one T.S.B. All deposits, except those necessary for exigencies of the business, are placed with banks of England or Ireland to acct. of National Debt



Trotsky



River-trout

Commissioners. Interest at rate of  $2\frac{1}{2}\%$  is paid on deposits up to £200. **T. in bankruptcy**, one who takes possession of and administers estate of a bankrupt.

**Trypanosomes**, blood parasites transmitted by blood-sucking insects; many varieties, esp. that disseminated by the tsetse fly, the cause of **Trypanosomiasis**: see SLEEPING SICKNESS.

**Trypsin**, ferment of the pancreas; converts proteins into amino-acids and polypeptides.

**Tsangpo**, riv., Tibet; upper course of the Brahmaputra (*q.v.*).

**Tsar**: see CZAR.

**Tsaritsin**: see STALINGRAD.

**Tsarskoye Selo**: see DYETSKOYE SELO.

**Tsetse fly**, African stinging fly, attacks cattle, etc.; causal agent of *nagana* (*q.v.*), which annihilates whole herds. One species transmits the trypanosomes of sleeping-sickness (*q.v.*) to man.



Tsetse Fly

**Tsinan, Chinan**, cap. prov. of Shantung, China, on Riv. Hoang-Ho; pop., 266,800; university; textiles; flour mills.

**Tsing**: see MANCHU.

**Tsing-tao**, seapt., prov. of Shantung, China, on Bay of Kiaochow; pop., 47,260; silk and straw industry. Cap. of Ger. leased territory to 1914, when captured by Japan. See KIAOCHOW.

**T-square**, ruler with cross-piece for drawing perp. and par. lines.

**T.S.S.R.**, abbr. Turkmenistan Socialist Soviet Republic.

**Tsu-shima**, Jap. isl. in strait betw. Korea and Kinshiu; c. 267 sq.m.; pop., 40,000; naval harbour. **Battle of T.**, decisive naval victory of Japanese over Russians, 1905.

**Tu**, chem. symbol of thulium.

**Tuam**, mkt. tn., Co. Galway; pop., 3,300; R.C. archbishopric, Protestant bishopric.

**Tuareg**, Hamitic race of Berbers (*q.v.*) dwelling in W. and Centr. Sahara; c. 300,000 Mohammedan nomads.

**Tuatara**, a lizard-like reptile of New Zealand, technically known as *Sphenodon*, and today the sole surviving species of a race of reptiles that flourished in past geological periods. About 12 in. long, with row of spines extending from back of head to base of tail; becoming very rare.



Tuatara

**Tub**, of butter,  $1\frac{1}{2}$  firkins or 84 lbs.

**Tuba**, deepest-toned brass wind-instr.; long trumpet used by Romans for military purposes.

**Tubal-Cain**, (O.T.) son of Lamech; tradit. ancestor of metal-workers.

**Tube furnace**, long iron cylinder, gently inclined, in constant revolution, for mixing, heating, and burning substances, e.g., cement.

**T. lamp**, elec. glow-lamp in the shape of a tube with incandescent filament, also with mercury vapour or var. gases wh. emit light when current is passed thr. them.

**T. Railway**, underground railway in tubular tunnel, driven through soft material by Greatead System; a "shield" is forced forward in an airtight chamber in which sufficient pressure is maintained to prevent collapse; tunnel is lined by cast-iron segments bolted together. See UNDERGROUND RAILWAYS.

**T.-worms**, marine worms of the sub-class *Chaetopoda* that live at the bottom of the sea in self-made tubes, often very beautiful in shape, e.g., the shell-binder that makes its tube entirely of bright fragments of shell and shingle; others secrete a cement tube (*Serpula* and *Spirorbis*) often to be seen on old scallop and oyster shells.

**Tubercle**, a tiny nodule produced in the body by the attack of the *Bacillus tuberculosis* which is the bacillus responsible for the disease

**Tuberculosis**. There are two varieties of the bacillus, the human and the bovine. In adults, the commonest form is tuberculosis of the lungs, known as *phthisis* or consumption. In young people, tuberculosis attacks the joints, especially the hip-joint, and also the glands of the abdomen. In children, it attacks the lymphatic glands of the bronchial region and the neck. In babies, a gland, loaded with tubercle bacilli, may discharge into the blood, when the bacilli are carried all over the body, and death from *miliary tuberculosis* occurs. When the bacillus is grown in a culture tube outside the body, the fluid on which it has grown is concentrated by heat, freed from the growth by filtration, and is then known as *tuberculin*, to be used for diagnosing the presence of the disease when it is suspected. The best treatment is open-air life in a sanatorium; this is most successful in high altitudes (Switzerland), where the patient can be exposed to the sun. The existence of the disease must be recognised at an early stage if a cure is to be effected.

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**Tuberosa**, *Polianthes tuberosa*, trop. plant cultivated for its lilylike flowers and pleasant fragrance.

**Tuber**, (bot.) thickened underground branch, often bears buds for reproduction, such as the eyes of the potato.

**Tübingen**, tn., Württemberg, Ger., in Black Forest dist., on Riv. Neckar; pop. 21,000; 16th-cent. cas.; univ. (since 1477).

**T.U.C.**, abbr. Trades Union Congress.

**Tucson**, tn., S.E. Arizona, U.S.A., on Santa Cruz Riv.; pop., 32,500; R.C. bpric.,

cathed.; winter resort; gold, silver, and copper smelting.

**Tudor**, Eng. royal dynas. (of Welsh extraction); Henry VII and VIII, Edward VI, Mary, and Elizabeth; 1485-1603.

**Tuesday**, 3rd day of week; named after Tiu (Tyr), Norse god of war and son of Odin.

**Tufa**, cellular or porous rock of volcanic origin; also known as *tuff*.

**Tufter**, (stag-hunting) hound used to drive the stag from cover.

**Tug**, (naut.) small motor- or steamship used to tow barges in canals, or large vessels into harbour, by means of hawsers.

**Tug-of-war**, (athlet.) trial of strength betw. 2 teams pulling on a rope.

**Tugan-Baranovskii**, Michael (1805-1919), Russ. socialist, pol. economist.

**Tugela**, largest riv. of Natal (300 m.), partly forming boundary betw. Natal and Zululand; flows from *Drakensberg Mtns.*, past Colenso, into Indian Ocean. Scene of heavy fighting before battle of Spion Kop (q.r.) in 2nd. Boer War.

**Tulleries**, formerly royal residence in Paris; built for Catherine de' Medici, c. 1564 and added to subsequently. In Fr. Rev. Louis XVI was taken there as prisoner (1789) and National Assembly held its meetings in the riding-school; residence of Napoleon as First Consul and later as Emperor. Restored by Louis Philippe, who was in the palace when it was attacked by the mob in 1848; home of Napoleon III, 1851-70; bldg. destroyed by fire in Commune, 1871. The portion wh. remained has been restored and is used as a museum.

**Tuke**, Henry Scott (1858-1929). Eng. painter; R.A., 1914; noted for sea subjects; *All Hands to the Pumps* is among pictures bought by Chantrey Trustees.

**Tula**, chf. tn., prov. T. (c. 10,000 sq.m.; pop., 1,816,544) Europ. Russia, on Riv. Una; pop., 147,875; metal indus. (samovars, firearms); noted for *Tula silverware*; mineral, coal, and iron-ore deposits.

**Tulip**, liliaceous plant, orig. from E.; single, handsome flower on long stalk; cultivated princ. in Holland and grown in gardens generally. Some magnif. var. have been prod.; in 17th cent., when the plant was first cultivated in Holland, fantastic prices were paid for single bulbs. **T. tree**, *N. American magnoliaceous tree (Liriodendron tulipifera)*, yellow tulip-like flower, also *Michelia fuscata*, similar tree grown in China. The timber is known as white-wood.



Tulip



Tulip-tree

**Tullamore**, co. tn., Offaly, Leinster, I.F.S., on Grand Canal; ruined Shragh Castle (1588) in neighbourhood; pop., 5,000.

**Tulle**, soft, net-like matl. used for makg. or trimming dresses.

**Tullus Hostilius**, tradit. 3rd Kg. of Rome, 672-640 B.C.; carried on war with Alba.

**Tulsa**, city, Oklahoma, U.S.A., on Arkansas Riv.; pop., 141,250; centre of agric. country; and of oilfields.

**Tumbler**, 1) drinking glass without a foot, holding abt.  $\frac{1}{2}$  pt. 2) (Eng.) Loose part of a machine wh. operates by gravity, moving suddenly on reaching a cert. position. 3) Part of internal mechanism of a lock (q.r.), one of sevl. wh. are made to occupy a cert. position by means of a key, in order to shoot the bolt. 4) **T. pigeon**, kind of pigeon wh. makes movements resembling somersaults when in flight.

**Tumours**, swellings or new growths (neoplasms); may be benign or malignant. **Benign t.**, offer no danger to life; e.g., fibroid of the uterus. **Malignant t.**, cause death, sooner or later, according to rate of growth; they are commonly called cancer, though this term should be reserved for those growths arising from epithelial tissues, technically called carcinomas. Cancers arising in muscle are known as sarcomas (q.r.).

**Tun**, 1) large barrel. 2) Wine meas., 2 pipes or 4 hogsheds, or 252 gallons.

**Tunbridge Wells**, royal bor., Kent, Eng., inland watering-place, esp. popular in late 18th. cent.; "Pantiles"; chalybeate spring; pop., 35,400.

**Tundra**, barren plain in N. Russia or other Arctic region; frozen or partially frozen desert, only vegetation of wh. is moss and lichen.

**Tungsten**, rare metallic element, found in combination with other minerals; grey and very hard, fusible only at very high temperatures; used in an alloy of steel and for making filaments of incandescent electric lamps.

**Tungu**: see LANGUAGE SURVEY, *Altaic*.

**Tunguses**, Mongol. race, divided into *Manchu* (q.r.) and *T. proper* (c. 100,000). Nomadic hunters, fishers, and horse-breeders, living betw. Arctic Oc., the Yenisei Riv., and the Pacific.

**Tunic**, white woollen undergarment,  $\frac{3}{4}$  length, with short sleeves, worn by anc. Rom.; now applied to  $\frac{3}{4}$ -length upper garm. worn by women, also to regimental coat worn by Brit. army-officers and soldiers.

**Tunicata**, marine animals closely allied to Amphioxus; stand at the base of the vertebrate animals, having, in place of a bony backbone, a cartilaginous rod or notochord. See SEA-SQUIRT.



**Tunicle**, (eccles.) close-fitting vestment, similar to, though in theory smaller than, *dalmatic* (q.v.); worn by deacons at Eucharist, and under the dalmatic by bps. when pontificating.

**Tuning-fork**, (mus.) U-shaped instrument of metal; when struck, always sounds the same note; for tuning (string) instruments T.F. with 435 full vibrations per sec. is used: see PITCH.

**Tunis**, cap. of Tunisia (q.v.), 28 m. from Mediterr. coast; pop., 186,000 (80,000 Europeans); mosques; Pasteur institute; silk and wool factories.

**Tunisia**, **Tunisie**, Fr. protectorate, N. Africa, on Mediterranean, bounded W. by Algeria and Sahara, S. by Sahara and Libya; c. 48,450 sq.m.; pop., 2,200,000; (Berbers, Arabs, Turks; 175,000 Europ.); mountainous in N. (outliers of Atlas Mtns., to 5,300 feet) desert steppes in S., with Shott el Jerid (salt lake); exports: corn, olive oil, phosphates; iron, lead, zinc; wines, fruits; sponge fisheries; cap., *Tunis*.

**Tunnel**, horizontal passage cut below the earth's surface, under rivers, or thr. mountains, for carrying railways, roads, water supplies, etc.

**Tunney**, Gene (1898- ), American boxer, form. heavy-weight world champion; defeated Dempsey (q.v.), 1926, '27; Heeney, 1928; retired, 1928.

**Tunny**, **tuna**, a gigantic member of the mackerel family and resembling that fish somewhat in general appearance; may be 9 ft. long and weigh 1,000 lbs. Abundant in Mediterranean, and a few appear yearly in N. Sea, off Yorkshire coast, in Aug.-September. Principal fisheries are in Mediterranean and date back to Phœnician origin.

**Tunstall**, mkt. tn., Staffs, forming part of city of Stoke-on-Trent (q.v.); potteries, coal and iron-works.

**Tunstead**, Simon (c. 1300-69), head of Eng. branch of Minorite Franciscans at Oxford. Reputed author of *De Quatuor Principalibus*, authoritative treatise on mensural music.

**Tup**, male sheep (ram), for breeding.

**Tupí**, tribe of S. Amer. Inds. in Centr. Brazil, S. of Amazon; speech is commercial language of Centr. Brazil.

**Tupper**, Martin Farquhar (1810-89), Eng.

writer; author of the platitudinous and at one time immensely popular *Proverbial Philosophy* (3 series, 1837-67).

**Turban**, orient. headgear of various shapes, consisting of a long piece of cloth twisted round a cap.

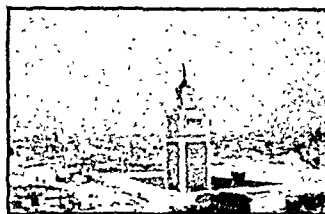
**Turbine**, machine by wh. energy of liquids (water) or gases (steam) under pressure is made to do work; fluid streams out into air or vacuum, acquiring high



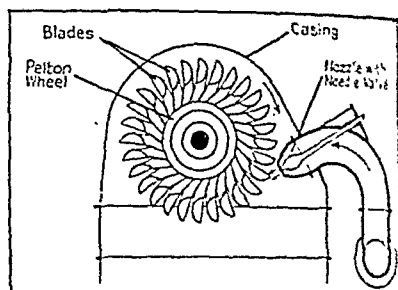
Tunny



Tuning Fork

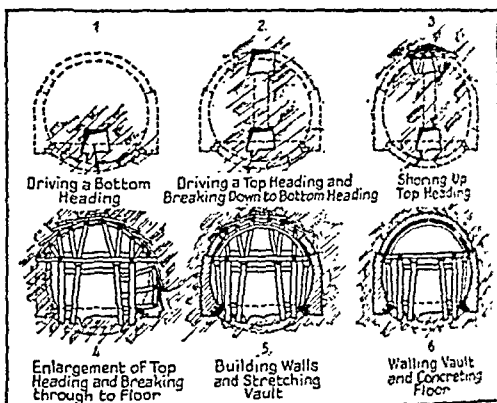


Tunis, the Grand Mosque



Turbine

velocity; it meets blades or vanes arranged on the circumference of a rotating wheel or cylinder, turning latter at high speed, thereby losing its own velocity (*impulse* 1); or it streams out from orifices in the wheel and drives latter round by reaction (*water* 1); Pelton wheel commonest (see III.). Steam: *de Laval* (*impulse*, similar to Pelton wheel);



Construction of Tunnel for Underground Railway

**Parsons, Curtis**, multistage reaction T. in wh. steam passes many bladed wheels and finally into vacuum. Mercury vapour T. now in use.

**Turbo-compressor**, turbo-blower, pump for compressing or exhausting gases (air, steam); constructed like a power turbine (q.v.) with a great no. of blades. Operates by centrifugal force of gas pumped. T-

**dynamo**, generator for producing elec. energy direct coupled to a steam turbine. **T.-locomotive**, locomotive driven by a steam turbine with condensing plant.

**Turbot**, member of the flat-fish (*Pleuronectes*) family. See **PLAICE**.

**Turcos**, Fr. Algerian infantry.

**Turco-Tatars**, Mongol. group of races in E. Eur. and N. Asia with cognate languages: Tatars (Tartars), Kirghiz, Kashgars, Uzbeks, Bashkirs, Osman Turks, etc.; in all c. 30 millions.

**Turenne**, Henri de (1611-75), Marshal of France in Thirty Years' War and in first wars of Louis XIV.

**Turgenyev**, or **Turgenev**, Ivan (1818-83), Russ. novel.: *A Sportsman's Sketches* (1852); *Fathers and Sons* (1862).

**Turgot**, Anne Robert Jacques, Bn. de (1727-81), Fr. pol. econ. and statesm.; Comptroller-Gen. of Finance, 1774.

**Turin**, **Torino**, city, Piedmont, It., cap. dist. of T. (3,950 sq.m.; pop., 1,283,000), at confluence rivs. Dora Riparia and Po; pop., 610,000; 15th-cent. cathed.; univ. (1400); palaces; museums; picture galleries; textile and automobile industry.

**Turkey**, **Türkiye Cümhuriyeti**, repub., Asia Minor and S.E. Europe, with Aegean isls. of Imbros and Tenedos. Main terr. (Anatolia and Kurdistan) comprises pract.

services developing. Chf. tns. *Angora* (cap.), Constantinople (Istanbul); Smyrna (Izmir).

**CONSTITUTION** (Oct. 20, 1924); Single-chambered *Nat. Assembly* (four yrs.; 316 members; one party; legislative and executive; universal suffrage, incl. women (from 1931) elects *President* (four yrs.) and *Nat. Council* (consultative and judicial).

**HISTORY**: Since A.D. 1000 the Turks have pressed W. from Asia; Osman I fndd. Turk. Empire c. 1300; Constantinople captured, 1453; zenith reached under Suleiman II, the Magnificent (captured Belgrade, 1521; besieged Vienna, 1529); slow decline in 17th century. Differences with Russia since 1700; after 1800 Turks driven out of the Danube principalities and (after 1821) out of Greece; Russo-Turk. War (1877-78) resulted in indepe. of Balkan States. On side of Centr. Powers in World War; Treaty of Sèvres (1920; never ratified) led to hostilities with Greece, who were expelled from Asia Minor in 1922; Treaty of Lausanne, 1923. Repub. proclaimed 1923; first pres., Kemal Pasha (q.v.), who moved cap. from Constantinople to Angora and introduced sweeping reforms.

**Turkey**, gallinaceous bird of the genus *Meleagris*, native of the S. United States and Florida. Domestic breed is descended from the Mexican species. Most beautiful is the Honduras or *ocellated turkey*.

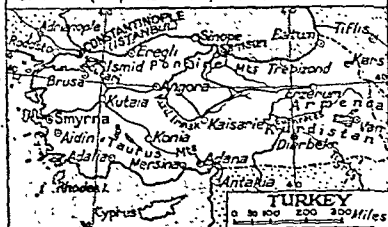
In wild state; feeds on seeds during daytime, but roosts in trees at night. Frequents mtns. at 8,000 to 10,000 ft. during summer, descending to lower valls. at approach of autumn, and congregates in great flocks. Polygamous, cock having highly coloured face and wattles, displayed during breeding season. **T. red**, fast cotton-dye, formerly manufac. from madder, now artific. out of alizarin and purpurin. **T. vultures**, aberrant birds-of-prey of the Order *Cathartidiformes*, confined to N. and S. Amer., the largest and most striking being the *condor*, of the Andes. All are carrion feeders.

**Turkish-Tartar Language**: see LANGUAGE SURVEY, *Allaic*.

**Turkistan**, former name for Asiatic territory, bounded W. by Caspian Sea, E. by Gobi Desert and Mongolia, incl. in Afghanistan, in Kazak, Uzbek, Turkmen, Kirghiz S.S. Republics, and (in China) Sin-kiang. Greater part of above conqd. by Russ., 1865; Auton. Soc. Sov. Rep., 1921-1925.



Dens 46 p. sq. n. Crops (1931): Tobacco, 45,000 t.; Cotton (185 lbs. of 500 lbs.) 168,000. For. trade (1931): Imports - 126.4 mill. £, Exports - 126.9 mill. £.



whole of Asia Minor (q.v.); Europ. terr. (E. Thrace, with former cap., Constantinople) bounded N. by Bulgaria, W. by Greece, S.W. by Aegean Sea, E. by Black Sea, and sep. from Asiatic T. by Dardanelles (Gallipoli Penins.), Sea of Marmora, and Bosphorus. Total area, 294,494 sq.m. (European T., 9,122 sq.m.); pop., 18,000,000 (Turks, Kurds; 97.4% Moslems); Armenian pop. diminished by emigration, Greek pop. (now only 26,000) by compulsory exchange in 1923 of Greeks in Turkey and Turks in Greece. Products include cotton, tobacco, fruits, cereals, olives, olive-oil, opium, silk; goats, sheep, cattle; minerals undeveloped; exports tobacco, carpets, dried fruits, mohair, cotton, opium. Rlys. 3,850 m.; merc. marine, (1931) 150,800 tons; air



Turkey



Woman of Turkistan

**Turkmenistan**, Soc. Sov. Repub., Asiatic Russia, created 1924; c. 190,000 sq.m.; pop., 1,379,900; Turkoman tribes and Uzbeks, Tekkés, Persians, Kirghiz (Mohammedans), mostly settled; poorly watered sandy steppes with oases (Merv); cattle breeding, cultivation of wheat and cotton; cap., *Polloratzk* (Ashkhabad).

**Turks and Caicos Islands**, group of 16 (9 T., 7 C.) islands in Brit. W. Indies, polit. annexed to Jamaica; cap., *Grand Turk*; salt, sponges, sisal hemp; pop., c. 5,500.

**Turku, Åbo**, seapt., Finland, on Gulf of Bothnia. Cap. of country till 1919, now of prov. Turku-Pori (8,400 sq.m.; pop., 523,000). Pop., 64,000. Two universities. Harbour free from ice in winter. **Peace of Åbo**, betw. Sweden and Russia, Aug., 1743.

**Turmeric**, rhizome of *Curcuma longa*, an Indian plant allied to ginger. Used princ. as a condiment and, on account of its yellow colour, in the preparation of pickles, etc. **T. paper**, paper impregnated with T., used as a test for alkali and boric acid.

**Turn**, (mus.) embellishment of a note by a group of grace-notes (*q.v.*).

**Turnberry**, golfing-resort, Ayrsh., Scot.; **T. castle** (fragmentary ruin) claims to be B. place of Robt. Bruce.

**Turner**, Joseph Mallord William (1775-1851), Eng. painter; pioneer of Impressionism.

**Turning moment**: see MOMENT.

**Turnip**, *Brassica rapa*, biennial plant cultivated for J. M. W. Turner its edible root; the young leaves are also used in cookery. **T.-eel**: see VINEGAR-EEL. **T. flea-beetle**, a small, jumping Beetle, injurious to crops.

**Turnover**, (finan.) amt. of money handled, *i.e.*, paid in and expended, in a business, within a given time. Profit on *rapid T.* (on such goods as foodstuffs, soap, etc.) usu. lower than that on *slow T.* (on expensive articles, *e.g.*, motorcars, pianos).

**Turnpike**, barrier to prevent passage along road until payment of toll (*q.v.*). Rapidly becoming obsolete.

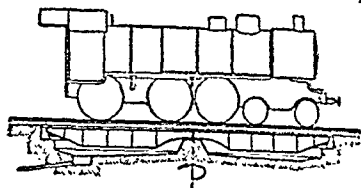
**Turnstile**, revolving gate, thr. wh. only one person can pass at a time; often provided with counter and pedal lock operated by attendant.

**Turnstone**, family of migratory shorebirds (*Streptopelia*) allied to plover; found in temperate climates; breeds in Norway and the Arctic regions; black and white plumage. So called from habit of turning over stones on shore in search of food.



Turnstone

**Turn-table**, (rly.) circular, revolving platform upon wh. rails are laid correspd.



Turn-table

with those of rly. line; used for reversing locomotives.

**Turpentine**, oily resin exuding from bark of certain trees, esp. terebinth (*see* PISTACHIO) and some conifers from wh. is distilled oil of *t.*, or *turps*, a colourless, strong-smelling liquid used in manuf. of varnish, as a painters' medium, medicinally as a counter-irritant and haemostatic, and in cases of uterine cancer.

**Turpin**, Dick (1706-39), Eng. highwayman; joined gang of deer-stealers and smugglers in Essex; set up as horse-dealer in Yorks; convicted of horse-stealing; hanged; story of his ride, on his mare, Black Bess, from London to York, prob. not authentic.

**Turquoise**, opaque mineral, aluminium phosphate coloured by iron or copper; sky-blue or greenish-blue; semi-precious stone.

**Turret**, 1) (archit.) little tower, often ornamental. 2) (Naval) Revolving armoured structure on wh. ship's guns are mounted.

**Turtle**, genus of Chelonian reptiles easily distinguished from the tortoises (*q.v.*) by the modification of their limbs into oar-like flippers perfectly adapted for swimming, and by the heart-shaped outline of the shell; never have more than two claws on each limb, and the head cannot be completely retracted within shelter of shell. Marine in habit, with almost world-wide distribution in tropic. seas. Four best known species are: *Green*, *Hawksbill*, *Loggerhead*, and *Leathery*. All oviparous, coming on shore to deposit their eggs and bury them in the sand. **T.-dove** variety of small wood-pigeon; migratory, shy, with reddish tint and soft cooing note.

**Tuscany**, mountainous division of centr. It., on Tyrrhenian Sea; 8,850 sq.m.; pop., 2,800,000; chf. riv., Arno; wine, fruit, olives; Carrara marble quarries in N.; cap., *Florence*.

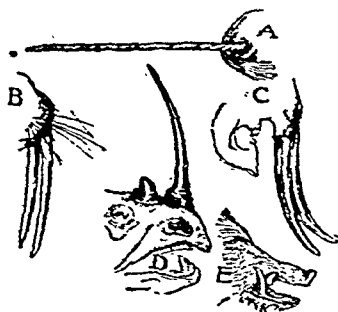


Turret (naval)

As *Etruria* (q.v.), annexed to Rome 350 B.C.; conquered by Charlemagne, A.D. 774; in later Mid. Ages comprised several city-states under Florence (Medici family); grand-duchy 1569; annexed to Sardinia, 1859; part of Italy, 1861.

**Tusculum**, S.E. of Rome, anciently a fav. country resort; Cicero had a villa there.

**Tusk**, long prominent tooth projecting



Types of Tusks

- A) Narwhal; B) Walrus; C) Elephant;  
D) Rhinoceros; E) Boar (pig)

from region of mouth; occurs gen. in pairs; Ts. of elephant supply ivory. See III.

**Tuskegee**, city, Alabama, U.S.A., on Tuskegee Riv.; pop., 3,300; seat of T. Normal and Industrial Institute for educ. of Negroes, fndd. by B. T. Washington, 1880.

**Tussaud**, Marie (1760-1850), *née* Groscholtz; Swiss modeller in wax; modelled heads of leaders of Fr. Rev.; came to London, 1800; fnder. of *Mme. Tussaud's Exhibition* of wax figures, establd. in Baker St., 1833; transferred to Marylebone Rd., 1884, largely destroyed by fire, 1925; re-opened, 1928.

**Tussore**, coarse fawn-coloured fabric, woven from silk of Indian wild silkworm.

**Tutankhamen**, Kg. of Egy. c. 1350 B.C.; restored anc. relig. disestablishd. by his father-in-law, Akhenaten; d. *et. c.* 18; his tomb, discovered at Thebes in 1922, furnished large quantities of invaluable specimens of anc. Egyptn. art and symbolism.

**Tutor**, 1) (educ.) member of staff responsible for personal supervision of progress and conduct of individual students. **Private t.**, person engaged as teacher and companion for youth or one who gives private lessons. 2) (Law) Minor's guardian.

**Tutti** (Ital., music), all together; direction on musical scores.



Tutankhamen

**Tutuila**, chf. isl. of American Samoa (q.v.).

**Tver**, chf. tn. of prov. T., Russian S.F.S.R. (c. 23,400 sq.m.; pop., 2,313,000) on Riv. Volga; pop., 109,450; textile indus., coach works. Cap. of Novgorod feudal principality until 1486.

**Tweed**, John, contemp. Brit. sculptor; national memorial to Kitchener, Horse Guards Parade, London, 1926; mem. to Ld. Beresford, St. Paul's Cathed.; bust of Joseph Chamberlain, Westminster Abbey; etc.

**Tweed**, riv. partially separ. Scot. from Eng.; rises in Peebles; flows past Peebles, Melrose, Kelso, and Coldstream into N. Sea at Berwick-upon-Tweed; the Anglo-Scottish boundary for last 16 m.; length 97 miles.

**Tweed**, soft woollen cloth, usu. woven from yarns of sevl. colours or shades, but witht. reg. pattern; mostly used of cloth woven in Scot. and Wales.

**Twelfth Night**; see EPIPHANY.

**Twelve Tables**, Law of Rom. law of 450 B.C., inscr. on 12 bronze tables; they formed the chf. basis of Roman jurisprudence.

**Twickenham**, Middx., Eng., residential sub. S.W. London, on Riv. Thames; fashionable in 18th cent.; home of Pope and Horace Walpole (at Strawberry Hill); pop., 39,900.

**Twilight of the Gods**, *Götterdämmerung*, see RING, THE.

**Twilight sleep**; see HYOSCYAMUS.

**Twill**, weave in wh. weft is passed under 2 or more warp threads at once, and inter-section changed by one thread to rt. or lt. at each throw of shuttle.

**Twin Falls**, on Snake Riv., Idaho, U.S.A.; 180 feet.

**Twins**, two infants delivered at the same birth; infants are usually smaller and more delicate in early months. Incidence of T. is 1 in 80 births. Human T. are derived either from the fertilisation of two distinct cells, or from a subdivision of one cell; in former case the infants may be of different sexes and have small resembl. to each other; in latter case they are always of same sex and very like each other.

**Twist**, 1) silk or cotton yarn consisting of several threads. 2) See RIFLE.

**Twitch grass**, *Agropyron repens*, a weed; used in med. in urinary and bladder complaints.

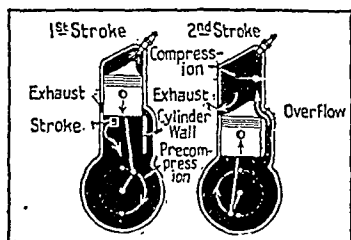
**Two-chamber system**, system of gov. by legis. body divided into 2 "chambers" or "Houses." Usu. 1 chamber elected on wide pop. franchise or apptd. (sometimes for life) by sup. authority. System supported on ground that 2nd chamber acts as check on precipitate action by 1st.

**Two Sicilies, Kingdom of the**; see NAPLES; SICILY.

**Two-step**, ballroom dance in 4-time.

**Two-stroke motor**, internal-combustn. en-

gine with explosion at every outward stroke of piston. No valves, exhaust (and in small



Two-Stroke Motor

engines intake) controlled by piston. Closed crank case for air compression. Advantages: more uniform tongue (*q.v.*), simpler cylinder casting.

**Two Thousand Guineas** (horse-race): see GUINEAS.

**Twyer**, (tech.) nozzle by wh. air blast is supplied to furnace.

**Tyburn**, London, site of gallows (1200-1783), at N.E. corner of Hyde Park.

**Tyche**, (Gr. myth.) goddess of Chance. See FORTUNA.

**Tycoon**, title formerly applied to hereditary c-in-c., Japan; aftwds. known as Shogun (*q.v.*).

**Tye**, Christopher (c. 1495-1572), Eng. composer; set portions of *Actes of the Apostles* to music, 1553.

**Tyler**, John, (1790-1862) 10th Pres. of U.S.A., 1841-45; elec. as Vice-Pres., 1840; succeeded as Pres. on death of W. H. Harrison.

**Tyler's Rebellion**, 1381, peasants' revolt under Wat Tyler, in protest agst. Statute of Labourers (*q.v.*) and heavy taxation. Rebels met Richard II at Smithfield, where Tyler was slain and his men dispersed.

**Tylor**, Sir Edwd. Burnett (1832-1917), Eng. anthropologist; prof. of anthropol. at Oxford, 1895; auth. *Anahuac, or Mexico and the Mexicans*, 1861; *Primitive Culture*, 1871, etc.

**Typan**, sheets of paper, card or cloth that cover the platen or cylinder on a printing machine to improve quality of press-work.

**Tympanum**, 1) (anat.) membranous drum of the ear. 2) A kettledrum. 3) (Archit.) Triang. space enclosed by a pediment (*q.v.*), or above a door in an arch; often adorned with reliefs or mosaic.

**Tynan**, Katharine (1863-1931), Irish writer and poet; works incl. *Louise de la Vallière*, 1885; *Miracle Plays*, 1896; *Irish Poems*, 1913; *The Infatuation of Peter*, 1926.

**Tyndale**, William (c. 1490-1536), Eng. reformer; trans. N.T. (1524-26), Pentateuch (1530), etc.; burned at the stake at Vilvorde, Belgium.

**Tyndall**, John (1820-93), Eng. physicist;

disc. *T. Effect*: diffusion of light on particles of a colloidal solution.

**Tyne**, riv. N. Eng., Northumb. and Durham; formed by confluence of N. Tyne and S. Tyne 1 m. N.W. of Hexham; course 30 m.; flows into North Sea at Tynemouth. Great industrial importance (shipb., engineering).

**Tyne Cot Cemetery**, Brit. milit. cemetery, Belgium, on Passchendaele Ridge (*q.v.*); 11,856 graves, and memorial to 34,957 missing (World War).

**Tynemouth**, co. bor. and seapt. tn. Northumb., at mouth of Riv. Tyne, 8 m. E.N.E. of Newcastle-upon-Tyne, of which it is the foreport; pop. (incl. North Shields) 64,900; watering-place; shipb., coal export, fisheries.

**Tynwald**: see KEYS, HOUSE OF.

**Type**, printers' types are small pieces of metal having a letter or other character in relief on one end. They are made in many sizes (some of wh. are shown on next p.) but are all the same height (height to paper) so that when assembled in lines and pages the faces present a uniform plane. Types are made of an alloy of lead, tin, antimony, and copper.

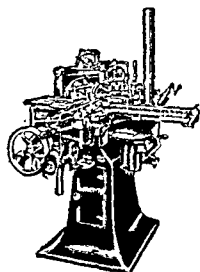
**Type composing machines**, first practical machine inv. by Dr. W. Church, an American resident in Eng. (1822). Chf. machines now in use are: **Monotype**, inv. by Tolbert Lanston, c. 1888; casts and sets single types; process needs two machines; on the first the operator, working at keyboard, perforates roll of paper which, passing through casting machine, directs making of correct letters and spaces; largely used for book printing. **Linotype**, inv. by Ottmar Mergenthaler (U.S.A.), c. 1876 and greatly improved since. It casts metal bars or slugs upon which, properly spaced, is type for the words of a complete line; operator, working at keyboard, sets up little matrices or moulds of the various letters, which are conveyed, when line is completed, to mouth of a pot containing molten metal where the slug is cast; the slugs, as cast, assemble one behind the other, and the matrices automatically return to their places in the magazine from



Tyndale



English Cemetery,  
Tyne Cot



Monotype Casting  
Machine

which they were originally released. The **Intertype** (chiefly used for newspaper work) is a similar machine claiming certain simplification. **Ludlow**, machine for casting slugs for head-lines and display composition;

ised by inflammation of the lower part of the small intestine, and to a lesser extent the large intestine. Temperature rises slowly during the first week, remains high during the second week, and commences to fall slowly

## TYPE SIZES

Point measurement	Old nomenclature	Roman	Italic
5 ■	Pearl	Pearl	<i>Pearl</i>
5½ ■	Ruby	Ruby	<i>Ruby</i>
6 ■	Nonpareil	Nonpareil	<i>Nonpareil</i>
7 ■	Minion	Minion	<i>Minion</i>
8 ■	Brevier	Brevier	<i>Brevier</i>
9 ■	Bourgeois	Bourgeois	<i>Bourgeois</i>
10 ■	Long Primer	Long Primer	<i>Long Primer</i>
11 ■	Small Pica	Small Pica	<i>Small Pica</i>
12 ■	Pica	Pica	<i>Pica</i>
14 ■	English	English	<i>English</i>
18 ■	Gt. Primer	Gt. Primer	<i>Gt. Primer</i>
Old Face	Old Face	Old Face	<i>Old Face</i>
Modern Face	Modern Face	Modern Face	<i>Modern Face</i>
Sanserif	Sanserif	Sanserif	

matrices set by hand in special composing stick wh. is locked in position on machine which casts the slug.

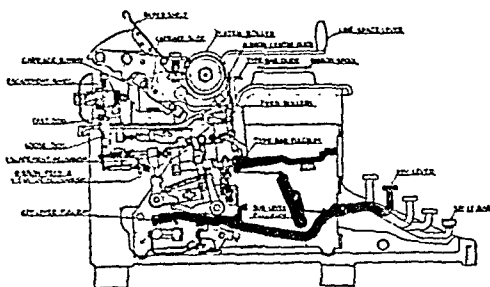
**Type metal:** see ANTIMONY.

**Typewriter**, machine for printing on paper letter by letter as struck on keyboard. Two main systems: typewheel and typebar. In *type-wheel systems* (Blick, Hammond, Teleprinter), the letter and all other signs are set out on the circumfer. of a single wheel; to print any one letter or sign, wheel is rotated, stopped at correct point, and then rocked forward so as to impress sign on paper; or paper may be pushed forward agst. wheel. In *type-bar systems* (innumerable makes), one to 3 letters or signs are carried on end of pivoted bar, wh. is thrown agst. paper when key is struck. In *shift-key machines* 2 or 3 signs on each type bar; paper shifted by special keys so as to take 2nd or 3rd sign (caps., figs.). Paper on *roller*, roller on *carriage*, sliding one space every time key is struck; pulled along by spring, wound up when carriage is reset to start new line. Inking by roller, pad, or (usu.) ribbon interposed betw. type and paper. See TELEPRINTER.

**Typhoid fever**, severe contagious disease caused by the typhoid bacillus, and character-

during the third week. Symptoms: extreme prostration, diarrhoea, loss of appetite. During the third week the bowel may rupture owing to the breaking down of a typhoid ulcer and general peritonitis (q.v.) result. Convalescence takes at least another 3 weeks.

**Typhon**, (myth.) hundred-headed monster, son of Gaea and Tartarus; father of



MODEL OF TYPING MACHINE

Cerberus and the Chimaera; personification of volcanic energy and destructive winds.

**Typhoon**, whirlwind, hurricane, tornado (q.v.) occurring in China Seas. †

**Typhus**, dangerous infectious disease

transmitted by the body-louse; characterised by high fever, delirium, and rash; caused by the bacillus *typhi exanthematici*.

**Typography**, the art of printing (*q.v.*), and designing type and of using it to best advantage.

**Tyr**, *lin*: see TUESDAY.

**Tyrannosaurus**, extinct carnivorous dinosaur, unarmoured, *c.* 40 ft. long, walking on hind limbs.

**Tyrant**, in anc. Gr. every indep. ruler; hence absolute ruler unconstrained by law or constitutn.; today any masterful, domineering man.

**Tyre**, seapt. and chf. commercial city of anc. Phoenicia, sit. on an isl. (now penins.) in Mediterranean. Fndd. *c.* 14th cent. B.C. by Sidon; reached zenith of prosperity under Hiram (*c.* 1000 B.C.); attacked by Assyrians and Babylonians; captured by Alexander the Great, 332 B.C.; Roman 68 B.C. (famous for *Tyrian purple*); Moslem in 7th cent. Site now occupied by small tn. of *Sur* (S. Syria).

**Tyrol, Tirol**, alpine region, Austria and

It., betw. Bavarian Alps (exclusive) and Dolomites; intersected by upper valls. of the Inn, Lech, Adige, and Drave. 1) *Austrian T.*, W. prov. of Austria, lying N. of Brenner Pass; forestry, dairy farming, tourist resorts; cap., *Innsbruck*. 2) *Italian or S. T.*, comprising Venezia Tridentina (*q.v.*) and part dept. Belluno; 6,255 sq.m.; includes Trentino (*q.v.*) pop., 670,000; mild, almost sub-tropical, climate; fruit, vines, maize, tobacco; many spas; chf. tn. *Trent*. Bavarian, 11th cent.; Austr., 1363; Bav., 1806; revolt against Fr. and Bavaria led by Andreas Hofer, 1809; Austr., 1814; S. Tyrol Ital., 1919.

**Tyrone**, inland co., Ulster, N. Ire.; area, 1218 sq.m.; pop., 132,800; surface hilly (*Sawel*, 2,240 ft.) rivs. Foyle, Blackwater; agric., flax, stock-raising, coal-mining, marble quarries; manuf. linen, woollens, earthenware; co. tn., *Omagh*.

**Tyrrhenians**, anc. Gr. name for the Etruscans. **Tyrrhenian Sea**, part of Medit. betw. It., Sicily, Sardinia, and Corsica.

**Tyrtaeus**, Gr. elegiac poet, 7th cent. B.C.

# U

**U**, 1) abbr., "U-boat" (*Unterseeboot*), Ger. submarine. 2) (Chem.) symb. of uranium.

**Ubangi**, riv. (1,550 m.), Fr. Equatorial Africa, N. trib. Riv. Congo, on frontier of Belgian Congo. **Ubangi-Shari**, Fr. colony, Equatorial Africa; 190,300 sq.m.; pop., 1,100,000; cap., *Bangi*.

**Uberrima fides** (Lat.), implicit good faith; applied esp. to contracts betw. parties standing in relation of mutual trust, e.g., guardian and ward, solicitor and client.

**Uccello**, Paolo (1397-1475), Ital. painter.; Florentine School; designed mosaics for St. Mark's, Venice.

**Udaipur**, **Mewar**, 1) State, Rajputana, 12,700 sq.m.; pop., 1,620,600. 2) Cap. of State, on L. Pichola; palaces; pop., 52,370.

**Udal**, Nicholas (1505-56), Eng. dramatist and Latin scholar; headmaster of Eton (1534) and Westminster (1555-56); *Ralph Roister Doister* (c. 1541), 1st Eng. comedy.

**Udder**, mammary gland of female domestic animals; secretes milk.

**Udine**, city, N. It., cap. dept. of U. (2,700 sq.m.); pop., 67,500; abpric.; cotton and silk industry. Ital. General Headqrs., 1915-17.

**Udolpho**, **Mysteries of**, romance by Mrs. Radcliffe, 1794; typical of the "Gothic" novel in its supernatural machinery and piled-up horror.

**Ufa**, cap. of Bashkir A.S.S.R., at confluence of rivs. Ufa and Byelaya; pop., 98,850; copper, breweries.

**Uffizi Gallery**, bldg. in Florence, built by Giorgio Vasari (15th cent.); orig. used as administrative offices by Dukes of Tuscany, later as repository of art treasures by Medici family. Acquired by Ital. Govt., 1860. Pictures, arranged in chronological order, include works by Botticelli, Fra Angelico, Filippino Lippi, Michelangelo, Titian, etc.

**U.F.S.R.**, abbr. Uzbekistan Fed. Soviet Republic.

**Uganda**, Brit. protectorate, E. Africa, bounded N. by Anglo-Egypt. Sudan, W. by Belg. Congo, S. by Tanganyika Terr. and L. Victoria, E. by Kenya; 94,200 sq.m. (water 13,500 sq.m.); pop., 3,513,600 (2000 Europeans, 14,000 Asiatics, remainder natives, mainly Bantu). Divided into E., N., W. *Provs.* and *Buganda Prov.* (native kgdm.). Contains Victoria Nile (see NILE), Ls. Kioga, and parts of Victoria, Albert

Edward, and Rudolph. Surface a plateau (3000 ft.); mountainous in S.W. and E.; forests in S.; climate trop., soil fertile; cotton, rubber, coffee, oilseeds, ivory, hides, and skins. Cap., *Entebbe*.

**Ugolino della Gherardesca**, despot of Pisa, starved to death, 1288, with two sons and two grandsons, by Abp. Ruggieri.

**Ugrians**, branch of Mongoloid Ural-Altaics; Magyars (10 mill.), Ostyaks (20,000), and Voguls (8000). Largely still primitive hunters and fishers, with Shamanistic relig. practices.

**Uhlan**, (Pol.), lancer in former Ger. Army.

**Uhlend**, Ludwig (1787-1862), Ger. poet; ballads: *Ich hatt' einen Kameraden* (I Had a Loving Comrade); editor of *Old High and Low Ger. Folk Songs*.

**Uinta Mountains**, part of *Rocky Mtn.* system (q.v.) in Utah, U.S.A.; many high peaks: King's Peak, 13,500 ft., is highest in State.

**Uist**, **North**, isl. (118 sq. m.), Outer Hebrides, Scot., separated at high tide by Isl. of *Benbecula* (5 by 7 m.) from **South Uist** (141 sq.m.); hilly (Ben More, S. Uist, 2,030 ft.), many lakes; Prince Charlie and Flora Macdonald associations.

**Uitenhage**, tn. of Cape Province, S. Africa, 21 m. N. of Port Elizabeth; railway workshops; pop., 14,000.

**Uitlander**, in S. Africa, esp. in republican Transvaal, Eur. settler not of Dutch nationality. Refusal of civil rights to U. gave rise to Jameson Raid (q.v.) and eventually to S. African War of 1899-1902.

**Ujiji**, tn., E. Africa, E. of L. Tanganyika; former slave-mart; meeting-place of Stanley and Livingstone, 1871; pop., 25,000.

**Ujpest**, tn., Hungary, on Riv. Danube, N. of Budapest; pop., 56,490; grain export.

**U.K.**, abbr. United Kingdom of Great Britain and Northern Ireland.

**Ukase**, former imperial decree in Russia, having the force of law.

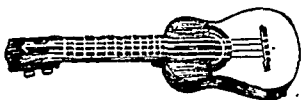
**Ukerewe**, largest island in L. Victoria, E. Africa; 215 sq.miles.

**Ukraine**, Soc. Sov. Rep., created 1919, second largest in Russian Union, bounded W. by Poland, Rumania, S. by Black Sea, Sea of Azov, E. by Russ. S.F.S.R., and N. by White Russia; c. 174,300 sq.m.; pop., 31,500,000 (80% Ukrainians, 9.5% Russ., 5.4% Jews). Contains Black Earth Area,



chf. wheat prod. region of Russia. Cattle-breeding, minerals, coal, iron ore, phosphorite. Incl. import. new hydro-elec. station at Kichaks (*q.v.*), and Donetz coal basin. Rivs.: Dnieper, Bug, Desna, Donetz. Chf. towns: Kiev, Kharkov (admin. centre), Odessa, Dnepropetrovsk. Following collapse of Russ. Emp., 1917, signed sep. peace treaty with Centr. Powers. War against Poland led by Petlura, 1918. Petlura joined Poles against Bolsh., 1920. Third Ukrain. Rep. formed 1920, Petlura's and Pol. troops being driven out of Kiev by Sov. forces. Indep. recog. by Russ. and Pol., by Treaty of Riga, Oct., 1921.

**Ukulele**, musical instr. resembling small guitar,



Ukulele

orig. used by Hawaiian natives; now widely introd. into Europe and America as jazz instrument.

**Ulan Bator Hoto, Uрга**, city and cap. "Mongolian People's Revolutionary Govt." (theoretically part of China), 170 m. S. of Kiakhta, N. of Gobi Desert, on Riv. Tola. Monastery part of city contains resid. of "Living Buddha"; Mongol section is inhabited by 14,000 Buddhist Lamas; pop., Chinese city, 26,300.

**Ulcer**, an infection by bacteria wh. destroys upper layer of cells of the skin or the mucous membrane; deep ulcers are crater-shaped. In case of deep-seated ulcers of the stomach or intestines, the wall may be perforated, an aperture into the abdominal cavity being formed, and this is dangerous to life. **U.**, **rodent**, a painless new growth of the skin of elderly people; commonly affects the face. Begins as a nodule, later ulcerates.

**Uleaborg**: see OULU.

**Ulema** (Arab.), collective name for Moslem doctors of law and interpreters of the Koran.

**Ullswater**, James Wm. Lowther (1855-), speaker, Brit. Hse. of Com., 1905-21; chm. Speaker's Electoral Reform Confer., 1916-17, paving way for extension of franchise to include women; chm. Devolution Confer., 1919.

**Ullswater**, lake, Cumb. and Westm., Lake Dist., Eng. (7½ m. by ¼-¾ miles).

**Ulm**, city, Württemberg, Germany, on Riv. Danube, opp. *Neu-Ulm*; pop., 60,000; Luth. cathed. (14th cent.; tower, 528 ft.); industries include metal, engineering, textiles, wool, and leather. Scene of capitulatn. of 23,000 Austrians (Gen. Mack) to Napoleon, 18 Oct. 1805, prior to Austerlitz.

**Ulna**, (anat.) inner bone of the for-arm extending from elbow to wrist.

**Ulpian** (Domitius Ulpianus) (c. 170-228), Rom. jurist.

**Ulrich**, 1) **U.**, Duke of Württemberg (1487-1550), exiled by Swabian Alliance 1519, restored 1534. 2) **U. von Liechtenstein** (c. 1200-76), Ger. poet.

**Ulster**, N. prov. of Ire.; most of it (*i.e.*, Antrim, Armagh, Down, Fermanagh, Londonderry, and Tyrone) belongs to *Northern Ire.*; counties of Cavan, Donegal, and Monaghan to I.F.S.

**Ulster**, long, loose overcoat orig. made of rough cloth (frieze) manuf. in Ulster.

**Ulster King of Arms** (heraldry), chief officer of arms in Ireland; K. of A., Registrar, and Knight Attendant to Order of St. Patrick. See HERALD.

**Ulster Rifles**, **Royal**, Brit. rifle regt.; union (1793) of old 83rd and 86th Foot; depot Armagh (N. Ire.); record office, Leith; 21 battalions in World War (then known as Royal Irish Rifles).

**Ult.**, abbr. *ultimo* (Lat.,) last (month.)

**Ultima ratio** (Lat.), the last argument; the final appeal to arms. **Ultima Thule** (Lat.), farthest Thule; the most distant land.

**Ultimate Court of Appeal**, in Eng. law, for civil cases, Hse. of Lds.; in eccles. cases and those brought from parts of Brit. Commonwealth overseas, Privy Council.

**Ultimatum**, in Internat. Law, final proposition or demand to an adversary bef. assumption of vigorous, gen. warlike measures; *e.g.* U. of Austria to Serbia 23 July, 1914.

**Ultimo** (Lat.), abbrev. *ult.*, last month.

**Ultra** (Lat.), beyond, exceeding a measure or limit. **U. vires**, beyond the legal or statutory powers of a person, crt., or committee.

**Ultramarine**, blue mineral pigment fast to light and to soap; formerly manufd. by grinding lapis-lazuli (*q.v.*), now, artific. produced by heating soda or sodium sulphate with clay and coal. **U. green**, mineral wh. when roasted with sulphur turns into U. blue; used as an oil- or water-colour, for book-printing, lithography, wall-paper and calico printing; also for "washing blue," and papier-mâché.

**Ultra-microscope**, enables presence of fine particles, too small to be seen, to be detected by light scattered by them when illuminated by a beam of light at rt. angles to direction of vision; particles appear like stars (usu. in rapid *Brownian* motion (*q.v.*) on a dark background, but their shape cannot be recognised. First used 1903.

**Ultramontane**, "beyond the mountains," designa. of those who, in countries N. of the Alps, give full support to the temporal and spiritual claims of Papacy.

**Ultra short waves**, (radio) wave-lengths of less than 10 metres.

**Ultra-violet radiation**, invisible R. of shorter wave-length than violet in spectrum

(*q.v.*); chem. and biol. very active. Detected by its photog. or photoelec. effect. *Sun-rays* are rich in U.-V.R.; shortest waves absorbed by the air with produc. of *ozone* in *stratosphere* (*q.v.*).

**Ulundi**, Zululand, 115 m. N.N.E. of Durban; former royal kraal of Cetywayo; defeat of Zulus by Lord Chelmsford, 1870; battle betw. Cetywayo and rival chief, Ulibepu, 1883.

**Ulverston**, urb. dist., Lancs, 8 m. N.E. of Barrow-in-Furness; iron and steel and chemical works; pop., 9,235.

**Ulyanovsk, Simbirsk**, chf. tn. prov., Russian R.S.F.R. (c. 13,400 sq.m.; pop., 1,517,618) on Riv. Volga; pop., 72,275; b.-place of V. I. Ulyanov (Lenin); the father of Kerenski was a master at the local school and taught Lenin.

**Ulysses, Ulixes**, Lat. for Odysseus (*q.v.*).

**Umbel**, (bot.) a flattened or rounded inflorescence in which the flower stalks spring from a common centre, each carrying a single flower.

**Umbelliferac.** (bot.) very large tribe of plants, the flowers of wh. are at the extremities of small stalks, united at the base to form an umbel.

**Umbel**, chestnut-coloured mineral pigment.

**Umbrella**, folding portable covering of silk or cotton stretched over collapsible metal ribs attached to handle, used as protection against rain; first popularised in Eng. in 18th cent. by Jonas Hanway. **U. bird**, Amer. bird with U-shaped crest, long wattle hanging from throat, and black plumage. **U. palm**, talipot palm, tall spreading tree of S. Asia; grows to a height of 100 ft.; has huge fan-shaped leaves.

**Umbria**, region of centr. It.; 3,365 sq.m.; pop., 603,900; fertile, hilly country, mild climate; agric., cattle and sheep, wool; rubber and jute works, iron foundries (Terni); many small tns. of hist. and artist. interest. Chf. tn., *Perugia*.

**Umpire**, (sport) one who sees that the rules of a game are observed; see REFEREE.

**Umtali**, tn., S. Rhodesia, 170 m. S.E. of Salisbury; rlyw. works; mines; pop., 2,300.

**Unam Sanctam**, title of the bull of Boniface VIII (1302), wh. proclaimed the temporal supremacy of the Pope.

**Unamuno**, Miguel de, (1864- ), Span. author and philos.: *The Agony of Christianity*.

**Uncalled capital**: see CAPITAL.

**Uncial**, type of letters found in MSS. from 4th-8th cent.; large characters resembling mod. caps., but rounder, standing c. an inch high.

**Uncle Sam**, popular interpretation of initials "U.S.," typifying Amer. nation.

**Uncle Tom's Cabin**, novel by Mrs.

Beecher Stowe directed agnst. Negro slavery; appeared in *National Era* (1851-52).

**Unconscious, The**, (psychol.) psychical impulses and experiences which are inhibited by a hidden effort from entering into consciousness. An important factor in the psychol. teachings of Freud (*q.v.*).

**Undercarriage**, (aeronaut.) supporting frame of aeroplanes; fitted with wheels or floats (hydroplanes); in case of amphibians (*q.v.*), U. has both wheels and floats.

**Undergraduate**, univ. student who has not yet taken a degree.

**Underground Railways**, gen. term for rly. systems (usu. electrified) running below ground-level in any large city, as in London, Paris, Berlin, etc. The older lines run in tunnels just below street-lvl., the newer lines, with restricted loading-gauge, in deep tunnels. See TUBE RAILWAY. The *Underground Electric Rlys. Co. of London* ("Underground") was a holding co. controlling *Metropolitan, Met. District, City and S. London, Central London, and London Electric Rlys.*, in addn. to London General Omnibus Co., etc. All these in 1933 were absorbed in the London Passenger Transport Board (*q.v.*). By extension, the word "Underground" is used also for the many suburban sections of the system which run above ground. See *ills.* next page, and to TUNNEL.

**Under-insurance**, when amt. for wh. property is insured is less than its value insurer is only liable for the propor. that amt. insured bears to value of property.

**Undervaluation of assets**, in a balance sheet; effected in order to create *hidden reserves*; see RESERVES.

**Underwing-moths**, medium-sized moths with grey or brown upper-wings and underwings of red, blue, or yellow, with black bands.

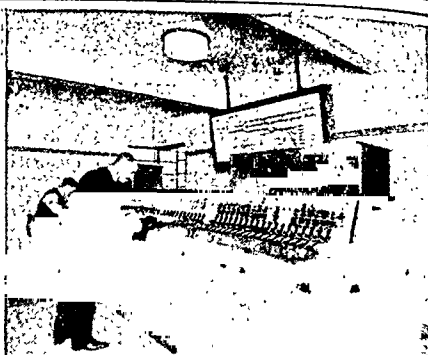
**Underwriter**, 1) one undertaking marine insurance; see LLOYD'S. 2) (Stk. Exch.). One who executes an **underwriting** undertaking by financial houses or individuals, to take up a stated proportion of a new issue of shares, debentures, etc., not subscribed by the public, see ISSUING HOUSE. **U. commission**, (Stk. Exch.) fee payable for U. a new issue of capital; varies from 1% to 10% of amt. underwritten; must be publ. in *prospectus* (*q.v.*) of issue.

**Undine**, 1) (myth.), a water-nymph. 2) Romantic tale of a water-nymph, by F. de la Motte Fouqué (*q.v.*), 1811; used by E. Hoffmann as libretto for opera, 1816.

**Undischarged bankrupt**, until a bankrupt person has received his *discharge*, wh. is only granted when court is satisfied of the honesty of his intentions and of his full co-operation in disclosure of all the facts as to his business and his personal means, he remains an U.B.; as such he is prohibited by



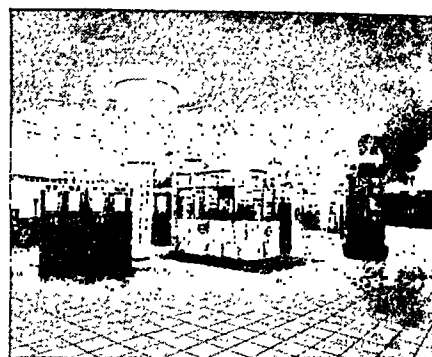
Piccadilly Line: Trailer Car



Arnos Grove: Signal Cabin



Wood Green: Platform



Manor House: Booking Hall

Underground Electric Railways, London

law from borrowing (or otherwise incurring debt of) more than £10 without disclosing that he is an U.B., nor may he do business under a different name without disclosing this fact to all with whom he deals.

**Undset**, Sigrid (1882–), Norweg. novelist: *Kristin Lavransdatter*. Nobel Prize (Lit.), 1928.

**Undue influence**, moral or other pressure to obt. consent of party to contract in a legal trans., e.g., a will, whereby contract is invalidated.



Sigrid Undset

**Undulatory (wave) theory** of light, expounded by Huygens, 1678; accdg. to wh. light consists in transverse vibrations in ether pervading all space. Explains chief properties of light, e.g., interference, diffraction, polarisation (*qq.v.*) wh. are difficult to explain by any other theory. See MAXWELL (Electromagnetic Theory). Compton and photo-electric effects (*q.v.*) cannot be explained on *U. theory*.

**Unemployment**, condition of those, esp. members of labouring classes, who through periodical trade depression, displacement of

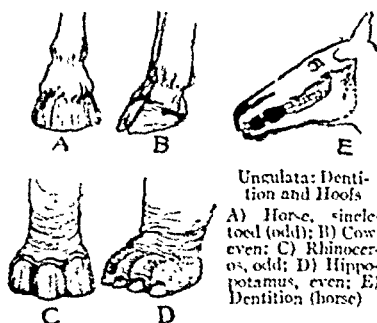
labour by technical improvements, etc., are unable to obtain paid work; since World War has become grave world-wide problem, e.g., in Sept., 1932, number of registered unemployed reached nearly 3,000,000 in Gt. Brit., over 5,000,000 in Ger., and (est.) over 10,000,000 in U.S.A.; in most countries alleviation attempted by State disbursements as well as private charity. See U. INSURANCE; MEANS TEST.

**Unemployment insurance**, system origtd. in Ger. of compulsory insur. agst. U.; financed by employers, employed, and State contrib. (See also HEALTH INSURANCE.) Adopted in Eng. for few trades, 1911. Extended by stages to almost all working population. Sim. systems in other countries. Supplemented after World War, at expense of State, by "uncovenanted benefit," pop. called "the Dole."

**Ungulata**, (zool.) order of hoofed mammals, mainly herbivorous; classed as *Artiodactyla* and *Perissodactyla* (*qq.v.*). Ill. next p.

**Uniate**, (relig.) member of one of several Eastern Christian Churches wh. although retaining their own liturgies and customs (marriage of clergy, Communion in both kinds, etc.) are in communion with R.C. Church. Each Eastern Christian Ch., Ar-

menian, Coptic, Byzantine, Syrian, etc., has a corresponding Uniate Church.



Ungulata: Dentition and Hoofs

A) Horse, single-toed (odd); B) Cow, even; C) Rhinoceros, odd; D) Hippopotamus, even; E) Dentition (horse)

**Unicellular**, (biol.) composed of a single cell, e.g., amoeba, bacteria.

**Unicorn**, 1) fabulous beast with long single frontal horn, one of the supporters of the royal arms of Eng.; symbol of chastity. 2) Constellation (*Monoceros*); see PL. ASTRONOMY, S.C.H., F. 3) Scots gold coin, current 15th-16th cent., = 23s. Scot., value c. 1s. 11d.

**Unimodal**, (statistical) having one mode, (see MODE).

**Union City**, New Jersey, U.S.A., on Hudson Riv., opposite New York; pop., 58,650; silk manuf. centre.

**Unionism**, polit. doctrine favouring formation or continuance of large gov. units; in Eng. was esp. applied to opposition to Irish Home Rule.

**Union Jack**, the Brit. National flag, wh. bears, super-imposed, the cross of St. George (Eng.), red on white, the saltire of St. Patrick (Ire.), red on white, and the saltire of St. Andrew (Scot.), white on blue. In its simple form a military flag, it appears also in the naval ensigns (q.v.), and, combined with distinctive national emblems, in various Dominion and Colonial flags (see col. PL. FLAGS).

**Union Pacific Railroad System**, U.S.A., operates from Missouri Riv., through Colorado and Utah, to Pacific States; 3,705 miles.

**Unison** (mus.), the state of sounding at the same pitch. ("In unison" often inaccurately applied to passages sung or played in octaves).

**Unitarians**, Christian sect first estab. on a definite basis in 1719; reject doctr. of Trinity as destructive of the Unity of God; generally reject divinity of Christ; deprecate fixity of creed and crystallisation of relig. thought through over-definition; congregational in organisation.

**United Brethren**: see MORAVIANS.

**United Free Church of Scotland**: see CHURCH OF SCOTLAND.

**United Kingdom**, formerly, legis. unit consisting of Gt. Brit. and Ireland. Now, Gt. Brit. and Nthn. Ire. only. *Revenue and Expenditure*: Expend. incrsd. fourfold since 1914, owing mainly to large incr. in National Debt, and in personnel of Civil Service; revenue supplied by incr. in Income Tax (contribtg.  $\frac{1}{3}$  of whole), Customs and Estate Duties. *Trade*: Great difference betw. figures of 1913 and those of 1930 mainly due to change in purchasing power of £. Sudden fall in Exports, unaccompd. by sim. fall in Imports, 1931, cause of unfavourable Balance of Paymnts. of that year. Proportn. of imports of food, etc., and of wholly or partially manufd. goods to total imports, has steadily increased. *Population*: increased pop. of pre-war period has hitherto maintained fig. of total no. of births at same level, in spite of steadily falling birth-rate; this fall now causing decline in total no. of births, to some extent counterbalanced by decrease in infantile mortality, so that proportn. of persons betw. 10 and 20 yrs. is on the increase. *Unemployment*: Near 70% of total contribtd. by pop. of N. Eng., Midlands, and Scotland, owing mainly to greater density of pop. in these districts. See Statistical Diagrams, etc., next three pages; also articles ENGLAND, WALES, SCOTLAND, IRELAND, GREAT BRITAIN.

**United Methodist Church**, Nonconformist Christian body formed (1907) by union of Methodist New Connexion, United Meth. Free Ch., and Bible Christians; absorbed (1932) in Methodist (q.v.) Church.

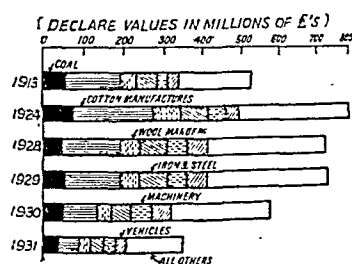
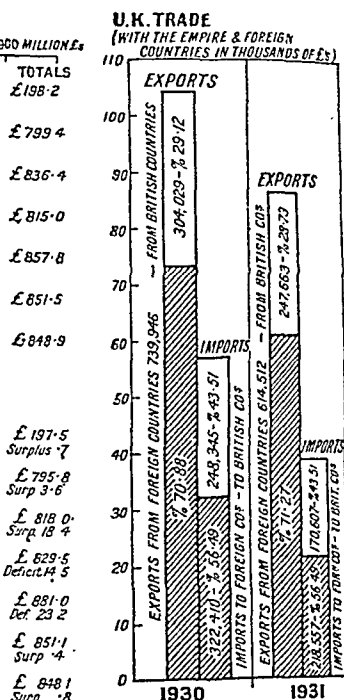
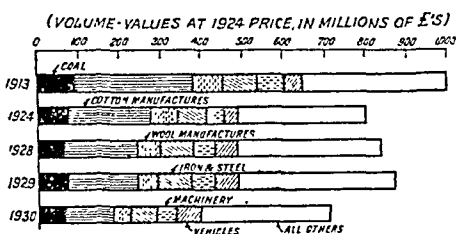
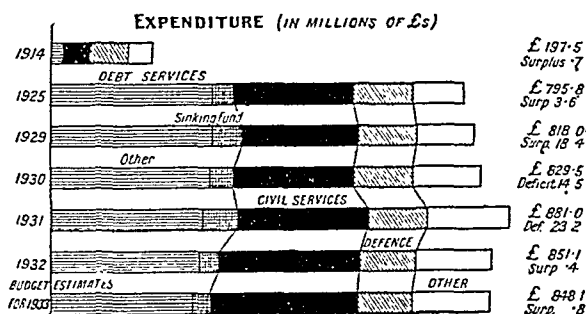
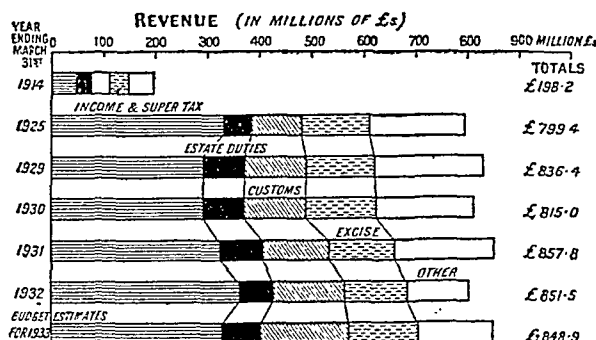
**United Presbyterian Church of Scotland**: see CHURCH OF SCOTLAND.

**United Provinces**, name assumed by the seven provs. of the Netherlands (Holland, Zealand, Utrecht, Friesland, Geldsland, Overysse, and Groningen) on declaring their independence of Spain at Union of Utrecht, 1579 (see BELGIUM).

**United Provinces of Agra and Oudh**, prov. N. India, Upper Ganges plain; 106,300 sq.m.; pop., 48,408,800; includes the 3 native states of Rampur, Tehri (Gharwal) and Benares (5,930 sq.m.; pop., 1,200,000); wheat, rice, barley, cotton, sugar, oilseeds; chf. cities, *Allahabad* (cap.), Agra, Benares, Cawnpore, Lucknow.

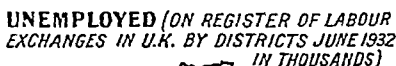
**United Service Institution, Royal**, London, orig. known as *Naval and Military Library and Museum*, 1831; present title assumed, 1830; incorportd., 1860. Museum is in Banqueting Hall, Whitehall (q.v.); contains relics, maps, contour plans, etc., of Brit. naval and military events.

**United States of America**, Federal repub., N. Amer., of 48 States, betw. Atlantic and Pacific oceans, bounded on N. by Canada, on S. by Mexico and Gulf of M.; 3,026,800 sq.m.; pop., 124,069,000 (Negroes,



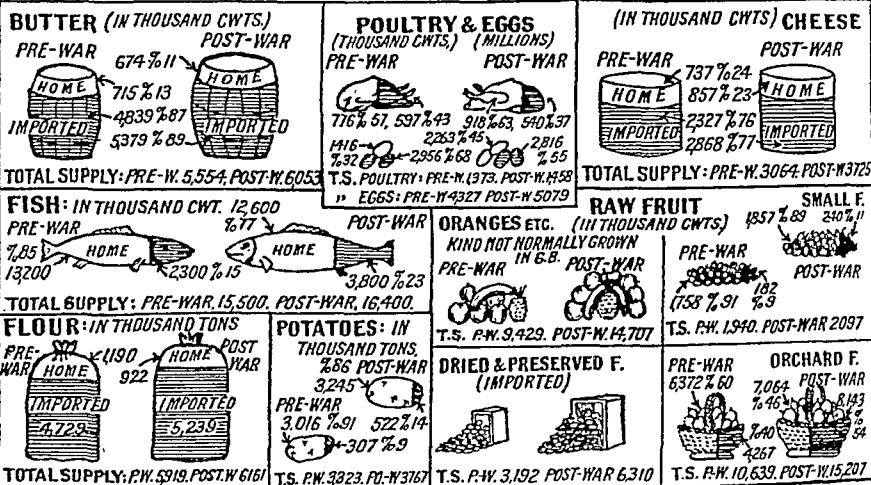
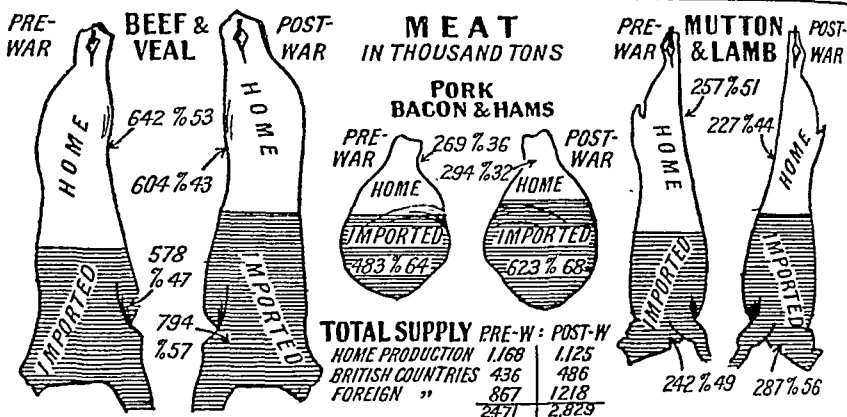
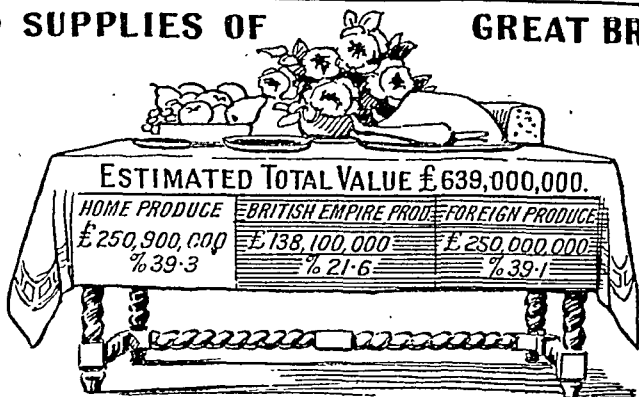
## UNITED KINGDOM

Graphs showing Revenue and Expenditure for recent years compared with 1914; Overseas Trade with Empire and Foreign Countries for 1930 and 1931; and the Volume Values (at 1924 prices) and Declare Values of principal items of Home Production for recent years compared with 1913.



## FOOD SUPPLIES OF

## GREAT BRITAIN

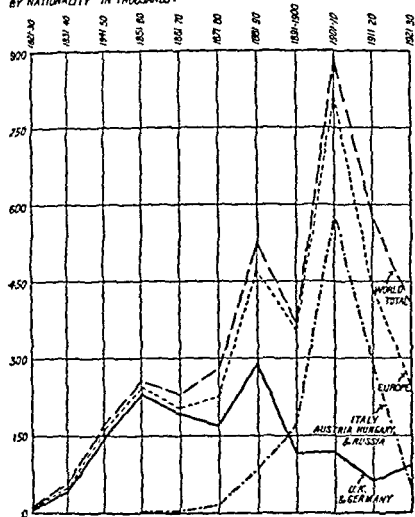


Comparison between United Kingdom Home-produced and Imported Foodstuffs for pre-war average (1909-1913) and 1931. While home-production had, as a whole, decreased, it will be seen that there was a considerable increase (11.5%) in importations from the overseas Empire, and a very large increase (over 40%) in that from Foreign Countries.

11,891,000); Mexican, 1,422,000; Indian, 322,000, Jap., 138,000); regular coast line on E. and W., but good harbours; chf. mtn. ranges: Rockies in W., and Appalachians in E., betw. which is basin of Mississippi and Missouri rvs., with prairie in W., forest regions in E., and Great Lakes in N. Other rvs. are Colorado, Rio Grande, Ohio, Delaware, Susquehanna, and Columbia; climate temperate, winters



ALIEN PASSENGERS ADMITTED INTO U.S.A. (1810-1930) DISTRIBUTION BY NATIONALITY IN THOUSANDS.



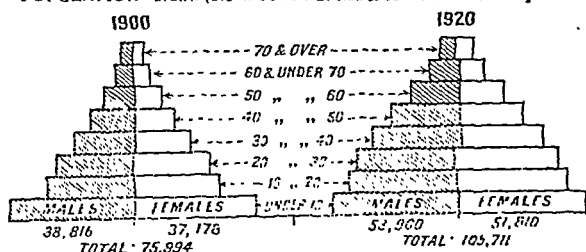
Until 1913, immigration to U.S.A. almost entirely European; from 1820-80 N. European; from 1880 to World War S. European

severe in N., dry in region of Mississippi and W. highlands; economic life highly developed, fndd. on intensive agric., mineral wealth, and possession of nearly all forms of raw material. CHF. PRODUCTS AND INDUSTRY: in middle W., wheat and maize, cattle-breeding, canning; in South, tobacco, cotton, cane sugar and fruit; coal mining, chiefly in Pennsylvania and West Virginia; iron in region of Lake Superior and the Appalachians; petroleum in centr. States and California. U.S. rly. system, longest in world (250,000 miles). CHF. EXPORTS: cotton, grain, petroleum, tobacco, machinery, motorcars. IMPORTS: rubber, coffee, silk, paper, and manufactd. goods; exports exceed imports; greatest volume of trade is

with Canada; of exports, to England. CHF. SEAPORTS: N.Y. City, Philadelphia, Baltimore, Boston, New Orleans, Los Angeles, and San Francisco. INLAND TNS.: Chicago, Detroit, Milwaukee, St. Louis, and Arkansas City. Federal cap. Washington. CONSTITUTION of Sept., 1787: Pres. (4 years' term), who nominates secretaries of state and Federal officials. LEGISLATURE: Congress consists of two chambers: the Senate (96 members, 2 for each State, elected for 6-yr. term) and Hse. of Representatives (435 members electd. by universal suffrage for 2 yrs.); 18th amendment to C., 1920, *see* PROHIBITION.

HISTORY: Earliest (abortive) settlement was in 1584 (Raleigh); in 17th cent. colonisation by England, France, and Holland; Dut. colonies lost to England in 1673 and French in 1763. War of Independence (leader of the colonists, George Washington), against England, 1775-83; in July, 1776, the Declaration of Independence was made; war ended by Peace of Versailles, Amer. independence being recognised. A constitution was framed, and Washington became first President, 1789. Disputes over right of search led to war with England, 1812-14. By 1821 the no. of States had increased from orig. 13 to 26; in 1823 the Monroe Doctrine (*q.v.*) was promulgated. Economic disputes, and esp. the slave question, caused the Civil War, 1861-65, between the Northern (Federal) and Southern (Confederate) States, wh. resulted in victory for the former and the abolition of slavery (Lincoln); the cleavage represented by the two great political parties, *vis.*, the Republicans (upholders of the Federation, centralists), and the Democrats (predominant in the S. States). War with Spain in 1898 led to the annexation of the Philippines. The U.S.A. joined the Allies in the World War (*q.v.*) April, 1917, and concluded a separate peace with Ger. in Aug., 1921. In 1921-22 Naval Disarmament Conference was held at Washington; in 1933 great commercial crisis and bank failures led to adoption of drastic industrial changes by new Presdt., F. D. Roosevelt.

POPULATION: U.S.A. (DISTRIBUTION BY AGE & SEX IN THOUSANDS)



Male preponderance in ages over 30 intensified since 1900 (contrast situation in U. K.), owing to greater proportion of male immigrants. As in U. K., falling birth rate has reduced proportion of persons under 10 yrs. resulting in more symmetrical distribution throughout the age groups



whom the most important, historically, are: **U. I.**, St. and martyr (223-230). **U. II.** (1088-99); excomm. Emp. Hy. IV and Kg. Philip II of Fr.; organised 1st Crusade. **U. IV** (1261-64), instit. festival of Corpus Christi (1264). **U. VI** (1378-89), election marked beginning of Great Schism (*q.v.*). **U. VIII** (1623-44), allowed Inquisition to compel Galileo's abjuration, 1633; denounced Jansenism, 1644.

**Urban district**, area of Eng. loc. govt., intermediate betw. bors. and rural districts; **U. d. councils** enforce sanitation, provide parks and other amenities, and gen. carry out public services not undertaken by County Council (*q.v.*).

**Urbi et orbi** (Lat.), to the city (Rome) and the world; words formerly used in papal benedictions pronounced on the Catholic world.

**Urbino**, city, the Marches, It.; pop., 20,000; cathed.; palace, univ. (1671); b-place of Raphael.

**Ure, Yore**, riv., Yorks, Eng.; rises in Pennines; flows past Ripon and joins Riv. Swale to form Riv. Ouse; length 60 miles.

**Urea**, carbamide,  $\text{CO}(\text{NH}_2)_2$ ; colourless crystals, m.p.  $132^\circ$ , present in urine of mammals; first artific. produced organic compound (Wöhler, 1828), now made from ammonia and carbon dioxide. Used as a fertilizer and in med. as a test for correct functioning of the kidneys; human blood contains a small quant. of U. and amt. is estd. for diagnosis of nephritis (*q.v.*).

**Uredo**: see RUST.

**Ureter**, (physiol.) duct by wh. urine passes from kidneys to bladder.

**Urethra**, canal thr. wh. urine is discharged from bladder.

**Urfa**, 1) Turk. vilay., N. Mesopotamia; 5,230 sq.m.; pop., 207,490. 2) Cap. of vilay., on site of Edessa; pop., 50,000. Fndd. c. 132 B.C.; Rom. colony 216 A.D.; centre of Christian Church in the E. in 3rd cent.; captured by Baldwin of Flanders in First Crusade and made cap. of a countship; captured by Moslems, 1144; Turkish since 1637.



Urfa, Pool of Abraham

**Urga**: see ULAN BATOR HOTO.

**Uri**, canton, Switzerland, one of the "Four Forest Cantons" (*Vierwaldstättle*), S. of L. of Lucerne; 410 sq.m.; pop., 25,000; cap., Altdorf. Joined orig. federation of cantons, 1291.

**Uriah**, (O.T.) Hittite, one of David's officers; husband of Bathsheba: David's in-

fatuation for B. led him to cause U. to be placed in position of danger in battle and killed (II Sam., xi).

**Urial, shapo**, small, Asiatic wild-sheep; male has ruff of long hair extending from throat to chest.

**Uric acid**, metabolic product of albumen, occurs in urine and, in very small amounts, in blood; pathologically it forms crystalline deposit, as gravel or stone (kidney stone or bladder stone).

**Uriel**, one of 7 archangels (*cf.* ESDRAS).

**Urim and Thummim**, (O.T.) sacred symbols contained in the breastplate of the Jewish high-priest; used by early Israelites for divination, a practice discontinued after death of David.

**Urine**, a yellow, watery fluid excreted by the kidneys; contains salts wh. are products of metabolism; in disease of the kidneys, U. may also contain albumen, blood, and casts (*q.v.*). U. collects in the bladder. **U. casts**, fragments of the kidney tubules which appear in the urine in inflammation of the kidneys.

**Urmia**: see URUMIA.

**Urology**, branch of surgery dealing with the urinary tract.

**Ursa Major**, "the Great Bear," also known as "Charles's Wain," "The Plough," "The Dipper," most prominent constell. of N. hemisphere. See PL., ASTRONOMY, N.C.H. **U. Minor**, "The Little Bear," constell. near N. Pole, closely resembling U. Major in configuration; contains N. star in its tail. See PL., ASTRONOMY, N.C.H.

**Ursula**, legendary saint; said to have been massacred with 11,000 virgins by the Huns in the Rhine at Cologne, 451; day, Oct. 21st.

**Ursulines**, relig. order of women engaged in educational work; fndd. by St. Angela Merici, 1537.

**Uruguay**, 1) riv., S. Amer.; rises S. Brazil; forms boundary betw. Argentina and

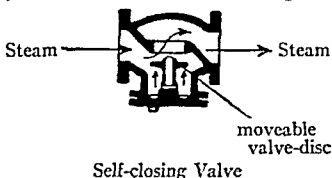
Brazil and Uruguay; flows into La Plata estuary; length, 1,000 miles. 2) Repub., S. Amer., on S.E. coast, betw. Argentina and Brazil; 72,153 sq.m.; pop., 1,850,000; flat pampas country with cattle-ranches; exports meat, wool, skins, and hides; cap. Montevideo. CONSTITUTION: President (four years), Cabinet of nine members, Senate (19 members), Chamber of Deputies (123 members). Indept., 1814-21 and since 1825; prov. of Brazil, 1821-25.

**Urumia, Urmia**, 1) salt lake, N.W. Persia, prov. of Azerbaijan (S. Armenia); area (in spring), c. 2,300 sq. miles. 2) Tn., Persia, 20 m. W. of L. U.; depopulated in World War, now being resettled (pre-war pop., c. 50,000).



one way, and closes when flow reverses. **Slide v., Corliss v.,** those automatically regulating admission of steam to cylinder of engine.

**Piston v.,** orifices opened and closed by motion of piston in tube. Many uses, e.g., in mus. instr. (cornet à piston). 2) (Wireless, electron, thermionic) Exhausted glass (or metal) vessel, containing filament heated by low-tension current and emitting elec-



Self-closing Valve

trons, *q.v.* (tungsten filament; or same coated with metallic oxides for dull-emitter *q.v.* Also *anode* (usu. nickel), and in case of *triode*, *tetradode*, *pentode* one or more grid electrodes. Positive end of high tension battery is applied to anode, negative to filament, causing flow of electrons, *i.e.*, an elec. current, wh. is weakened or reinforced when voltage is applied to grid, resulting in *amplification* (*q.v.*). Characteristic curve of V. shows how anode current varies with voltage applied to grid. A small permanent voltage—*grid bias*—is often applied to grid. **Rectifying v. (diode)** has no grids, only filament and anode. When alternating voltage is applied, current can pass in one direction only.

**Hard v.** has extremely high vacuum; **soft V.** contains a little gas. **Triode V.** used in wireless reception, and for generating continuous oscillations and waves for transmission. **Rectifying V.** used in wireless for supply of anode H.T. voltage, and for charging accumulators. **Screen grid**, four-electrode (*ictrode*) valve having second grid outside first, maintained at constant potential; prevents uncontrollable reaction; used in high-frequency amplification. **Pentode**, five-electrode valve, has three grids, outermost (nearest anode) being connected to filament. Used as output valve, since output almost independent of anode voltage. See WIRELESS TELEGRAPHY.

**Vámbéry**, Armin (1832-1913), Hung. traveller and orientalist; *Travels and Adventures in Central Asia*.

**Vampire**, 1) blood-sucking bat of trop. America; attacks animals and sometimes men; c. 3 in. long, with pointed teeth. 2) In pop. superstition, souls of dead men (criminals and evil-livers) which leave their bodies at night to suck the blood of human beings; belief still held among Slavonic peoples.



Vampire Bat

**Van**, 1) lake, Turkish Armenia; alt. 5,200 ft.; area, abt. 1,400 sq.m.; water

brackish. 2) Tn., Turk. Armenia, on E. shore of L. Van; pop., 21,600. Important cuneiform inscriptions of Urartu (*q.v.*) civilisation; also bronzes and pottery.

**Vanadium**, chem. element, sym. V; at. wt. 50.95; m.p. abt. 1720°. Very hard, lustrous, white metal; occurs in nature combined with lead as *vanadinite*; used as an addition to steel.

**Vanbrugh**, Sir John (1664-1726), Brit. playwright and architect; joined Congreve in unsuccessful attempt at theatrical management; comptroller of royal works, 1714; Clarenceux kg. of arms; blt. Castle Howard, Yorks; Blenheim House, etc.; plays include *The Relapse*, 1697; *The Provoked Wife*, 1697.

**Van Buren**, Martin, (1782-1862) 8th Pres. of U.S.A., 1837-41. U.S. Senator and Gov. of N.Y., 1821; Vice-Pres., 1832.

**Vancouver**, Geo. (c. 1758-98), Brit. navigator; served under Cook in 2nd and 3rd voyages; expedit. to Pacific, 1791-95; auth. *Voyage of Discovery to the N. Pacific Ocean and Round the World*, 1798.

**Vancouver**, seapt., cap. Brit. Columbia; pop. (incl. suburbs), 245,300 (many Chinese); cathed.; univ.; shipb., eng. works, lumber, canned fruits, dairy produce.

**Vandalism**, passion for destructn., or hostility to art and lit. such as that shown in 5th cent. by Vandals at sack of Rome.

**Vandals**, Teutonic people, settled in Pannonia, 4th cent.; moved westward, 406, and, after some 20 years in Spain, crossed to Africa, c. 430, where (under Genseric) they fndd. a kingdom. Sacked Rome, 455; kgdm. overthrown by Belisarius (*q.v.*), 533-36.

**Vanderbilt**, family of Amer. capitalists and rly. builders: 1) **Cornelius** (1794-1877), developed carrying trade on E. Amer. coast; operated shipping line betw. N. Y. and Havre, 1855-61; pres. N. Y. and Harlem Rly., 1863, and N.Y. Central Rly., 1868; estab. through line, N.Y. to Chicago, 1873; fndd. *V. Univ.*, Nashville, Tennessee, 1873. 2) **William Henry** (1821-85), s. of Cornelius, rly. pres.; 3) **Cornelius** (1843-99), s. of Wm. Henry; chairman of boards of directors of Michigan Central and Canada Southern rlys., 1883.

**Vandervelde**, Émile (1866- ), Belg. statesm.; Socialist leader; For. Min., 1925-27.

**Van der Humm**, S. Afric. liqueur made from a berry resembling a black currant.

**Van de Velde**, Willem (1611-93), Dut. marine painter; went to Eng. (1672) with his son, **Willem** (1633-1707), and both were employed by Charles II to depict sea-fights; another son, **Adrian** (1636-72) was a landscape and animal painter. **V. de V., Henri** (1863- ), Belg. archit. and artist.

**Van Diemen's Land**, former name of Tasmania (*q.v.*).

**V. and M.**, abbr. Virgin and Martyr.

**Van Dyck**, Sir Anthony (1599-1641), Dut. painter, settled in Eng.; portraits of Charles I, Henrietta Maria, and of many members of the Court.

**Vane**, Sir Henry (1612-62), Eng. Puritan statesm.; a negotiator of the Solemn League and Covenant; exec. on charge of treason.

**Vanguard**, troops marching in advance of the main body.

**Vanilla**, *Vanilla planifolia*, a climbing orchid, native of Mexico, acclimatised in many trop. countries; the cured pods are the vanilla beans of commerce, sweet smelling and pleasant to the taste.

**Vanillin**, aromatic substance of the V. pod; now produced synthetically.

**Vanitas vanitatum** (Lat.), vanity of vanities; refrain recurring several times in the Book of Ecclesiastes (*q.v.*).

**Vanner**, (metall.) machine used in ore-dressing for treating fine pulp (*q.v.*); has an endless belt passing over two rollers, upper surface being gently inclined, and the whole given a rapid shaking motion from side to side; incline is caused to travel against the incline, the pulp to flow down it; heavy particles settle on the belt and are continuously carried up and over, and removed as they pass the upper roller.

**Vannes**, cap. dépt. Morbihan, Fr.; pop., 23,000; cathedral; schools of hydrography and artillery; grain, butter, cattle, lace.

**Van't Hoff**, Jacobus (1852-1911), Dut. chemist, originator of *V. H.'s law*: Osmotic pressure exerted by any substance in solution is the same as it would exert if present as a gas in the same volume as that occupied by the solution, provided that solution is so dilute that volume occupied by the solute is negligible in comparison with that occupied by the solvent.

**Vaporisation**, transformation of a liquid into a gas at boiling point.

**Vapour**, gaseous form of substance; distinguished from gas by being below *critical temperature* (*q.v.*), hence can be condensed to liquid by increase of pressure alone. **V. pressure**, or **tension**, max. pressure of V. of any substance at any given temperature. Increases with temperature.

**Var**, 1) riv. (75 m.), S. Fr.; flows into Mediter. at Nice. 2) Dépt., S. Fr., on Mediter.; 2,330 sq.m., pop., 377,100; mountainous; cap., *Draguignan*; port, Toulon.

**Varanger Fjord**, gulf, N.E. coast Norway; 70 m. long, 54 m. wide; ice-free; part of E. side Finnish since 1918.

**Varangians**, Slav. name for Scand. Vikings; see *RURIK*.

**Varazdin**, tn., Croatia, Yugoslavia, on rt.



Vanilla

bank of the Drave; pop., 13,650; sawmills, timber.

**Vardar**, 1) riv., Balkans; rises borders of Albania; flows through Macedonia (Skoplje and Veles) into Gulf of Salonika; length 230 miles. 2) Dist., Yugoslavia; mountainous; 14,011 sq.m.; pop., 1,386,100; cap., *Skoplje*.

**Varese**, Edgar (1885- ), Amer. composer of advanced modern tendency; works mainly for large orchestras.

**Varese**, tn., prov. of Como, It., on Lake V. (5.8 sq.m.); pop., 22,000; silk, automobiles.

**Variant**, differt. readg., esp. of related MSS., early printed books, music, or translations.

**Variation**, change in individual properties of an organism from the normal type of the species. **Variations**, (mus.) series of re-statements of a theme under different conditions.

**Varicose veins**, distention and contortion of superficial veins, usu. of the legs, due to weakening of the walls of the veins; V. rs. are liable to rupture.

**Variety theatre**, or *music hall*, theatre in wh. short turns (songs, dances, acrobatics, dramatic sketches, etc.), are performed.

**Varix**, the dilation and thickening of a vein; see *VARICOSE VEINS*.

**Värmland**, prov. Sweden, N. of L. Vener; 7,406 sq.m.; pop., 269,460; iron ore; cap., *Karlstad*.

**Varna**, 1) Dist., E. Bulgaria; 1,471 sq.m.; pop., 230,125. 2) Fortified port, Bulgaria, on Black Sea coast; pop., 60,565; exports tobacco and cereals; sea-bathing.

**Varnhagen von Ense**, Karl (1785-1858), Ger. diplomat and author; *Diaries*; m. Rahel Levin (1771-1833), who kept literary salon in Berlin; *Correspondence*.

**Varnish**, gum or resin dissolved in oil or spirit and forming a solution, wh., after application to surface of wood, leather, metal, etc., dries into a hard, glossy, translucent coating.

**Varro**, Marcus Terentius (116-27 B.C.), Rom. author and antiquarian; wrote 490 books, nearly all lost; *De Lingua Latina*.

**Varus**, Publius Quintilius (d. A.D. 9), Rom. gen.; consul, 13 B.C.; Gov. of Syria 6-4 B.C.; commanded in Ger., A.D. 6-9; deftd. by Ger. alliance led by Arminius at b. of Teutoburgerwald, A.D. 9; slew himself by falling on his sword.

**Vas**; see *EISENBURG*.

**Vas deferens**, narrow tube with muscular walls which carries the semen from the testicles; it passes through the inguinal canal into the abdominal cavity and enters the urethral passage beside the prostate gland. The semen is stored in the seminal vesicles beside the prostate.

**Vasa**, Swed. dynas., 1523-1632, on distaff

side to 1818; *see* GUSTAVUS. **Order of V.**, Swed. order of knighthood, fndd. 1772.

**Vasari**, Giorgio (1511-74), Ital. archit. (*see* UFFIZI) painter and art historian: *Lives of the Painters*.

**Vasco de Gama**: *see* GAMA.

**Vascular bundle**, (bot.) the strands of conducting tissue which traverse the bodies of plants. **V. cramp**, spasm of the arteries; very painful contraction of the small arteries, e.g., of the coronary arteries of the heart; *see* ANGINA PECTORIS. **V. engorgement**, condition in wh. the return of the blood through the blood-vessels to the heart is checked: 1) naturally, owing to inefficient pumping by the heart or to an obstruction of the return-flow of blood in the blood vessels; 2) artificially, as in Bier's hyperaemia treatment for inflammation.

**Vase**, oriental, Gr., Rom. and Etruscan earthenware vessel, often decorated with painted designs. Gr. types: for keeping wine, *pitkos*; for carrying water, *hydria*; for keeping anointing-oil, with long neck, *lekythos*; for mixing liquids, *krater*; etc.; those with two handles were called *amphorai*; figures painted in black (Black-figured) in 6th cent. B.C., and left in red (Red-figured) up to and incl. 4th cent. The scenes painted on Gr. vases illustrate social life and mythology.



Greek Amphora,  
4th cent. B.C.

**Vaseline**, petroleum jelly, proprietary name for product of distillation of petroleum; used in med., in cosmetics, and as a lubricant.

**Vashti**, (O.T.), Qn. of Ahasuerus (*q.v.*); supplanted by Esther (*q.v.*).

**Vaso-motor nerves**, nerves wh. control the expansion and contraction of the blood vessels.

**Vassal**, a feudal tenant, holding land, or office, of the kg. or of another vassal, as a fief (*q.v.*), in return for certain services; *see* FEUDALISM.

**Västerås**, cap. prov. of Västmanland, E. Sweden, (2,608 sq.m.; pop., 162,065), on N.W. shore of L. Mälär; pop., 29,925.

**Västerbotten**, prov., Sweden, on N.W. coast Gulf of Bothnia; forests; 22,755 sq.m.; pop., 202,000; cap., Umeå.

**Vat**, large receptacle for liquor, used in technical processes, e.g., brewing (to hold wort), dyeing, etc. **V.-dyeing**, process in wh. dyestuff is produced on the fibre from some colourless substance. **V. colours**, such as indigo, wh., when reduced, are colourless and soluble; when oxidised, take colour and become insoluble.

**Vathek**, Eastern romance by Beckford (*q.v.*), 1787; orig. written in French; Eng. transl. by Saml. Henley, 1784.

**Vatican, The**, official residence of the Pope, situated within the Vatican State (*q.v.*) on the **Vatican Hill**, a hill in Rome on the right bank of the Tiber. Comprises several palaces, with the papal apartments, the Sistine and Pauline chapels, museums, picture galls., and library; paintings and frescoes by the great Ital. painters, incl. Michelangelo and Raphael (decoration of the *stanze*, or rooms); Belvedere; Scala Regia, monumental staircase leading to Vatican palaces. **Vatican Gardens**, used for recreation by the Popes during their self-imposed captivity (*see* VATICAN STATE), contain the Observatory. First palace built by Symmachus (498-514); twice enlarged; official residence of the Popes after their return from Avignon in 1377. Connected by covered passage with Castel Sant'Angelo, 1415. Rebuilt in 15-16th cents. by Nicholas V, Julius II, and other Popes. Enlargements and improvements have continued into 20th century. *See* ST. PETER'S, ROME. **V. Council** (1869-70), most recent Ecumenical council of Cath. Ch.; proclaimed Dogma of Papal Infallibility (*q.v.*); interrupted by Ital. occupation of Rome, and never officially concluded. **V. State**, independent Sovereign State (109 ac.), Rome, belonging to the Holy See; pop., 639; contains St. Peter's, Vatican Palace, and Vatican Gardens; rlyw., with private station. In 1870, when the Itals. occupied Rome and the States of the Church (*q.v.*) were annexed to It., relations between the Holy See and the govt. of It. became strained. In token of his disapproval, the Pope confined himself to the precincts of the Vatican. As a result of negotiations between Pius XI and Mussolini the dispute was settled by the Lateran Treaty (11 Feb., 1929), when the Vatican State was created, papal sovereignty was renewed, and the term of voluntary self-imprisonment came to an end.

**Vauban**, Sébastien le Prêtre de (1633-1707), Fr. mil. engin. and Marshal of France.

**Vaucluse**, dépt., Fr., in Provence; 1,381 sq.m.; pop., 235,000; cap., Avignon.

**Vaud, Waadt**, canton, W. Switzerland, betw. L. Neuchâtel and L. of Geneva; 1,238 sq.m.; pop., 326,500 (French-speaking); vineyards; watchmaking; cap., Lausanne.

**Vaudeville**, short theatre piece, with interpolation of comic songs.

**Vaughan-Williams**, Ralph (1892- ), Eng. composer; opera: *Hugh the Drover*, 1924; symph.: *Sea*; *London*; *Pastoral*.

**Vault**, 1) (archit.), arched roof; **domed v.**, of semi-circular section; **groined v.**, in wh.



Vaughan Williams

the curved lines due to intersection of vaults meet in a point. 2) Jump, using hands as support. **Vaulting-horse**, gym. apparatus for vaulting exercises.



Vault

**Vaux, Fort**, a fort N.E. of Verdun, Fr., temporarily occupied by Ger. troops in 1916.

**Vauxhall**, anc. manor (Fulkes Hall), site of pleasure gardens in Lambeth, S. London; closed (1859); now name of working class district.

**V.C.**, abbr. Victoria Cross.

**V.D.**, abbr. Volunteer Decoration.

**Vector**, (phys.) quantity possessing both magnitude and direction, e.g., *V. of Force*, of current, in electr. etc. **V. addition**, accdg. to *Parallelogram of Forces* (q.v.). **V. sum**, result of add. of several Vs., analogous to the resultants in P. of Forces.

**Veda** (Sansk.: Knowledge), oldest Hindu sacred writs. (2500 to 500 B.C.): 1) *Samhitas*, i.e., hymns, incldg. *Rigveda*, *Samaveda*, *Yajurveda*, *Atharvaveda*; 2) *Brahmanas*, i.e., priestly dicta, incldg. *Aranyakas* and *Upanishads*; 3) *Sutras*, i.e., rules. Fundamental principles of vedic religion are: personification and apotheosis of Nature, life after death, ancestor worship.

**Veddahs**, aborig. inhabts. of Ceylon, of very small stature; still at very low level of civilisation.

**Vedette** (Fr.), a mounted sentry.

**Vedic**: see LANGUAGE SURVEY, *Ind. Languages*.

**Vega**, 1st magn. star,  $\alpha$  of constell. Lyra (q.v.). See PL. ASTRONOMY, N.C.H., G.

**Vega Carpio**, Lope de (1562-1635), Span. poet and dramatist; took part in Armada expedition, 1588; *Hermosura de Angelica*, 1602; *Los Ramilletes de Madrid*; *El Perro de Mortolano*; *El Maestro de Danzar*.

**Vegetable**, any form of plant life (V. kingdom); specific. edible leaves, flowers, seeds, pods, roots, etc., of plants cultivated for human food. **V. marrow**, gourd with greenish-yellow elliptical fruit, occas. slightly ribbed, and whitish flesh; in common use for table.

**Vegetarian**, one who lives on a purely veg. diet; or one who avoids all food that has been prepared by slaughter.

**Veli**, anc. city, Etruria, It.; head of Etruscan League; conq. by Rome, 396 B.C.

**Veins**, blood vessels of the body; they convey the blood back to the heart from the lungs and other organs of the body. See MAN, Pl. III; see also ARTERIES.

**Velasquez**, Diego (1599-1660), Spn. Crt. painter to Philip IV, one of most notable



Velasquez, Self-portrait

painters in history of art, whose influence has extended to modern times. *Venus and Cupid*; *Surrender of Breda*; many portraits.

**Velddt**, grassy plains of Transvaal; part of great S. African plateau.

**Vellum**, fine parchment made of calfskin; also superior kind of paper.

**Velocipede**, early form of bicycle (q.v.).

**Velocity**, (phys.) ratio of distance travelled to time taken; many units in use: centim. or ft. p. sec.; kilom. or m.p. hour.

**Velours**, upholstery velvet of mixed linen and cotton, or jute and cotton; also name of matl. with soft pile used for hats.

**Velvet**, textile, properly of silk, or of silk on cotton or linen backing w. thick close soft pile or nap on one side.

**Velveteen**, imitation velvet made of cotton.

**Vena cava**, the two large veins (superior and inferior) wh. return the blood to the heart.

**Vendée**, dépt., Fr., on Atlantic coast, S. of Loire estuary; 2600 sq.m.; pop., 394,500. Cap., *La Roche*. Centre of rising agst. Revolutionary Govt., 1793.

**Vendémiaire**, Sept. 22nd-Oct. 21st in Fr. Repub. Calendar (q.v.).

**Vendors' shares**, payment in form of shares of purchasing co. for patents, goodwill, etc., sold to another company.

**Venediger**, **Gross Venediger**, peak of Hohe Tauern, Austria (12,005 ft.), on borders of the Tyrol and Salzburg.

**Veneer**, thin sheet of choice and usu. hard wood used as ornamental facing a) to a cheaper or stronger wood b). See Ill.



Veneer

**Vener**, **Väner**, lake, centr. Sweden; largest in Scandinavia; area 2,141 sq.m.; max. depth, 292 feet.

**Venereal**, pertaining to sexual intercourse, usu. to disease arising therefrom.

**Venesection**, phlebotomy; bleeding; withdrawal of blood by opening a vein. Occ. performed to give relief in apoplexy. Frequently practised from Mid. Ages to early 19th cent., in treating illness.

**Veneti**, name of 2 anc. Europ. tribes: 1) inhabitants of dist. round Po estuary; traded in amber; bred and trained horses; helped Romans in war agst. Gauls; passed under Rom. rule during 2nd Punic War; country, Venetia, devastated by Alamanni, Goths, Huns; settled by Lombards. 2) Inhabitants of N.W. Gallia Celtica (Brittany); powerful maritime people with considerable trade with Britain; defeated by Rom. in naval battle, 56 B.C.

**Venetia**, Latin form of Venezia (q.v.).

**Venetian Alps**, group of S. Alps, betw. the Brenta and Tagliamento valls.; max. height, 8,868 feet.

**Venetian blind**, window blinds made of parallel slats of wood supported on tapes.

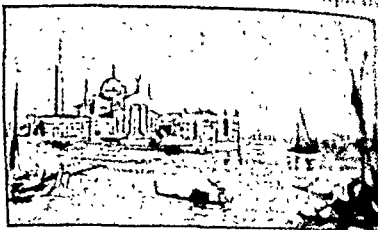
**Venezia**, 1) tn.; see VENICE. 2) Former prov. of N. Italy, in 1919 enlarged and divided into three, as follows: a) **V. Euganea**, containing most of old prov. of Venezia; 9,830 sq.m.; pop., 4,122,000; chf. tns., Venice, Padua, Verona. b) **V. Giulia** (with Zara); region N. It., betw. Jugoslavia and Venezia (Austrian to 1919); 3,350 sq.m.; pop., 978,000; agric., grain, wine, imp. fisheries, shipbuilding. Chf. tns., Trieste and Fiume (q.v.). c) **V. Tridentina**, Alpine region, N. It. (Austrian till 1919); 5,380 sq.m.; pop., 659,500; timber, little agric., textiles, esp. woollens; chf. tn., Trent.

**Venezuela**, federal repub. in N. of S. Amer., betw. Colombia (W.) and Brit. Guiana (E.); 393,800 sq.m.; pop., 3,090,000. Coast-line deeply indented on W. by Gulf of Maracaibo; fringed by isls., incl. Trinidad on E.; mtn. range in N., reaching to coast in places; Guiana highlands in S. (Plateau of Parima); llanos of the Orinoco in centre. Exports petroleum, coffee, cocoa, hides and skins, gold. Cap., Caracas. CONSTITUTION: President (7 years' term), Senate (40 members), and Chamber (81 deputies). Discovered by Columbus, 1498; Sp. until declartn. of independ., 1810; in 1821, under leadership of Bolivar united with Colombia to form federal State; revolt, 1829, resulted in re-establishmt. of independence.

**Veni, vidi, vici** (Lat.), I came, I saw, I conquered; inscription on triumphal banners of Julius Caesar after his victories in Pontus.

**Venice, Venezia**, city and seapt., It., dept. Venezia Euganea, on 117 isls. in lagoons on W. side Gulf of V. (head of Adriatic); pop.,

**HISTORY:** Fndd. prob. c. A.D. 450; soon became comml. and naval centre; indep. 1182.



Venice; Church of San Giorgio Maggiore

cent.; zenith of power during Crusades; after defeating Genoa (1380) became mistress of the Mediterranean, acquiring much territ. in It., Dalmatia, Greece, and the Levant, and controlling Eastern trade. Centre of Renaissance in 15th cent.; declined after exhausting wars with Turkey (after fall of Constantinople, 1453) and lost monopoly of Eastern trade when sea-route to the Cape was discovered in 1486. Disastrous war with League of Cambrai, 1508-10; lost Cyprus, 1571; derived no benefit from victory of Lepanto, 1571; lost Crete, 1668, and the Morea, 1716, after Morosini's reconquest, 1683. Taken by Fr., 1797; Austr., 1814; absorbed in It., 1866. Venetian School of Painting includes Titian, Tintoretto, Paolo Veronese, Tiepolo, Canaletto.

**Venizelos**, Eleutherios (1864- ), Gr statesm.; Pr. Min. of Greece, 1910-15, 17-20 '24, 1928-33.

**Venn, Hohes**, moorland plateau, Rhine prov., Prussia, forming N. part of the Ardennes (Eifel district).

**Venomous snakes**, those snakes (q.v.) in which two specialised, hollow, sharp-pointed teeth in the upper jaw connect with poison glands. The needle-sharp fang has a small opening near its tip, through which the poison is extruded into the wound already made by the point of the tooth. The action of the poison is usu. extremely rapid and often fatal.

**Ventilator**, (bldg.) aperture formed in wall or ceiling, to promote supply of fresh air and extraction of vitiated air; with or without mechanical aid.

**Ventnor**, tn. and seaside resort, S. coast Isle of Wight, Eng.; pop., 5,100.

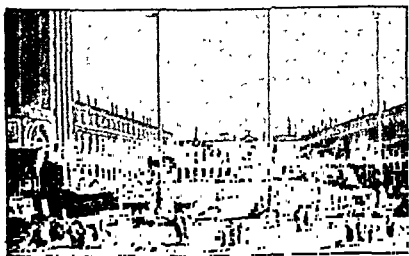
**Ventôse**, Feb. 19th-Mar. 20th in Fr. Repub. Calendar (q.v.).

**Ventricle**, (physiol.) a small cavity, usu. applied to V. of heart or brain.

**Ventriloquism**, art of producing the voice so that it appears to proceed, not from speaker's mouth, but from a distance.

**Ventspils, Windau**, port, Latvia, at mouth riv. same name, on the Baltic; pop., 17,225; exports timber.

**Venture tube**, (phys.) apparatus for measuring flow of fluids in pipes. Pipe has



Venice: Procurazia!

263,000; 175 canals (largest, Grand Canal); 350 bridges (oldest Rialto; Bridge of Sighs); abpric.; Byzantine, Gothic, and Renaissance churches and palaces; cathed. of St. Mark (11th cent.); Doge's Palace (14th cent.); Ca' d' Oro (15th cent.); Library of San Marco (16th cent.); campanili; arsenal (fndd. 1104); guildhalls; museums and picture galleries; university. Local transport by gondolas; rly. viaduct to mainland; Lido (q.v.), 2 m. S.E.; naval and comm. port; exports glass, silks, damask, lace, mosaics, gold and silver work.

constriction of correct form, and flow is measured by connecting narrowest part of constriction and full width of pipe by small tubes to differential manometer (*q.v.*).

**Venus**, (myth.) 1) Rom. goddess of love; *Gr. Aphrodite* (*V. of Milo*, see *MIL*O). 2) (Astron.) Second of the inner planets (for statistics, see Table, *PLANETS*). Nearest planet to earth; very bright, and often visible even by day; the morning and evening star of the ancients. **Venusberg**, the Hörselberg in Thuringia, in which part of the Tannhauser legend was supposed to have been enacted.

**Venus's fly-trap**, insectivorous plant, *Dionaea muscipula*, of Carolina; apex of leaf forms a trap for insects and contains a digestive secretion. **V. looking-glass**, species of campanula (*q.v.*) found in cornfields in S. Europe; also cultivated; purple flowers.

**Vera Cruz**, 1) State, E. Mexico, on Gulf of Mexico; 27,760 sq.m.; pop., 1,400,000; petroleum wells nr. coast; peak of Orizaba (*Citlaltépell*, 18,200 ft.); cap., *Jalapa*. 2) Seapt. tn. in State, on Gulf of Campeche; pop., 54,500; cigars.

**Verb**, inflected part of speech stating what subject does or suffers; may be transitive or intransitive.

**Verbatim et literatim** (Lat.), word for word and letter for letter.

**Verbena**, vervain, large family of plants and trees. Lemon *V. Aloysia citriodora*, formerly known as *V. triphylla*; sweet smelling garden plant; common vervain (*V. officinalis*), small purplish flowers, used in herbal med. as tonic, etc. The teak tree of E. Asia is a member of the tribe.

**Verboten** (Ger.), forbidden, prohibited.

**Verbum sat sapienti** (Lat.), a word to the wise is enough; abbr., *Verb. sap.*

**Vercelli Book**, O.E. MS. (11th cent.), fnd. in cathed. library, Vercelli, Piedmont, by F. Blume (1822); contains *Andreas*, *Fates of the Apostles*, *Address of Soul to Body*, *Falseness of Men*, *Dream of the Rood*, *Elene*, *Guthlac* (prose).

**Vercingetorix**, chieftain of the Gauls, whom he led agst. Caesar; captured and executed in Rome, 46 B.C.

**Verdi**, Giuseppe (1813-1901), Ital. opera composer; principal operas: *Rigoletto*; *Il Trovatore*; *La Traviata*; *Un Ballo in Maschera*; *La Forza del Destino*; *Aida*; *Otello*; and *Falstaff*; other works include a *Requiem*.

**Verdict** (law), decision of jury, given to the judge, on any civil or criminal cause submitted to them.

**Verdigris**, basic acetate of copper used as a pigment and an escharotic in vet. med.; poisonous.

**Verdun**, 1) fortified tn., dépt. Meuse, Fr., on Riv. Meuse; pop., 29,300. During World War (Feb.-June, 1916), enormous Ger. losses in repeated and unsuccessful attempts to capture Verdun. **Treaty of V.**, 843; partition of Frankish Empire betw. Lothair (emperor), Ludwig the German, and Charles the Bold (beginnings of Ger. and Fr. as distinct nations). 2) Tn., Quebec, Canada; pop., 51,140.

**Vereeniging**, tn., Transvaal, S. Africa, 60 m. E. of Potchefstroom; collieries; negotiations (May, 1902) after Boer War culminated in *Peace of V.* by which Gt. Brit. annexed Transvaal and Orange Free State.

**Verger**, one who bears a *verge* or staff of office before eccles. dignitaries; esp. an official attached to a ch., who shows worshippers to their seats, etc.

**Vergil**: see *VIRGIL*.

**Verhaeren**, Emile (1855-1916), Belg. poet; *Les Flamandes*, 1883; *Les Flambeaux Noirs*, 1889; *Les Villes Tentaculaires*, 1895; *Parmi les Cendres*, 1916.

**Verkhné-Udinsk**, adminis. centre Buriat-Mongol A.S.S.R., Asia, on Riv. Uda and Trans-Siberian Railway. Pop., 28,750. Temp. 66°F. in July; -17°, January.

**Verkhoyansk**, vill., Yakutsk prov., Siberia; pop., 500. Formerly place of exile for polit. offenders. Aver. ann. temp. 2°F.; Jan. -56°. Lowest recorded temp., -85°.

**Verlaine**, Paul (1844-96), Fr. lyric poet: *Poèmes Saturniens*, 1866; *Parallèlement*, 1889.

**Vermeer van Delft**, Jan van der Meer (1632-75), Dut. painter: *View of Delft*.

**Vermicelli**: see *MACARONI*.

**Vermiform process**: see *APPENDIX*.

**Vermilion**, red mercuric sulphide, found naturally in cinnabar (*q.v.*) and used as scarlet pigment; also prepared artific. from mercury and sulphur; now largely replaced by aniline dye.

**Vermont** ("Green Mountain"), State, New England, U.S.A., bounded on E. by Connecticut Riv.; 9,564 sq.m.; pop., c. 363,000; cap., Montpelier.

**Vermuth**, **vermouth**, apéritif made from white wine flavoured with herbs (Fr. dry; Ital. sweet).

**Verne**, Jules (1828-1905), Fr. author: *Round the World in 80 Days*.

**Verner's law**, law stated by K. Verner (1875) showing effect of position of accent in shifting of orig. Indogermanic mute consonants and S.

**Vernet**, family of Fr. painters: 1) **Claude Joseph** (1714-89); marine paintings. 2) **Horace** (1789-1863), battle-pieces and oriental subjects.

**Vernier**, Pierre (1580-1637), Fr. mathe-

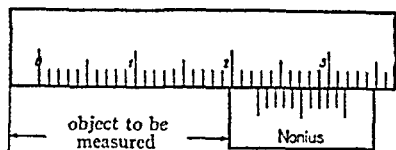


Verbena



Verdi

matic.; inv. **V. instrument**, auxiliary ruler device, permitting measurements to be taken with great accuracy; a movable



Vernier

division fixed to the ruler on which 9 parts of the ruler are divided into 10, so that if the unit on the ruler be  $\frac{1}{10}$  in. that on the vernier is .09 inches. In diag., if object measured = 2.2 in., the first stroke of the V. scale would have corresponded with a stroke (2.2 in.) of the ruler, but the corresponding stroke is the 7th, therefore 7 is the second decimal place and total length is 2.27 inches.

**Vernon, Mount**, Virginia, U.S.A., 15 m. from Washington, D.C.; former home of George Washington; mansion, now a memorial, overlooks Potomac River.

**Verona**, 1) city, N.E. It., cap. prov. of V., on the Adige; pop., 154,000; Roman amphitheatre; mediaeval streets, squares, bridges, churches decorated with examples of *Veronese School* (painting and sculpture); 14th-cent. cas.; now an important horse-market. 2) Prov. of Venezia Enganea; 1,195 sq.m., pop., 563,200.

**Veronal**, diethylbarbituric acid, a potent soporific.

**Veronese**, Paolo (1528-88), Ital. painter: *The Marriage at Cana* (Paris).

**Veronica**, holy woman said to have wiped face of Christ on way to crucifixion with a cloth wh. miraculously received impression of His features and is now preserved as relic at St. Peter's, Rome; hence any cloth or handkerchief bearing representation of Christ.

**Veronica**, genus of herbs or shrubs with white, blue, or pink flowers; *V. officinalis*, speedwell (*bird's eye*, *cat's eye*), a wild flower, bright blue.

**Verrocchio**, Andrea del (1436-88), Ital. goldsmith, sculptor, and painter; equestrian statue of *Colleoni* (Venice).

**Versailles**, cap. dépt. Seine-et-Oise, Fr., 11m. S.W. of Paris; pop., 68,500; famous palace (built by Louis XIV) and park. States-general met here, 1789; Kg. of Prussia proclaimed Ger. emp., 1871. **Treaty of V.** 1) (1783) ended American War of Independence. 2) Versailles, Hall of Mirrors (1919), peace treaty betw. Ger. and the



Versailles, Hall of Mirrors

Allied and Associated Powers opposed to her in the World War, signed 28 Jan. 1919, and ratified 10 Jan., 1920. Principal terms: Covenant of League of Nations (*q.v.*). Surrender of territory in Europe. Table, next page. E. Prussia separated from rest of Ger. by Polish "Corridor" (*q.v.*). Free City of Danzig (*q.v.*) under League, with Pol. control of foreign relations. Plebiscite of pop. (see SELF-DETERMINATION) of S.E. Pruss. resulted in its remaining German. Saar dist. to be under League of Nations until 1935 (with control of coal mines by Fr.) when a plebiscite to be held, with possibility of re-purchase of mines by Germany. Union with Austria forbidden; Customs Union with Luxemburg dissolved. Surrender of all Ger. colonies. Liquidation of all private Ger. undertakings in colonies and enemy countries. Annulment of Treaty of Brest-Litovsk (betw. Ger. and Soviet Russia). Ger. Army limited to 100,000 men, to serve 12 years. Dissolution of General Staff. Limitation of arms (heavy artillery, air-craft guns, gas, and submarines prohibited). Surrender of navy except 6 battleships, 6 cruisers, 12 destroyers, and 12 torpedo-boats; no new ships to be built except for replacement; naval personnel limited to 15,000 men. Fortification of Baltic coast, Heligoland, and left bank of Rhine dismantled; these zones, as well as a zone 50 km. (31 m.) wide on rt. bank of Rhine, demilitarised. Commn. of control to be set up. **Penal Conditions:** Surrender of war criminals, and admission of war guilt by Germany and her allies. **Reparations** (*q.v.*), based on damages to be finally fixed by R. Commission. Surrender of Mercantile Marine and ocean cables. Deliveries in kind. **Economic conditions:** Most-favoured-nation terms to be granted by Ger. for 5 years; internat. control of Ger. waterways. **Guarantees:** Occupation of left bank of Rhine and of certain bridge heads: Cologne, Coblenz, Mainz; gradual evacua. in 5, 10, or 15 yrs. if terms carried out. Sanctions to be exercised in event of Ger. not fulfilling obligations. Clauses relating to *League of Nations* and *international labour organisations*. For Table showing European territory surrendered by Ger. in accordance with the Treaty of Versailles, see next page.

In 1913, the percentage of the total Ger. harvest in the listed territories amounted to the following: rye, 17%; wheat, 12%; oats, 11%; potatoes, 18%. Livestock: cattle, 12%; horses, 16%; sheep, 12%. The indust. count of 1907 showed 252,000 employers with one million employees, i.e., 7.3% and 6.9% respectively. 12.4% of those occupied in mining and foundries throughout Ger. (i.e., 107,000 persons) were in the above territories. These produced, in 1913, 19% of the



<i>Territory</i>	<i>To whom</i>	<i>Area (sq.m.)</i>	<i>Pop. (in thousands) 1910</i>
Alsace-Lorraine	France	5,600	1,874
Moresnet, Eupen and Malmédy	Belgium	400	60
N. Schleswig	Denmark	1,540	166
Memel territory	Lithuania	1,022	141
Large parts of Posen, W. Prussia, Upper Silesia	Poland	17,800	3,855
Danzig	Danzig	740	331
Hultschin district of Silesia	Czechoslovakia	122	49
Total surrendered		27,304	6,476

European territories surrendered by Germany under the terms of the Treaty of Versailles, 1919.

coal of Germany, 75% of her iron ore; 68% of her tin, and 26% of her lead.

**Verse**, words arranged in met. form; line of a poem; a stanza; short portion of any composition, esp. of the chapters of Bible, orig. confined to metrical books, 1st applied to the whole Bible, 1528.

**Vershok**, Russ. linear meas., 1.75 in. (4.44 cm.); 16 vershoks = 1 arshin.

**Vers Libre**, free verse; term appld. in Fr. prosody and gen. to verse composed of lines of no uniform length.

**Verst**, (Russ. linear measure) 1.067 km. (0.663 m., or roughly 2/3 mile).

**Vertebrae**, individual bones forming the flexible spinal column; they are grouped from above downwards into the cervical, thoracic, or dorsal, lumbar, sacral and coccygeal vertebrae.

**Vertebrates**, group of animals having a spinal column; incldg. mammals, birds, fishes, and batrachians.

**Vertex**, (geom.) summit, or apex; point of angle, cone, or pyramid.

**Vertical Amalgamation**: see COMBINE.

**Vertigo**, giddiness, disturbance of equilibrium; may be due to disease of the semi-circular canals of the ear (q.v.).

**Vertue**, George (1684-1756), English artist; engraver to Soc. of Antiquaries from 1717; over 500 portrait plates, incldg. *Archbishop Tillotson*, after Kneller.

**Verulamium**, Roman tn., nr. St. Albans, on site of earlier British settlement; burnt by Boadicea, A.D. 61; recent excavtns. have revealed important relics of Rom. and Brit. occupations.

**Verviers**, tn., prov. of Liège, Belgium; pop., 41,400 (with suburbs 70,000); textiles.

**Very light**, chemical flare fired as a signal, or to show up enemy troops at night (inv. by Adm. S. W. Very of U. S. A. Navy).

**Vesalius**, Andr. (1514-64), Belg. physician and anatom.; his work

on *The Structure of the Human Body* led to great advance in science of anatomy.

**Vesicles**, (med.) spots on the skin containing a watery fluid.

**Vesoul**, cap. dépt. Haute Saône, Fr.; pop., 10,860; linen, textiles, basket-weaving, salt-works.

**Vespasian**, Titus Flavius Vespasianus, Rom. Emp., 69-79; blt. the Colosseum, Rome.

**Vesper** (Lat.), evening.

**V.-bell**, bell calling worshippers to *Vespers*; see HOURS, CANONICAL.

**Vespucci**, Amerigo (1451-1512), Ital. navigator; made 3 voyages to America, wh. was named after him.

**Vesta**, (Rom. myth.) goddess of the hearth (Gr. *Hestia*). **Vestals**, virginal priestesses of Temple of V. in Rome.

**Vestige**, 1) visible trace or mark left by something destroyed or vanished. 2) (Biol.) Rudimentary degenerate survival of a former organ or structure.

**Vestigia nulla retrorsum** (Lat.), no footsteps returning; an allusion to Aesop's fable of the Lion and the Fox.

**Vestments**, articles of liturgical dress worn by officiating clergy; esp. those worn by celebrant at Mass, i.e., amice, alb, girdle, stole, maniple, and chasuble; last three vary in colour according to season of the eccles. calendar. Use of V. by Anglo-Cath. section of Ch. of E. clergy has given rise to much controversy. V. of generally similar character used in Gr. Orth. churches.

**Vestris**, Lucia Eliz. (1797-1856), "Mme. Vestris," Eng. actress; dau. of G. S. Bartolozzi; m. 1) Aug. Armand Vestris, ballet-master at King's theatre, and 2) Chas. Jas. Mathews, 1838; 1st appeared as Proserpina in Winter's *Il Ratto di Proserpina*, 1815.

**Vestry**, 1) room where vestments of the clergy and sacred vessels of the ch. are kept. 2) (Ch. of E.) Meeting of ratepayers for discussion of parish affairs and elections of



Vespasian



Vesalius

ch. officers; formerly had also certain civil functions, now performed by borough and district councils.

**Vesuvius**, active volcano, It., 7 m. E. of Naples, at present 4,012 ft. high; former rim of crater (*Monte Somma*), 3,722 ft.; observatory; cog-wheel and funicular rlys. to summit. First recorded eruption A.D. 79, when Pompeii, Herculaneum, and Stabiae were destroyed; last severe eruption, 1930.



Crater of Vesuvius

**Vetch**, *Vicia*, plants belonging to the pea and bean tribe; common *V. (V. sativa)*, blue or purplish flowers, cultivated for fodder. The tare or hairy *V.* (small white flowers) is *V. hirsuta*.

**Veterinary science**, study of anatomy, physiology, breeding, etc., of cattle and domestic animals, and of nature and treatment of their diseases. Royal College of Vet. Surgeons fndd. in Gt. Brit., 1844. Research institutes have since been established in London, Cambridge, and elsewhere, to ascertain causes of, and preventive treatment for, animal diseases. Cert. diseases (e.g., foot-and-mouth disease, glanders, swine-fever, etc.) are notifiable under Diseases of Animals Acts, 1894-1927.



Vetch

**Veto**, right to negative resolutn.; act of using power of prohibition.

**Vetter, Vätter**, second largest lake, centr. Sweden; 733 sq.m.; length, 77 m.; max. breadth, 18 m.; max. depth, 390 ft.; outlet, Riv. Motala; crossed from E. to W. by route of Göta Canal.

**Vevey**, health resort, canton of Vaud, Switzerland, on N. shore of L. Geneva, nr. E. end; pop., 13,130; manuf. chocolate, condensed milk.

**Vézère**, riv., S. Fr., rt. trib. of the Dordogne; on its lower course is the *Cro-Magnon Cave* (remains of Aurignac Period).

**Via** (Lat.), road; by way of. **Via media**, a middle course.

**Via Mala**, ravine of the Hinterr Rhein, in canton of Grisons, Switzerland.

**Viaduct**, structure of masonry or metal for carryg. road or rlwy. over val. or river; bridge.

**Viaticum** (Lat. provision for a journey), R.C. name for Sacrament of the Eucharist when given to those in danger of death.

**Viborg**, 1) tn., Jutland, Denmark; pop., 15,360; cathed.; textiles; iron-works. - 2) See VIIPURI.

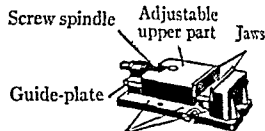
**Vibraphone**, jazz percussive instr. with "like tone.

**Vibration**, rapid reciprocating motion of a body; in bldg., transference of *V.*, e.g., from machines, is mitigated by use of resilient materials for their foundations; continued *V.* causes damage to steel structures, e.g., bridges.

**Vibrato**, (mus.) tremulous effect produced on stringed instr. by shaking the finger on the string. In singing, tremulous effect, used to express emotion; see TREMOLO.

**Vicar** (Lat.), a deputy (e.g., "Vicar of Christ," a title of the Pope); the incumbent of an English parish who is not a *rector* (q.v.), i.e., does not receive the great tithes. **V. capitular** (R.C.Ch.), canon elected by chapter to supervise diocese pending appointment of new bp. **V.-general**, cleric appointed by bp. to act as his deputy or assistant in eccles. causes, visitations, etc. **V. forane**, name used in R.C.Ch. in Eng. as equiv. to rural dean (see DEAN).

**Vice**, (tech.) contrivance for gripping objects while being worked on by hand (with chisels, files, etc.), also for mechanical dressing with machine tools.



**Vicente**, Gil (c. 1470-c. 1540), Portug. crt. poet and playwright; 1st known work the *Neatherd's Monologue*, recited at birth of Kg. Manoel's heir, 1502; wrote c. 44 plays, 14 in Portug., 11 in Span., 19 bi-lingual; political: *Auto da Fama* (1515); tragi-comedy: *Serra da Estrella*, 1527; farce: *Ignês Pereira*, 1523.

**Vicenza**, tn., Venetia, It., on the Bacchiglione; pop., 67,000; 13th-cent. cathed.; palaces and other buildings by Palladio.

**Vice Versa** (Lat.), interchanged; with position reversed.

**Vichuga**, tn., prov. Ivanovo-Voznesensk, Europ. Russia; pop., 26,775; centre of Russ. textile industry.

**Vichy**, watering place, dépt. of Allier, Fr., on the Allier; pop., 20,000; horse-racing; mineral waters.

**Vickers, Ltd.**, Brit. engineering, shipb., aircraft and armament manuf. firm, fndd., 1828, by Geo. Naylor and Edw. Vickers as steel manuf.; limited company, 1867; amalg. with many other similar businesses; reconstr. 1926; began, 1888, constr. of **V. machine-gun** (q.v.), on the Maxim principle but with inverted working parts and corrugated water-jacket. Used in the Brit. Army since 1915.

**Vico**, Giov. Battista (1668-1744), Ital. philos. and jurist.

**Victor**, name of 3 popes and 2 antipopes, of whom the most important, historically, are: **V. III** (1086-87), made pope agnst. his

will; sent army to Tunis, wh. defeated Sarcens and forced Sultan to pay tribute to papal sec. **V. IV.**, title taken by both anti-popes: 1) Gregorio Conti; 2) Octavian, Ct. of Tusculum.

**Victor Amadeus:** 1) **V.A. I.**, Duke of Savoy (1630-37). 2) **V.A. II** (1666-1732), Duke of Savoy; later (as V.A. I), Kg. of Sardinia. 3) **V.A. III** (1726-96), Duke of Savoy (as V.A. II) Kg. of Sardinia.

**Victor Emmanuel**, name of 3 kgs. of Sardinia and It.: 1) **V.E. I** (1759-1824), Kg. of Sardinia, Nice, Savoy, Piedmont, Genoa. 2) **V.E. II** of Sardinia, I of It. (1820-78); Cavour his chf. adviser; assumed title Kg. of It., 1861; complete union of It. effected by occupation of Rome, 1870. 3) **V.E. III** (1869- ), succeeded to Ital. throne on assassination of his father, Humbert, 1900.

**Victoria**, Rom. goddess of victory (Gr. *Nike*, *q.v.*).

**Victoria (Alexandrina)** (1810-37-1901), Qn. of Great Brit. and Ireland, Empress of India; only child of Duke of Kent, 4th son of George III; succeeded her uncle, William IV; m. Albert of Saxe-Coburg-Gotha, 1840; withdrew from social life at his death in 1862, but still carried out her constitutional duties; assumed title Empress of India, 1877; Jubilee, 1887; Diamond Jubilee, 1897; reign remarkable for extension of Empire and for internal reforms.

**Victoria**, 1) State, S.E. Australia, bounded N. by New South Wales (Riv. Murray), and W. by S. Australia; separated by Bass Strait from Tasmania; 87,900 sq.m.; pop., 1,795,500. Crossed E. to W. by end of Great Dividing Range (*q.v.*), highest in E. (*Mt. Bogong*, 6,800 ft., in Austral. Alps); many lakes and minor rivs.; climate healthy and temperate; agric. depends on irrigation; wheat, oats, fruit, wine; sheep, cattle, horses, pigs; gold, tin, gypsum; exports wool, wheat, dairy produce, fruit, meat, hides, and skins; cap., *Melbourne*. 2) Cap., British Columbia, on Vancouver Isl.; pop., 38,400. 3) Cap. and port, Hong-kong, on N. coast of isl.; pop., 577,500 (18,000 Europeans). 4) Cap., Seychelles on Mahé Island. 5) Cap., Gozo (Maltese Isls.); pop., 5,200. 6) Cap., State of Espirito Santo, Brazil; pop., 22,000. 7) Cap., Labuan, Straits Settlements; pop., 1,500. 8) Port, Nigeria. 9) Tn., S. Rhodesia.

**Victoria, Lake** (alt., 3,700 ft.), Kenya, Uganda, and Tanganyika Terr., E. Africa; second-largest fresh-water lake in world; length, 250 m.; breadth, 200 m.; area, 26,400 sq.m.; depth, 250 ft.; islands include Ukerewe (*q.v.*); affluent Riv. Kagera, outlet Victoria Nile (*see Nile*). Discovered by Speke, 1858; explored by Stanley, 1889.

**Victoria**, low, 4-wheeled horse carriage, with seats for two persons at rear and raised

driver's seat; named after Queen V., in whose reign it was popular.

**Victoria and Albert, Order of**, order for British ladies only; four classes, of which first and second are exclusively for royal members; fndd. 1862; badge is hung from bow of white moiré.



Victoria

**Victoria and Albert Museum**, London, national art collection designed to illustrate history of development of industrial arts and crafts. Originated in *Museum of Ornamental Art*, establd. at Marlborough House, 1852; removed to S. Kensington, 1857. Presen bldg. erected 1860-84; additions, 1899-1909. Exhibits classified under: Architecture and sculpture; ceramics, glass and enamels; engravings and design; printing and book production; metal work; paintings; textiles; woodwork, leatherwork and furniture.

**Victoria Cross**, bronze cross, awarded for valour in presence of enemy to officers and men of Brit. armed forces; recipients below commissioned rank may receive annuity up to £50. Instit. by Qn. Victoria, 1856; ribbon: crimson for all services (formerly blue for navy); when worn alone (undress uniform) has miniature replica of cross attached.

**Victoria Falls**, waterfall, Riv. Zambezi (*q.v.*), W. Rhodesia, S. Africa; vertical drop of 260-350 ft.; discovered by Livingstone,



By courtesy of the High Commissioner for South Africa  
Victoria Falls

1855; crossed by rly. bridge, 1905. **V. Land**, isl. Arctic, N. Canada.

**Victoria Regia**, giant water-lily, native of S. Amer. rivs.; leaves reach 6 ft. in diameter, and their edges are turned up, forming a ring 6 or 8 in. high; flowers, 18 in. in diameter, are 1st white and then red; the seeds are edible.

**Victorian Order, Royal**, Brit. order of five classes: Knights Grand Cross (G.C.V.O.), Knights Commander (K.C.V.O.), Commanders (C.V.O.), members of 4th and 5th classes (M.V.O.); fndd. 1896; ribbon: dark blue, with red and white edges.



**Virgo**, "the Virgin," zodiacal constell. containing star Spica; ♍, 6th sign of Zodiac (*q.v.*), entered by sun at autumnal equinox, *see* PL., ASTRONOMY, S.C.H., D., N.C.H., E.

**Virgo intacto** (Lat.), untouched virgin; legal term for woman or girl who has never been carnally approached by man.

**Viribus unitis** (Lat.), with united powers; motto of Emperor Francis Joseph of Austria.

**Viroconium:** *see* WROXETER.

**Virtual**, 1) existing potentially, but not active; latent. 2) In *optics*, **V. image**, apparently produced in a certain place (e.g., behind a mirror) by rays wh. do not really come from the image, having been reflected or refracted; if prolonged backwards they would form the image. *Ant.: real image*, wh. can be focussed on a screen, whilst virtual image cannot.

**Virtue**, (eccles.) a habit of right conduct, either acquired by practice or directly infused by God. **Cardinal Vs.**, prudence, justice, fortitude, temperance; **Theological Vs.**, faith, hope, charity.

**Virulence**, (med.) ability of a bacterium to infect a healthy animal; may be high or low.

**Virus**, cause of certain diseases not due to bacteria, but to very small organisms, some of which are too small to be seen under the microscope. Infantile paralysis is caused by a virus.

**Vis**, **Lissa**, isl., Dalmatia, Jugoslavia, in Adriatic; 38 sq.m.; mountainous, fertile valls.; vineyards. **Cap.**, Vis, on N. coast; pop., 5,500; naval harbour. Austr. naval victory over Italians, 1866.

**Visa**, control mark on passports; for entry into certain countries V. of consulate concerned required.

**Vis-à-vis** (Fr.), face to face, opposite.

**Visby**, **Wisby**, cap. Swedish isl. of Gotland, on W. coast; pop., 10,575; cathed.; harbour; watering-place.

**Viscacha**, large, burrowing rodent mammal of S. Amer.; long-tailed, dark-grey, black and white markings on face; eats grass, seeds, and roots.

**Visceroptosis**, abnormal sagging of organs of abdomen so that the belly is low and protuberant; may follow repeated pregnancies.

**Vischer**, 1) **Peter the Elder** (1455-1520), with 2) his s. **Peter the Younger** (1487-1528), metal workers; chf. work: *Tomb of St. Sebaldus*, Nuremberg (with self-portrait of the Younger).

**Visconti**, noble Ital. family, ruled in Milan 1277-1447.

**Viscose:** *see* ARTIFICIAL SILK.

**Viscosity**, (phys.) internal friction of fluids. Measured by co-efficient of V., the force required per unit area to keep two plane parallel surfaces in the fluid, unit distance apart, moving relatively to one an-

other with unit velocity. Measured usually by rate of flow of fluid through capillary tube. V. of liquids decreases rapidly (2-3% per degree C.) with rise of temperature, that of gases increases, though not so rapidly. V. of solids very difficult to define and measure, except in case of amorphous solids such as glass and pitch, which are extremely viscous liquids. V. of great importance technically, esp. in examination of oils and fats, in wh. use is made of the **Viscosimeter**.

**Viscount** (*fem.* Viscountess), the fourth order of the Brit. peerage, orig. title of a county sheriff. First creation by patent in 1440. Of the 74 Viscountcies in existence 1 (Hereford) dates from the 16th cent. (1546), 6 from the 18th, 19 from the 19th, the remainder being 20th-cent. creations.

**Vis-en-Artois**, vill., 10 m. S.E. of Arras, Fr.; Brit. nat. memorial to 9,905 missing (World War).

**Vishnu**, one of the trinity of principal deities in Hinduism, believed to have become incarnate in various forms, esp. as Krishna; *see* BRAHMA; SIVA.

**Visigoths**, name for Western branch of the Gothic people; *see* GOTHES.

**Vis inertiae** (Lat.), force of inertia; static power; passive resistance.

**Visitation**, 1) manifestation of divine favour or wrath; 2) feast, July 2nd, commem. visit of Virgin Mary to St. Elizabeth (Luke ii, 39ff); 3) routine or special fulfilment by a bp. of his duty of overseeing his diocese.

**Order of the V.**, R.C. relig. order of ascetic women whose special mission is the nursing of the sick in their homes; fndd., 1610, by St. Jane Frances de Chantal and St. Francis of Sales (*q.v.*) at Annecy.

**Visor** (Fr.), movable part of helmet, protectg. face, with bars or slits for the eyes.

**Visp**, left trib. of the Rhone; rises Gornier Glacier nr. Zermatt; joins Rhone at Visp (Viège).

**Vistula**, **Wisla**, **Weichsel**, riv., mainly in Poland; formed by confluence of *Black*, *White*, and *Little V.*, rising W. Beskid Mtns. (Carpathians); passes Cracow, Warsaw, and Torun; traverses Free State of Danzig, where it divides into sev. distributaries, flowing into Baltic past Danzig and into Frisches Haff, E. of Danzig; length, 670 m.; navig., 500 m.; chf. trib., Riv. Bug.

**Visual angle**, (*optics*) angle formed by lines uniting extreme edges of an object seen by the eye to the pupil. **V. field**, the area wh. can be seen without moving the eye.

**Italian Brothers**, **Likedeeler** (*i.e.*, equal sharers of booty), pirates of N. and Baltic Seas, suppr. c. 1400.

**Vitalianus**, **St.**, Pope (657-672).

**Vitamins**, substances in foodstuffs, of unknown composition, whose absence leads to certain diseases. Classified at present, as

follows: A., anti-xerophthalmic, present in fish-oils, liver, and green plants; B<sub>1</sub>, anti-neuritic and anti-beriberi, and B<sub>2</sub>, anti-pellagra, present in yeast and lean meat, also prob. in beer, milk, eggs, and wheat-germ; C, anti-scorbutic, present in cabbage, citrus fruits, tomatoes and swedes; D, anti-rachitic, present only in fish-oils and fish-fats, but produced by ultra violet irradiation (sunlight); E, anti-sterility, in lettuce and wheat-germs.

**Vitebsk**, tn., White Russia, on Riv. Dvina; pop., 99,810 (many Jews). Manuf. glass, agric. machin., boots, spectacles.

**Vitimsk**, tn., U.S.S.R. Asia, at confluence of Riv. Vitim (1,080 m.) and Riv. Lena. V. gold area believed to be richest in E. Siberia.

**Vitoria, Vittoria**, fortress tn., N. Sp., cap. prov. of Alava, on Riv. Zadorra (trib. of the Ebro); pop., 37,100; 12th-cent. cathedral.

**Battle of V.**, 21 June, 1813, victory of Allies under Wellington over French under Joseph Buonaparte; ensured retreat of French from Spain.

**Vitos**, mtn. peak, Bulgaria (7,513 ft.), with city of Sofia at its N.E. foot.

**Vitreous humour**, the jelly-like transparent material which fills the eyeball behind the lens.

**Vitrifiable pigments**, enamel colours, glass fluxes dyed by means of metallic oxide for glazing metal, glass, or porcelain; also for porcelain painting; the pigments are burnt in.

**Vitriol, Oil of**, sulphuric acid, H<sub>2</sub>SO<sub>4</sub>. **Blue V.**, copper sulphate, CuSO<sub>4</sub>.5H<sub>2</sub>O. **Green V.**, ferrous sulphate, FeSO<sub>4</sub>.7H<sub>2</sub>O.

**Vitruvius**, Pollio, Rom. archit. 1st cent. B.C.; *De Architectura*.

**Vittorio Veneto, Battle of**, victory of Itals. over Austrians, Oct., 1918; named after vill., N. It., E. of Riv. Piave.

**Vitznau**, Swiss health resort (1,443 ft.), Canton of Lucerne, at the foot of the Rigi.

**Vivace** (mus.), lively.

**Viva voce** (Lat.), by the living voice; term applied to examination in wh. the candidate is questioned and answers by word of mouth.

**Vivaldi**, Antonio (1680-1743), Ital. violinist and composer.

**Vivarium** (Lat.), container, gen. of glass, for living animals.

**Vivat!** (Lat.), Long live!

**Vive le roi!** (Fr.), Long live the King!

**Vivekananda**, Svami (1862-1902), Indian saint and missionary of Europeanised version of teaching of the Veda (q.v.).

**Viviani**, René (1865-1925), Fr. politician; socialist deputy for Paris, 1893; head of Ministry of Labour, 1906; resigned, 1910; Minister Public Instruction, 1913; Premier Minister for Foreign Affairs at outbreak World War, 1914; succeeded by Briand, 5; became Minister of Justice; one of

Fr. delegates to Washington Conference, 1921.

**Viviparous**, bringing forth young, alive and fully formed, capable of independent life. Ant.: *oviparous* (egg-bearing).

**Vivisection**, experiments on living animals for scientific purposes.

**Vixere fortes ante Agamemnona** (Lat.), brave men lived before Agamemnon; i.e., no one is unique or original possessor of any quality.

**Vizcaya, Biscay**, one of the three Basque provs., N. Sp.; (836 sq.m.); pop., 460,272. Cap., *Bilbao*.

**Vizier**, chief minister to a Moslem ruler. The office *Grand V.* in Turk. abol. 1878.

**Vlaardingen**, port, S. Holland, 6 m. W. of Rotterdam, on the Nieuwe Maas; pop., 27,500; herring and cod fisheries.

**Vladikavkaz** ("Key of the Caucasus"), tn., N. Caucasian Area, cap. of N. Ossetia, on Riv. Terek; 2,450 ft. abv. sea lvl.; pop., 78,350; famous Kasbek Peak near by; starting point of Grusinian military road.

**Vladimir**, St. (980-1015), Grand Duke of Russ.; introd. Gr. Cath. religion into Russia.

**Vladimir**, chf. tn. prov. Russ. S.F.S.R. (c. 12,680 sq.m.; pop., 1,340,370), on rivs. Klyazma and Lybed. Pop., 37,320. Cathedrals, Uspenskiy (1150), Amritievsky (1197). Cherry orchards noted throughout Russia.

**Vladivostok**, Russ. port on "the Golden Horn" (Gulf of Peter the Great), Sea of Japan; pop., 108,185; Russia's most important export tn. in Far East. Term. of Trans-Siberian Railway.

**Vlona**: see VALONA.

**Vitava, Moldau**, riv. (265 m.), Czechoslovakia, trib. of Elbe; rises Bohemian Forest, joins Elbe at Melnik; navig. from Prague.

**Vocational Psychology**, psychol. applied to guidance of individuals in choice of career, by means of intelligence tests, etc.

**Vodka**, Russ. liqueur distilled mainly from green rye, potatoes, and maize; its sale was prohibited in Russia during World War.

**Voice, Breaking of**, a change in the voice wh. occurs in adolescent boys; characterised by the voice becoming deeper owing to changes in the larynx.

**Voile**, light open fabric of plain calico weave, of cotton, silk, or wool.

**Voivode**, orig. milit. leader, later provincial governor in S.E. Europe. Rulers of Moldavia and Walachia, afterw. Hospodars (q.v.).

**Voivodeship, Wojewodztwo**, county or dept. of Poland (17 in all).

**Vol.**, abbr. *volume*.

**Volapük**, artific. univers. lang., invented (1870) by Schleyer.

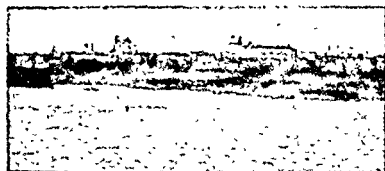
**Vol-au-vent**, fine white, highly seasoned stew of chicken or veal, in pastry.

**Volcano**, vent in earth's crust, through wh. magma (*q.v.*) escapes to surface; lava and ashes ejected accumulate to form a hill or mountain, usu. conical in shape, with deep vent or crater, in summit. Vs. classified as *free-flowing*, with continuous and gentle flow of lava, and *explosive*, with spasmodic, violent eruptions; also as *active*, *dormant*, and *extinct*. Found in greatest number on coasts of Pacific Ocean. See also FUMAROLE; SOLFATARA; MOFETTE. **Mud vs.**, formed by escape of gases, etc., not necessarily of truly volcanic nature.

**Vole**, name of group of rodents of family *Muridae*; ind. in Eur., Asia (N. of Himalayas), and N. America. Differ from rats and mice by heavier build, less active habits, blunter muzzles, shorter ears and tails. Destructive to root crops; burrow in banks of streams, sometimes causing floods. Many varieties (field V., bank V., water V., etc.), c. 50 in all.

**Volenti non fit Injuria** (Lat.), injury is not done to one who is willing (consenting); i.e., an action is not punishable if the suffering party consents to it.

**Volga**, Russ. riv. (c. 2,270 m.; drainage area c. 563,200 sq.m.—greater than Gt. Brit. Fr. and Ger. combined), largest in Eur., rises in Valdai Hills, N.W. Russ., and flows S. to Caspian Sea. Rt. bank hilly,



The Volga, at Saratov

pasture-lands, on left; receives over 100 tribs., incldg. Kama, Sura, Oka, and Vetluga; connected by canals to Baltic and Arctic seas; flows through Tver, Rybinsk, Nijni-Novgorod, Samara, Saratov, and Stalingrad to Astrakhan, in neighbourhood of wh. it falls into the Caspian by over 200 mouths. Rich in fish, esp. sturgeon, lamprey, trout, pike, and Caspian herring.

**Volhynia**, former prov. of Russia; now divided betw. Ukrainian S.S.R. and Poland (prov. of *Volyn*).

**Volnay**, vill., Côte d'Or. (Burgundy), Fr. 4 m. S.W. Beaune; produces red wine.

**Volo**, sept., Thessaly, Greece, on N. coast Gulf of V.; pop., 41,710.

**Vologda**, chf. tn. of prov., Russian S.F. S.R. (c. 43,800 sq.m.; pop., 1,053,300) on Riv. Vologda (trib. of Riv. Sukhona), pop., 57,975; port and rly. junct.; pottery, glass, cement factories.

**Volscians**, one of indig. peoples of It.,

brought into subjection by Romans (338 B.C.).

**Volstead**, Andrew J. (1860– ), Amer. politician; *Volstead Act*, 1919, implementing 18th Amendment of Constitution enforcing Prohibition, 1919.

**Volsunga** (Nordic myth.), race to wh. Siegfried (*q.v.*) belonged.

**Volt**, 1) (elec.) unit of potential difference or electromotive force; one V. is tension wh., acting thr. a resistance of 1 ohm, generates current having a strength of 1 ampère. 2) (Fencing) Rapid step to escape a thrust. 3) Pace of a horse in wh. it steps with high, springy movements. **Volte-face** (Fr.), entire change of mental attitude.

**Volta**, Alessandro, Ct. (1745–1827), Ital. physicist; invntd. electrophorus, condenser and **voltal battery**; orig. forms: V. pile, flat disks of zinc and copper, with moist cloth betw. alternate pairs; "crown of cups," series of cups each containing copper and zinc plates in acid.



Volta

**Voltage**, (elec.) potential difference (*q.v.*) measured in volts.

**Voltal element**: see GALVANI. **V. series**, (elec.) order of arrngmt. of solid conductors (carbon, silver, copper, iron, zinc, aluminium) so that when any 2 are dipped in an electrolyte, the one earlier in series becomes electr. positive to the one later.

**Voltaire**, François Marie Arouet de (1694–1778), Fr. philos., histor., and poet; friend and instructor in poetry of Frederick the Great, 1750–53; tragedies: *Zaïre*, *Mahomet*; epic: *Henriade*; satire: *Candide*.

**Voltmeter**, electrolytic cell for measuring quantity of electr. passed thr. a circuit by means of the electrolytic effect (deposition of silver, mercury, hydrogen, etc.) of the current.

**Volt-ampère**, by-product of volts and ampères; in an alternating circuit differs from watt by the *power-factor* (*q.v.*).



Voltaire

**Voltmeter**, instr. for measuring elec. tension or voltage; gen. an ammeter (current measuring instr.) of high resistance, hence taking only a small current propor. to voltage to be measured.

**Volturno**, riv. (108 m.), It.; rises Abruzzi; flows past Capua into Tyrrhenian Sea N. of Naples. Victory of Garibaldi over Neapolitan forces, 1860.

**Volumetric analysis**, (phys.) process of ascertaining amt. of a dissolved substance by means of titration (*q.v.*).

**Voluntarism**, theory that will is the

fundamental basis of all life and experience; opposed to intellectualism (*q.v.*).

**Volunteer**, 1) person who offers his services. 2) **Volunteers**, unpaid civilians who train as soldiers for the defence of their country. Vs. in Gt. Brit. since 1782; merged into Territorial Force (*q.v.*), 1908.

**Völuspá**, *Song of the Prophetic*, poem of Elder Edda (*q.v.*).

**Volute**, (archit.) ornament in shape of a snail-shell, esp. on capital of Ionic column; see COLUMN.

**Volvox**, fresh-water protozoan (*q.v.*), forming spherical colonies of cells, wh. moves by lashing action of tiny flagella on surface; feeds like a plant, some authorities considering it as such.

**Volyn**, prov. of Poland, larger part of former Russ. prov. of Volhynia; 11,689 sq.m.; pop., 1,437,570; forests; agric. and cattle-breeding; cap., *Luck*.

**Vomiting**, act of discharging contents of stomach thr. the mouth; usu. a protective reaction on the part of the body, caused by presence of irritating matter in stomach; may also be due to cerebral disease or psychical disturbance. See SEA-SICKNESS.

**Vondel**, Joost van den (1587-1679), Dut. dramat.; *Lucifer*.

**Voodoo**, secret system of magico-religious rites based on African tribal beliefs with de-based Christian admixture, practised by W. Indian Negroes.

**Vorarlberg**, prov., W. Austria, betw. L. of Constance, the Rhine, and Arlberg Pass; 1,004 sq.m.; pop., 140,000; mountainous; forests; pasture; cattle-breeding; dairy-farming; cap., *Bregenz*.

**Voronezh**, chf. tn. of prov. (c. 25,200 sq.m.; pop., 3,300,100) and cap. of Centr. Black Earth Area, Russian S.F.S.R., on Riv. Voronezh; pop., 99,735, Univ.; agric. institute; museum. Manufac. bricks, wadding, and paint.

**Voronoff**, Serge (1866- ), Russ. biol. and surgeon, working in Paris; experiments in grafting animal glands on human body. See REJUVENATION.

**Vorstenlanden**, semi-independent States in centr. Java; chf. tns.: Surakarta and Jokjakarta.

**Vosges, Wasgau, Wasgenwald**, 1) mtn. range, E. France, extending along W. side of upper Rhine vall.; highest point, *Ballon de Guebwiller* (Sulzer Belchen), 4,679 feet. Formed part of Franco-Ger. frontier, 1871-1914, and of front line in World War; assaults on Hartmannswellerkopf (*q.v.*). 2) Dépt., E. Fr., in Vosges Mtns., 2,280 sq.m.; pop., 377,980; wooded mtns., agric., cattle; mineral springs; many quarries; blast-furnaces, foundries, weaving. Cap., *Epinal*.

**Vote**, formal expression by ballot, show hands, etc., of preference for a candidate

for Parliamt., or other position, also, of approval of resolution at public meeting. **V. of confidence**, motion put bef. legis. body of a govt. to ascertain whether latter still retains the confidence of the body as a whole.

**Votive** (Lat.), in fulfilment of a vow. **V. offerings**, objects dedicated to a Deity; esp. (R.C.Ch.) images, tablets, candles, etc., to God or the saints. **V. Mass** (R.C.), one said for a special object (e.g., peace, a sick person), or in honour of some saint other than the one to whom the day is assigned.

**Votyak**, auton. area, Russian S.F.S.R., bounded by Tatar A.S.S.R., Uralsk and Vyatka; c. 11,700 sq.m.; pop., 75,610. Forest, marsh, and swamp. *Veziachinsk* area noted for mud spring cures. Admin. centr., *Izhevsk* (pop., 54,000).

**Voussoir**, (bldg.) one of the wedge-shaped stones or bricks forming an arch.

**Vowel**, a speech sound, usu. voiced, formed by the tongue, and sometimes with participation of the lips, so uttered that the air-passage in the mouth is never sufficiently constricted to produce audible friction; contrasted with consonant (*q.v.*).

**Vox et praeterea nihil** (Lat.), a voice and nothing more.

**Vox populi, vox Dei** (Lat.), the voice of the people is the voice of God.

**Voyvodina**, dist., N. Jugoslavia; includes W. Banat.

**Vrbas**, prov., Jugoslavia; 7,938 sq.m.; pop., 828,560; valls. betw. Bosnia and Slavonia; cap., *Banyaluka*.

**Vries**, Hugo de (1848- ), Dut. botanist; fndd. theory of Mutation (*q.v.*).

**Vt.**, abbr. Vermont.

**Vulcan**, (Rom. myth.) god of Fire; identified with Gr. god Hephaestus (*q.v.*).

**Vulcanite**: see EBONITE.

**Vulcanise**, to treat rubber by heating, impregnating with sulphur; results in incr. elasticity, greater stability, removal of stickiness.

**Vulcanised fibre**, made by compressing sheets of paper impregnated with zinc chloride; substitute for leather, etc.

**Vulgate**, Latin translation of the Bible, made by Jerome (331-420); officially accepted as authentic by R.C.Ch., and basis of all vernacular versions used by R.Cs., incl. Douay Bible (*q.v.*).

**Vulture**, large bird-of-prey of the genus *Vulturidae*, which includes the griffons, black, white-headed, eared, and scavenger vultures, all birds of the Old World, characterised by their naked head and neck, which may be scantily clothed with down or plumes in some cases, but never completely clothed with feathers. All are large, ungainly, cowardly birds, and carrion



King Vulture



feeders; play important part in the East as natural scavengers. *See also* TURKEY VULTURE; CONDOR.

**Vulva**, external opening of the female genital organs.

**Vuoksen, Vuoksi**, riv. (93 m.), Finland; flows from L. Saima to L. Ladoga; difference in lvl. causes *Imatra Falls* (66 ft.), with largest power-sta. in Finland.

**Vyatka**, chf. tn. of prov., Russian S.F.S.R. (c. 43,650 sq.m.; pop., 2,222,305) on Riv. Vyatka (c. 700 m.); pop., 63,100. Rly. junct.; fur, wax, grain trade; manuf. matches. leather, agric. machinery.

**Vycheгда**, rt. trib. (c. 700 m.), of Riv. Dvina, N. Russia; rises in Timan Mtns.; joined by Riv. Sukhona at Kotlas to form Dvina (q.v.).

**Vyernoleninsk, Nikolayev**, port for Black Sea of Ukrainian S.S.R. at confluence of rivs. Bug-Ingul; pop., 104,910; naval base; ore, corn, and sugar exports.

**Vyrnwy, Lake**, artificial lake. Montgomery, Wales, formed 1880-90 by dam (1,200 ft., 100 ft. high) across R. Vyrnwy, to form reservoir for Liverpool Corp'n. waterworks; largest Welsh lake (1,120 acres; capacity, 12,150,000 gall.). *See* BALA, LAKE.

**W**, (chem.) symbol of tungsten (wolfram).

**W.**, abbr., 1) west; 2) watt (elec.).

**Wadt**: see VAUD.

**Waag**, riv. (246 m.), Slovakia, left trib. of Danube; rises High Tatra; joins Danube at Komarom.

**Waal**, riv. (53 m.), Holland, S. arm of the Rhine; leaves Rhine above Niemegeen, joins Meuse above Gorinchem; divides above Dordrecht, right branch (Old Meuse, Oude Maas) running W.N.W. to join New Meuse (Nieuwe Maas) below Rotterdam, and left branch running W. through canalised New Merwede to Hollandsch Diep and N. Sea.

**Wabash Railway**, U.S.A., operates in Mississippi vall.; 2,524 miles.

**Wadai**, mountainous dist., in E. Sudan, part of Chad Terr., Fr. Equat. Africa; 170,000 sq.m.; pop., c. 2,000,000; cap. *Abeshr*.

**Wadham College**, Oxford; fndd. 1612, by Nicholas and Dorothy Wadham, of Merifield, Somerset. Wren, one of its alumni, designed the quadrangle clock.

**Wadi, Wady**, (Arabia, etc.) water-course, river-bed, wh. is dry except in rainy season; an oasis.

**Wady Halfa**, tn., Anglo-Egypt. Sudan, 575 m. N.W. of Khartum, on right bank of Nile; N. terminus of Sudan rly.; Second Cataract 6 m. above town; ruins of 2 Temples XIIth. and XVIIIth. Dyns. on opp. bank of Nile.

**Wafd party**, Egypt. nationalist party; formed 1919 under Zaghlul (*q.v.*), resultg. in anti-Brit. demonstrations; declartn. of independence of Egypt, 1922.

**Wafer**, 1) (eccles.) thin disk of unleavened bread, used for Communion in R.C.Ch. and often in Ch. of England. 2) Thin gummed disk of paper for sealing letters.

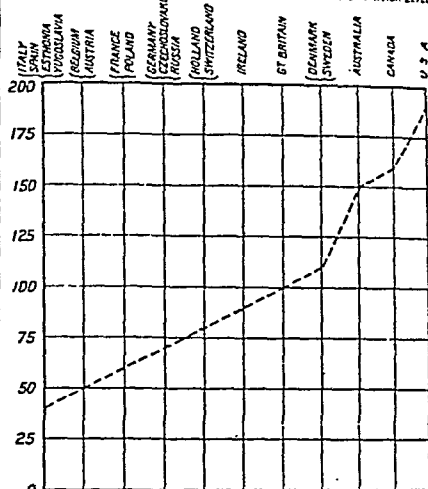
**Waffle**, thin, crisp cake of batter, cooked in w.-iron, a double pan with hinged lid.

**Wagenaar**, Bernard (1894- ), Amer. composer.

**Wages**, return for labour, esp. of persons emplyd. in production with view to profit of employers, and paid at a stipulated rate. **Normal w.**, actual sum earned in given time, or for given amt. of work of given quality. **Real w.**, quantity of goods purchaseable with money earned; i.e., ratio betw. "nom. W." and "cost of living." **W. agreement**, settlement of rate of W. made betw. employers and workers in an industry. **W. fund**

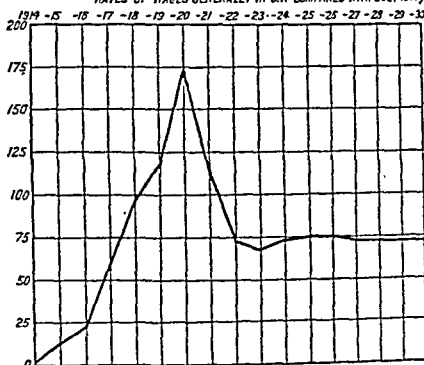
**theory**, (econ.) doctrine first stated by Adam Smith (*Wealth of Nations*, 1776), and de-

**COMPARATIVE REAL WAGES IN 1930** (EXPRESSED AS PERCENTAGE OF BRITISH LEVEL)



Graph indicates actual wage-rates, irrespective of number of hours of work.

**WAGES** (ESTIMATED AVERAGE PERCENTAGE INCREASE IN WEEKLY FULL-TIME RATES OF WAGES GENERALLY IN U.K. COMPARED WITH JULY 1914)



Nominal Wages remained stationary from 1922 until depression, while cost of living at given standard fell; i.e., Real Wages rose.

veldp. by J. S. Mill (*Principles of Pol. Econ.*, 1847) that average rate of wages depends on propor. of number of wage-earners to amount of gen. wealth app. to direct purchase of labour (*IV. Fund*), and that wages can only rise thr. increase of W.F., or decrease of population. This is the short-run wages theory

of classical economists. For long-term theory, see **IRON LAW OF WAGES**.

**Wagga Wagga**, tn., N.S. Wales, Australia, 309 m. W.S.W. of Sydney, on riv. Murrumbidgee; agric. and gold-mining centre; pop., 8,920.

**Wagonette**, four-wheeled, open carriage with 2 seats, each for from 3 to 5 or 6 persons, facing each other behind driver's box.



Wagonette

**Wagner, Richard** (1813-83), Ger. composer and writer; chief works: *Rienzi*; *The Flying Dutchman*; *Tannhäuser*; *Lohengrin*; *The Ring of the Nibelung*; *Tristan and Isolde*; *Die Meistersinger*, *Parsifal*; Festival Theatre at Bayreuth. Autobiography, *My Life*; m., in 1869, *Cosima*, dau. of Franz Liszt (1837-1939). Their s., *Siegfried* (1869-1939), wrote popular operas, *Der Bärenhäuter*.

**Wagner von Jauregg**, Julius (1857- ), Austrian neurolog.; introd. malaria treatment for syphilitic softening of the brain; Nobel Prize (Med.), 1927.

**Wagram**, vill., Austria, 10 m. N.E. of Vienna; victory of Napoleon I over Austrians, 6 July, 1809.

**Wagtail**, fam. of perching birds, predominantly yellow in colour, found in Old World and Alaska; insect-eating, slender-bodied; few species fnd. in S. Africa.

**Wahabis**, followers of a Mohammedan reforming sect fndd. by Abd-el-Wahhab (d. 1787); influence revived under Puritan king of Nejd, Ibn Saud, during World War; having conqd. Hejaz and Moslem holy places now control most of Arabia.

**Wahlstatt**, vill., Lower Silesia, on the Katsbach. Victory of Blücher (later made Pr. of W.) over the French, 26 Aug., 1813.

**Battle of W.**, 1241, see **LIEGNITZ**.

**Walblingen**, anc. tn., Württemberg, Ger.; pop., 8,000; cas. of the Hohenstaufens; name corrupted in Ital. to Ghibelline (q.v.).

**Wainscoting**, (bldg.) lower part of inner wall faced with wood, marble, etc.; usu. in panelling.

**Waits**, singers of hymns (carols) for alms in the street, generally children. Old ch. custom at Christmas, formerly on other feast days also.

**Wakayama**, prefecture (1,823 sq.m.; pop., 787,540) and seapt. (pop., 102,700), S. Hon-do, Japan.

**Wakefield**, Chas. Cheers W., 1st bn. (1859- ); oil manufacturer, philanthropist, and patron of aviation; Lord Mayor of London, 1915-16; has written *America, Today and To-morrow*.

**Wakefield**, city in W. Riding of Yorks, Eng., on Riv. Calder, 8 m. S.E. of Leeds; pop., 59,100; manuf. woollens, machinery; cathed. (spire 247 feet). Scene Yorkist defeat in 1460.

**Wake Robin**: see **CUCKOO PINT**.

**Walachia**, dist., Rumania, betw. Transylvanian Alps and the Danube; divided by the Aluta into **Little W.** (Oltenia; 9,296 sq.m.; pop., 1,536,300; cap., *Craiova*) and **Great W.** (Muntania; 20,380 sq.m.; pop., 3,640,600; cap., *Bucharest*). United, 1861, with Moldavia to form Rumania.

**Walchensee**, alpine lake, Upper Bavaria; 6 sq.m.; 2,628 ft. abv. sea-lvl., max. depth, 642 ft.; diff. of level (650 ft.) betw. lake and Kochelsee exploited by W. Power Station.

**Walcheren**, westernmost isl., Zealand, Holland; 81 sq.m.; cap., *Middelburg*. **W. Expedition** (1809), an attempt by Brit. troops to destroy Fr. fleet in the Scheldt and capture Antwerp; nullified by bad management and fever.

**Waldeck**, dist. of Hesse-Nassau, Ger.; 403 sq.m.; pop., 56,000; surface hilly; agric. and cattle-breeding; cap., *Arolsen*; health resorts, Pyrmont and Wildungen. Republic, 1919-20; now absorbed by Prussia.

**Waldeck-Rousseau**, Pierre Marie René (1846-1904), Fr. statesm.; Pr. Min., 1899-1902.

**Waldemar**, Kgs. of Denmark: 1) **W. II**, Kg. 1202-41; conq. whole Baltic coast to Esthland; lost it 1227. 2) **W. IV**, *Atterdag*, Kg. 1340-65; expelled by Hanseatic League.

**Waldenses**, **Vaudois**, Christian sect founded by Peter Waldo (Pierre de Vaux) at end of 12th cent.; attempted to purge Ch. of alleged mediaeval accretions; c. 1200 and in 17th cent., underwent heavy persecution and massacre (Milton's Sonnet); some still exist in Piedmont.

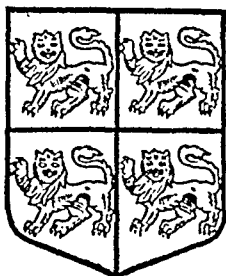
**Walderssee**, Alfred, Ct. von (1832-1904); Ger. F.M.; c.-in-c. Allied Forces in Chinese Boxer Rising, 1900.

**Waldteufel**, Emil (1837-1915), Fr. composer of waltzes: *España*; *Estudiantina*.

**Walensee** (Lake of Wallenstadt), lake, Switzerland, betw. *Churfirsten* and *Glärner Alps*; 9 sq.m.; max. depth, 495 feet.

**Wales**, principality of U.K., on W. coast of Gt. Brit.; area, 7,442 sq.m.; pop., incl. Monmouthsh., 2,593,000 (Anglicans, 27.8; Calvinists, 20.4; Congregationalists, 19.2; Baptists, 15.2; Methodists, 6.1; Rom. Cath., 3.7 per cent). Many Welshmen are bilingual, c. 6% speaking Welsh only. The coastline forms two striking peninsulas: *Lleyn* in the N., with isl. of Anglesey off N.W. coast, and *Pembrokesh.* ("Little England beyond Wales") in S. The surface generally is mountainous, the highest peak in S. Brit. being *Snawdon* in N. Wales (3,560 feet.). In centr. Wales are the *Berwyns* (Moel Sych,

2,713 ft.), *Aran Mawddwy* (2,972 ft.). and *Plynlimon* (2,468 ft.), and the *Brecon Beacons* (2,907 ft.), *Black Mtns.* (2,660 ft.), *Brecknock Van* (2,632 ft.), and *Carmarthen Van* (2,460 ft.) are among the highest summits in S. Wales. Of the rivers, the Severn (220 m., longest in Eng. and Wales), the Wye (130 m.), and the Usk (55 m.) all drain into Bristol Channel; the Dee (70 m.) flows through Vale of Llangollen and past Chester to its estuary in Irish Sea; the Towy (65 m.), draining into Carmarthen Bay, is longest of purely Welsh rivers. The largest lake is the artificial Lake Vyrnwy (Liverpool waterworks reservoir; 5 m. by 1 m.), the largest natural lake being Lake Bala (3½ m. by ¼ m.).



Great mineral wealth, the S. Wales coal-field being one of the most important in U.K.; extensive smelting of tin, iron, and copper; slate quarries in the N. Agric. in fertile vales of Clwyd and Glamorgan; breeding of sheep, cattle, and horses. Principal ports: Cardiff, Swansea, Newport, Beaumaris. Largest tns.: Cardiff, Swansea, Rhondda. There are 13 counties (incl. Monmouthshire). The earliest inhabitants appear to have been Celtic *Goidels* and *Brythons*; Rom. conquest in A.D. 78.

**Wales, Prince of**, title borne by the eldest son of the British sovereign; first conferred by Edw. I, the conqueror of Wales, on his son Edw. of Caernarvon (aftwds. Edw. II), 1031. See also EDWARD, PRINCE OF WALES.

**Walvisch Bay**: see WALVIS BAY.

**Walker Art Gallery**, Liverpool, Eng., presented to Corporatn. of Liverpool by Sir And. Barclay Walker (1824-93). Incls. Roscoe Collection, representg. Eur. art from Mid. Ages to 16th cent., and a modern collection contng. examples of Pre-Raphaelite (*q.v.*) and later schools of painting.

**Walking race**, athlet. event, on either

Records (all British):

Miles	hr.	min.	sec.	Holder	Year
1		6	22	Cummings	1913
2		13	11½	Larner	1904
3		20	21½	Raby	1883
4		27	14	Larner	1905
5		35	10	Raby	1883
10	1	14	45	Raby	1883
15	1	55	56	Raby	1883
20	2	39	57	Perkins	1887
25	3	35	14	Franks	1882
50	7	52	27	Butler	1905

road or track. One foot must always touch ground, and one leg always be straight.

**Walkley**, Arthur Bingham (1855-1924), Eng. civil servant and dramatic critic of *The Times*; served as Brit. delegate on various postal congresses; pub. *Dramatic Criticism*, 1903; *Pastiche and Prejudice*, 1921; etc.

**Wallaby**, name given to various species of marsupial mammals closely resembling, but smaller than, kangaroo; incl. *banded W.*, *brush-tailed W.*, *Parry's W.*, *spurred W.*; all confined to Australia; veg. table-feeding.



Wallaby

**Wallace**, Alfred Russel (1823-1913), Eng. naturalist and traveller; simultan. with Darwin in propounding theory similar to that of evolution; *Man's Place in the Universe*, 1903; see WALLACE'S LINE. **W.**, Edgar (1875-1932), Eng. novelist; detective stories.

**W.**, Lew. (1827-1905), Amer. novelist; *Ben Hur* (1880). **W.**, Sir Richard, Bt. (1818-90), natural s. of 4th Marq. of Hertford; connoisseur and philanthropist; M.P. for Lisburn, 1873-85; trustee of Nat. Gall.; see WALLACE COLLECTION.

**W.**, Sir Wm. (c. 1274-1305), Scot. patriot and hero; deftd. Eng. at Stirling Bridge, 1297; deftd. by Edward I at Falkirk, 1298; betrayed to English, 1305, and condemned for treason.

**W.**, William (1860- ), Brit. composer; symphonic poem, *The Passing of Beatrice*; later symph. poem, *François Villon*; pop. cycle, *Freebooters' Songs*. **W.**, William Vincent (1812-1865), composer; operas: *Mari-tana* (1845); *Lurline* (1860); etc.

**Wallace Collection**, coll. of works of art, arms, and armour, formed by 3rd and 4th Marquesses of Hertford and Sir Richard Wallace, the last-named of whom removed it from Paris to the Hertford family mansion, Manchester House, in Manchester Square, London. Sir Richard d. in 1890, and his widow, in 1897, bequeathed the collection to the nation on condition that its unity should not be destroyed. The govt. thereupon purchased the house (£80,000) and the collection was opened, 1900, the mansion being renamed "Hertford House." The collection is particularly rich in French works of art of the 18th cent., including not only paintings and miniatures, but furniture, clocks, and porcelain; while the display of artistic and historical arms and armour is unrivalled.

**Wallace's Line**, line representing course of channel wh. orig. separated continents of



Edgar Wallace

Asia and Australia; passes N.N.E. through Bali Str.; to W. of it, flora and fauna are Asiatic in character, while to E. and S. they are Australian; named after Alfred Russel Wallace (q.v.), author of *Island Life*, 1880.

**Wallach**, Otto (1847- ), Ger. chemist; Nobel Prize (Chem.), 1910.

**Wallachia**: see WALACHIA.

**Wallachians**, *Walachians*, *Flacks*, name for Rumanians and allied peoples scattered throughout Balkans; see WALACHIA and RUMANIA.

**Wallasey**, co. bor. Wirral Penins., Cheshire, Eng.; suburb of Birkenhead; pop., 97,500; includes New Brighton.

**Wallenstadt**, Lake of: see WALENSEE.

**Wallenstein**, Albrecht von, Duke of Friedland (1583-1634), Imperial generalissimo, 1625; with Tilly, conq. almost all N. Ger.; dismissed, 1630; recalled after successes of Gustavus Adolphus, 1631; destd. at Lützen, 1632; opposed by Sp. Cath. League; removed from command 1634 and murdered at Eger.

**Waller**, Edmund (1605-87), Eng. poet; remembered for a few lyrics (*Go, Lovely Rose*, etc.). **W.**, Lewis (1860-1915) Eng. actor; first appeared in London, 1883; princ. rôles: Henry V, Monsieur Beaucaire.

**Wall flower**, *Cheiranthus cheiri*, sweet-scented golden-yellow flower growing wild on old walls. Many varieties cultivated.

**Wallingford**, tn., Berks, 55 m. W. of London; Roman-Brit. settlement; cas. (demolished 17th cent.); pop., 1,365.

**Wallington**, urb. dist., Surrey, 2½ m. S.W. of Croydon; residential suburb of London; pop., (with Beddington), 26,249.

**Wallis**: see VALAIS.

**Walloons**, Celtic people in S. Belgium (45% of the total pop.), lang., Fr. dialect.

**Wall-rue**, *Asplenium ruta-murari*, small spleen-wort growing on walls, cliffs, etc.

**Wallsend**, town, Northumb., Eng., 4 m. N.E. Newcastle-upon-Tyne; pop., 44,600; manuf. aluminium; collieries. The east end of the Roman Wall reached the Tyne here.

**Wall Street**, street in N. Y. containing Stock Exchange and numerous banks; also designation for N.Y. finance; corresponds to "the City" in London.

**Walmer**, seaside resort, Kent, Eng., adjoining Deal; pop., 5,300; residence of Wardens of Cinque Ports.

**Walnut Canyon**, nat. monument (1915)

in Arizona, U.S.A.; 960 acres; prehist. cliff dwellings.

**Walnut tree**, *Juglans regia* and other varieties; timber is used for furniture and ornamental work; nuts are highly esteemed as a dessert fruit when ripe; pickled whilst unripe.

**Walpole**, Horace, 4th E. of Orford (1717-97), politic. and man of letters; *Castle of Otranto*; *Memoirs*. **W.**, Hugh Seymour (1884- ), Brit. novelist;

*The Wooden Horse*, 1900; *Mr. Perrin and Mr. Traill*, 1911; *Jeremy*, 1919; *The Cathedral*, 1922; *Rogue Herries*, 1930. **W.**, Sir Robert, 1st E. of Orford (1676-1745). Brit. statesm.; Pr. Min. (1st Ld. of Treasury and Chan. of Excheq.), 1715-17, 1721-42.

**Walpurgis**, **Walpurga**, St. (d. 779), Eng. abbess who lived in Ger.; her feast day synchronises with spring festival, **W. Night**, in wh., acc. to legend, the witches ride to the Brocken in the Harz Mountains.

**Walrus**, **morse**, large aquatic carnivore of the Polar Seas, resembling seal in general shape, but having the upper canine teeth developed into enormous tusks, projecting far below lower jaw. Old males attain 10 to 11 ft. in length. Social in habit, collecting in herds on the ice-fields.

**Walsall**, co. bor., Staffs, Eng., in Black Country; manuf. leather, iron, brass; pop., 103,100.

**Walter**, John (1730-1812), Eng. newsp. propr.; fndr. of *The Times*.

**Walter of Aquitaine**, legendary son of Alphere of Aquitaine; given to Attila as hostage, together with Hagen and Hiltegun; hero of Ekkehard's *Waltharius*, and of the O.E. fragments known as *Waldere*; versions of his story occur in *Thidreks Saga* and, prob., in *Skaldskaparmal*.

**Waltham**, tn., Massachusetts, U.S.A., on Charles Riv., pop., 39,250; noted for its watch factory.

**Waltham Abbey**, anc. monastic foundation in vill. of same name, Herts; nave is oldest surviving Norman bldg. in Eng.; burial-place of King Harold (q.v.). **W. Cross**, urb. dist., Herts; gunpowder factories, breweries; named from extant "Eleanor Cross,"



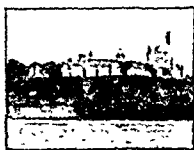
Horace Walpole



Hugh Walpole



Sir R. Walpole



Walmer Castle



Branch of Walnut-tree, Showing Interior of Fruit



Walrus

erected (c. 1291) to commem. Qn. Eleanor, wife of Kg. Edward I; pop., 7,116.

**Walthamstow**, bor. Essex, Eng.; industrial part of Greater London; pop., 133,000.

**Walther von der Vogelweide** (c. 1170-1230), Ger. minnesinger (*q.v.*) and lyric poet. *Under the Limes*.

**Walton, Izaak** (1593-1683), Eng. author: *The Compleat Angler* (1653; 5th ed., 1676, with continuation by Cotton); "Lives" of Donne, Wotton, Herbert, and others. **W., William Turner** (1902- ), Eng. composer; *Facade*; overture, *Portsmouth Point*; *Sinfonia Concertante*, piano and orch.; viola concerto; oratorio: *Belshazzar's Feast* (Leeds Festival, 1931).

**Walton-on-Thames**, urb. dist., Surrey, 17 m. S.W. of London; site of former palace of Henry VIII (Oatlands Park); pop., 17,953.

**Walton-on-the-Naze**, urb. dist. and watering-place, Essex, 70 m. from London; pop., 3,066.

**Waltz**, ballroom dance in slow  $\frac{3}{4}$  time; 1st appeared in 18th cent.; form utilised by Chopin as medium for instrumental music.

**Walvis (Walfisch) Bay**, terr. and port, S.W. Africa, on Atlantic; 375 sq.m.; formerly part Cape Prov., now admin. by S.W. Africa.

**Walworth**, working-class dist. of S. London, Eng., in met. bor. of Southwark (*q.v.*).

**Wampum**, purple or white beads made from shells and strung together; used as money by N. Amer. Indians; also for personal ornament and record-keeping.

**Wanamaker**, John (1838-1922), Amer. merchant; fndr. of Wanamaker's stores; pres. Y.M.C.A., Philadelphia, 1870-83; postmr.-gen. U.S.A., 1889-93.

**Wandering Jew, The**, medieval legendary figure, variously identified with one Ahasuerus, a cobbler, and Cartaphilus, door-keeper of Pilate's Judgment Hall, who, for an insult offered to Christ on the day of His Crucifixion, is doomed to wander eternally over the earth.

**Wandering-wasps**, small solitary wasps (*q.v.*); some species parasitic in nests of other Hymenoptera.

**Wanderjahre** (Ger.), roving years; year of travel, undertaken after an apprenticeship, in order to gain experience.

**Wandsworth**, met. bor., S.W. London, Eng., S. bank Riv. Thames; pop., 353,100.

**Wanganui**, seapt. of prov. Wellington, N. Island, New Zealand; exports wool, dairy produce; conflicts with Maoris, 1847, '64, '68; pop., 27,180.

**Wanne-Eickel**, tn., Westphalia, Ger.; pop., 93,900; port on Rhine-Herne Canal; coal mines.

**Wannsee**, Ger. residential tn. and garden suburb; lake of Riv. Havel, nr. Berlin.

**Wanstead**, urb. dist. of Essex, 7 m. N.E. of London; residential suburb; pop., 19,183.

**Wantage**, bor. and mkt. tn., Berks; b. place of Alfred the Great. (849); grammar school; pop., 3,424.

**Wapentake**, name given in certain Eng. counties (Yorks, Lincs, Leics, Notts, Derbysh., and Rutland) to the former admin. division elsewhere called Hundred (*q.v.*).

**Wapiti**, name given to deer closely allied to red-deer group; N. Amer. W. is also known as *elk*; Asiatic species known as *Manchurian Wapiti*.

**Wapping**, riverside dist. of E. London; part of bor. of Stepney; docks; tunnel (now railway) under Riv. Thames.

**War**, settlement of differences betw. States by recourse to arms; defined by



Wapiti

Clausewitz as the continuation of politics by other means; object, the imposition of a nation's wish on the enemy, so that, as the loser, he will submit to all the victor's conditions, *i.e.*, surrender at discretion. In primitive communities this may involve complete extermination of the beaten side; in more complex society not possible, owing to reaction on hitherto neutral neighbours; also, few wars are fought to a finish. W. is possible only betw. sovereign States; betw. a State and its dependency armed conflict is called *Revolt*, within a State, strife of rival factions is *Civil War*. Customary to distinguish *aggressive* and *defensive* W., on the ground that one or other of the combatants must be the attacker; in practice, every nation, once W. has been declared, claims to be fighting a defensive W. Most great wars are betw. groups of nations or allies. Each side must prosecute the campaign with all the powers at its disposal: half-hearted measures lead to defeat. The campaign demands the employment of armed forces, prev. trained in peace-time: soldiers, sailors, and airmen (in Gt. Brit., army, navy, and air force); peace-time establishments are strengthened by mobilisation of reserves, militia, territorial forces, volunteers, etc. Requirements of armed forces (munitions, material, transport, stores, food, etc.) supplied by reorganism. of civilian population. Object of c.-in-ch. of a force so to arrange all his forces as to ensure general victory over the enemy (*strategy*), and, once a battle is engaged, to direct operations leading to victory in that battle (*tactics*). **W. graves**, Brit. milit. cemeteries in all theatres of World War; in charge of *Imperial War Graves Commission* (900 milit. cemeteries in Fr. and Belgium; many Brit. nat. memorials to the missing). **W. guilt**, admission of responsibility for World War by Ger. and her allies (Art. 231

of Treaty of Versailles; *q.v.*) **W. indemnity**, sum payable by destd. State to victor by way of reparation for losses and costs of war; see **REPARATIONS**. **W. loans**, internal loans raised in belligerent countries during World War to cover costs of the war: **W. profits**, see **EXCESS PROFITS DUTY**. See also **WORLD WAR**; **WAR OFFICE**; **ARMY**; **ARMY COUNCIL**; **BLOCKADE**; **LEAGUE OF NATIONS**; **ARBITRATION**; **HAGUE TRIBUNAL**.

**Warbeck**, Perkin (c. 1474-99), pretender to Eng. throne, claiming to be son of Edw. IV; befriended by Emp. Maximilian, and James IV of Scot.; surrendered at Beaulieu, Hants, 1497; hanged.

**Warblers**, small passerine birds of the family *Sylviidae*, which includes some of the finest songsters, *e.g.*, nightingale, willow warbler, blackcap, chiff-chaff, the grass- and the sedge-warbler. All are denizens of the Old World, many build remarkable nests, *e.g.*, Indian tailor-bird; and many migrate over long distances. See separate headings.

**Warburg**, Otto Heinrich (1883- ), Ger. physiologist; investigated metabolism and an authority on cancer; Nobel Prize, 1931.

**Ward**, **Artemus**, pseud. of Charles Farrar Browne (c. 1834-67), Amer. humorist; contributor to *Punch*, 1866-67; *Artemus Ward: His Book*, 1862; *Artemus Ward: His Travels among the Mormons*, 1865; etc. **W., Mrs. Humphry** (1851-1920), Brit. novelist; works incl. *Robert Ellesmere*, 1888; *The Case of Richard Meynell*, 1911; etc. **W., Sir Leslie**, "Spy" (1851-1922), Brit. cartoonist; famous series of caricatures in *Vanity Fair*, 1873-1909; wrote *Forty Years of "Spy"*, 1915.

**Ward**, 1) division, esp. for voting, of city, bor., urb. distr., or parish. In City of London they have high antiquity, and each is gov. by an alderman (*q.v.*). **Wardmote**, meeting sim. to vestry (*q.v.*), formerly with power to punish offences. 2) Gen. pers. under care of guardian. **W. in Chancery**, pers. under care of guardian apptd. by crt., or infant brought under authority of crt. by application on his own behalf.

**Warden**, in Gt. Brit., formerly gov. of dist. (*e.g.*, *W. of Cinque Ports*); now title of heads of several Oxford colleges, and of headmaster of Trinity Coll., Glenalmond.

**Ware**, urb. dist., Herts, 22 m. N. of London; remains of Franciscan priory; breweries; pop., 6,171.

**Warehouse**, bldg. for storage of goods; see **BONDED WAREHOUSE**.

**Warlock**, Peter: see **HESELTINE, PHILIP**.

**Warm-blooded animals**, *haematothermals*, animals the temperature of whose body is independent of external temperature; man, mammals, birds, as opposed to the cold-blooded animals, *e.g.*, fish, reptiles.

**Warnsdorf**, frontier tn., N.E. Bohemia,

Czechoslovakia, on the Mandau; pop., 20,330; linen.

**War Office**, in Gt. Brit., Ministry in charge of the army. Adminis. by the Army Council (*q.v.*) under presidency of Sec. of State for War. See also **STAFF**; **GENERAL STAFF**; **ADJUTANT**; **QUARTERMASTER**; **ORDNANCE**.

**Warp**, thread extendg. lengthways in loom and crossed by the woof. **W. knit**, fabric intermediate betw. knitted and woven matl., warp havg. parallel threads interlooped with one another. **Warp-beam**: see **WEAVING**.

**Warrant**, sealed appt. by or on behalf of Crown; also order sealed by a crt. or magistrate for arrest of accused person. **W. for goods**: see **DOCK WARRANT**. **W. officer**, rank in the army above N.C.O. Appointed by Sec. of State for War on the recommend. of a commanding officer. *Regimental sergeant-major* is a W.O. 1st class; *Company, Sqn., or Batty. S.M.* a W.O. 2nd Class. In the Royal Navy, gunner, boatswain, Officer torpedo, and carpenter W.Os. and Chief W.Os., the latter ranking with a lieutenant in the army. See **OFFICERS**.

**Warrantable stag**, full-grown male red-deer with 5 "points" on each antler, fit to be hunted.

**Warranty**, an express or implied statement of something wh. a party undertakes shall form pt. of contract; partic. the circumstance of selling a thing by its proper description.

**Warrington**, co. bor., Lancs, Eng.; pop., 79,300; manuf. iron, leather, glass.

**Warsaw**, **Warszawa**, 1) prov., Poland; 11,329 sq.m.; pop., 2,114,890. 2) Cap. of Poland, on the Vistula, seat of parliament (Sejm); R.C. and Orth. abps.; Luth. ch.; royal palace; univ. (1816); picture gall.; museums; Lazienki palace and park; Saxon Garden. Fndd. 12th cent.; residence of dukes of Mazovia till 1526, when annexed to Poland; captured by Swedes 1655 and 1702; by Russians, 1764 and 1794; annexed to Prussia, 1795. Cap. indept. Duchy of W., 1807; captured again by Russians, 1813; insurrections, 1830-31, '63, and 1906. Occupied by Germans, 1915-18; Polish since 1918.

**Wars of the Roses**: see **ROSES**, **WARS OF**.

**Wart**, malformation of the epidermis of the skin, usually due, in the first place, to irritation.

**Warta**, **Warthe**, riv. (488 m.), N. Europe longest trib. of Oder; rises in Poland N.E. of Beuthen; flows past Czystochowa, Poznan; joined by Riv. Netze after entering Ger.; joins Oder at Küstrin.

**Wartburg**, cas. (11th cent.) in Thuringian



Epauulette and Sleeve-badges of Warrant Officer (R.N.)

Mtns., Ger., above Eisenach; anc. seat of Landgraves of Thuringia. Luther's place of refuge, 1521-1522.

**Wart-hog**, most hideous of the pig tribe, characterised by large, conical, warty growths projecting from sides of face, and huge tusks that curve upwards and outwards. Native to Africa.



Wart-hog

**Warton, Thomas** (1728-90), English critic and author; prof. of poetry, Oxford, 1757; poet laureate, 1785; works incl. *The History of English Poetry*, 1774-81; his bro. **Joseph** (1722-1800), literary critic; wrote *Essay on Genius and Writings of Pope*, 1757, etc.

**Warwick, Richard Neville, the Kingmaker** E. of (1428-71); assisted Edw. of York to deft. Lancastrians and to secure throne as Edw. IV; aftwds. revolted agst. Edw., and reinstated Henry VI. Edward, however again deftd. Lancastrians at Barnet, where Warwick was killed.



Warwick Castle

**Warwick, Earls of**, Henry de Newburgh (prob. a companion of the Conqueror) cr. 1st E. c. 1088; direct line extinct by mid-13th cent., when title passed to Wm. de Beauchamp (9th E.), a collateral descendant. In 1449 Richd. Neville, the "Kingmaker" (see above), husb. of Anne dau. of Richd., 13th E., was cr. (15th) E.; he was eventually succd. by his grandson, Edward (the last of the Plantagenets) as 18th E. On his execution (1499) title became extinct, but was revived in 1547 for John Dudley (aftwds. Duke of Northumberland), a descendant of Richd., 13th E., again lapsing in 1590 on d. of the 21st. In 1618 the title was conferred on the 3rd Bn. Rich. in whose fam. it remained until d. of the 29th (or 8th) E. in 1759, when it was revived in favour of Francis Greville, E. Brooke, a member of a younger line of the Beauchamp fam. Pres. holder, 7th of this creation, is his descendant.

**Warwickshire**, midland co., Eng.; area, 902 sq.m.; pop., 1,534,782. Surface mainly flat; principal riv. Avon; well wooded (Forest of Arden, formerly in S.); "Shakespeare Country"; agric., cattle, sheep; includes part of manuf. district surrounding Birmingham (largest tn.) and Coventry, the centre of England's motor trade. **Warwick**, county tn. on Riv. Avon, pop., 13,500; cas. (14th cent., much restored) manuf. agric. implements.

**Wasatch Range**, part of Rocky Mts. system (q.r.) in Utah, U.S.A.; *Mt. Dana*, 12,235 feet.

**Wasgau, Wasgenwald**: see *VOSGES*.

**Wash.**, abbr. Washington.

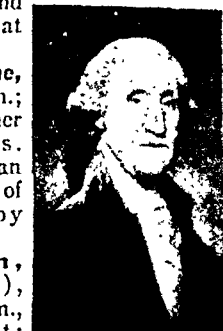
**Wash, The**, shallow inlet N. Sea, betw. Norfolk and Lincs, Eng.; 22 m. by 15; receives rivs. Ouse, Nene, and Welland.

**Wash bottle**, (chem.) bottle or flask, cork of wh. bears two bent tubes, one just passing thr. the cork, the other reaching to bottom; outer end is drawn to a fine jet. If flask be filled with liquid and air blown thr. the 1st tube a fine stream will be ejected from 2nd tube; may be used to wash precipitates. Gases may be washed in a sim. appar. by being bubbled thr. 2nd tube and collected at first.

**Washing machine**, gen. worked mechan.; a perforated inner drum cntg. clothes. etc., revolves inside an outer drum full of steam-heated soapy water.

**Washington**, George (1732-99), Amer. soldier, statesm., and 1st President; fought for Eng. agst. the French in Virginia, 1754-58; became definitely anti-Eng. and was apptd. c.-in-c. of the Amer. forces after Lexington (Apr., 1775); retired at close of War of Independ., 1783; pres. of Nat. Convention, 1787, and of U. S. (for 4 yrs.), 1788; re-elected, 1792; retired, 1796, and d. (without issue), 14 Dec., 1799.

**Washington**, 1) ("Evergreen State") in N.W. of U.S.A., bounded N. by Brit. Columbia, E. by Idaho, S. by Oregon, and W. by Pacific Ocean; 69,127 sq.m.; pop., 1,600,000; coast deeply indented by Puget Sound (q.r.); *Cascade Mtns.* (*Mt. Rainier* 14,408 ft.) divide state N. and S.; *Olympic Mtns.* (7,915 ft.) in N.W. Riv. Columbia forms part of S. boundary; land fertile where irrigated (cereals, fruit, vegetables); sheep and cattle; forests (lumber); fisheries; coal, gold, silver, copper, magnesite; chf. tns.: *Olympia* (cap.), Seattle, Tacoma, Spokane. 2) Federal cap. of U.S.A., on Potomac Riv., 225 m. S.W. of New York; comprises *District of Columbia* (D.C.); 70 sq.m.; pop., 486,900. City regularly laid out (parks and gardens); seat of Pres.



Washington



Washington, the Capitol

of U.S.A. (White House), Fed. Congress and Senate (Capitol), and of the various ministries; four univs. (one for Negroes); Library



of Congress; Nat. Museum, art galleries; Washington Monument; Lincoln Memorial; observatory. Fndd., 1791; federal cap. since 1800; capitol burned by the British, 1814; hdqrs. of the North in Amer. Civil War.

**Washington, Mount:** see APPALACHIAN MOUNTAINS.

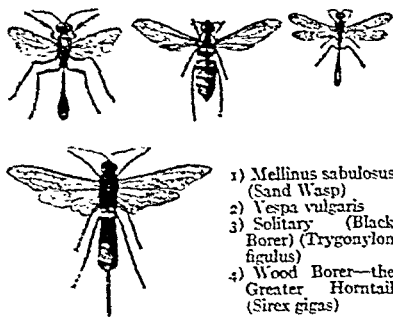
**Washington, Treaty of,** 1) *Ashburton T.*, 9 Sept., 1842, betw. Gt. Brit. and U.S.A., by wh. boundaries betw. Canada and U.S.A. were settled. The *San Juan Arbitration* (q.v.) arose from difficulty in interpretation of part of this. 2) 8 May, 1871, betw. Gt. Brit. and U.S.A., providing for settlement of the "Alabama" (q.v.) and the "San Juan" claims, by arbitration; dealt also with fisheries disputes and questions of navigation on the St. Lawrence River and the Great Lakes.

**Washington Agreement,** (1922), on naval disarmament betw. U.S.A., Gt. Brit., Jap., Fr., and Italy.

**Washington Post,** ballroom dance of Amer. orig., pop., in early 20th century.

**Washita River,** trib. of Red Riv., Texas, U.S.A.; 550 miles.

**Wasp,** name generally applied to a family of insects (*Vespidæ*) of order Hymenoptera



- 1) *Mellinus sabulosus*  
(Sand Wasp)
- 2) *Vespa vulgaris*  
(Solitary Black Borer)
- 3) *Trygonylon figulus*  
(Wood Borer—the Greater Horn-tail)
- 4) *Sirex gigas*

Types of Wasp

known as *Social Wasps*; cells of paper-like material made from chewed wood; the nests, wh. are in the ground or in hollow tree-trunks, contain tiers of cells in which the larvae are reared; fully developed females (queens), workers, and drones are produced; the females, wh. are larger than the males, have a sting in the tail, poison from wh. can cause much pain.

**Wasserkuppe,** mtn., Ger. (3,117 ft.), highest peak of the Rhöngebirge; source of Riv. Fulda; annual gliding contests.

**Wasting** (physiol.): see CACHEXIA; MARASMUS.

**Wast Water,** lake, Cumberland lake dist., Eng. (3 m. by  $\frac{1}{2}$ ); *Wadale Head*, centre for rock-climbing.

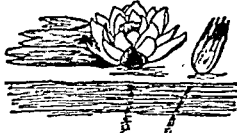
**Watch,** (naut.) allotted portion of time, usu. 4 hours, for watching or being on duty;

that section of officers and crew of ship who together attend to her working for an allotted time. *Dog W.*, two watches of 2 hours, one from 4 to 6, other from 6 to 8 P.M.

**Water,** covers abt.  $\frac{3}{4}$  of surface of earth; determining factor in economics of nature and for living beings; in solid state, *ice*, as gas, *steam*; greatest density of 4° C., expands on freezing, therefore ice floats on W.; on acc. of its great specific heat, W. only follows slowly fluctuations of temp. of air, e.g., in spring; therefore climate near sea is more equable than climate inland. W. is a combination of hydrogen and oxygen (H<sub>2</sub>O); almost always contains impurities; chem. pure as *distilled W.*; sea-water (q.v.) up to 4% salts, esp. common salt or sodium chloride; also traces of gold. *Hardness of w.*, see HARDNESS. *Purification of W.*, removing impurities wh. are harmful for indus. or domes. purp.; substances in suspension (sand, mud, organisms) removed by subsidence in reservoirs and by filters (sand, cloth, porous earthenware); destruc. of bacteria by means of chemicals, e.g., chlorine; extrac. of iron by treatment with air (spraying and trickling over coke); lime and magnesia salts (causing *hardness*) by treatment with lime, soda, or zeolites (q.v.), *base-exchange system*.

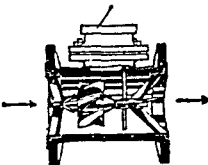
**Water-beetle,** large pond-beetle belonging to order *Dytiscidae*, having legs adapted for swimming; herbivorous; larvae predatory. **W.-boatman**, aquatic insect of carnivorous habit, found in stagnant water. **W.-bugs**, predatory aquatic insects, inhabiting ponds in temperate regions; mouth-parts adapted for sucking. Various species: water scorpion, oval water-bug, water boatman (q.v.). **W.-colour**, pigment diluted with water instead of oil; usu. applied in transparent washes for landscapes, sketches, etc. **W.-concentration** processes for ore-dressing; finely ground ore is suspended in water, and var. constits. of diff. spec. grav. are caused to sep. from one another; valuable minerals (heads, concentrates) are usu. heavier than worthless (tails, gangue). Chf. machines: classifiers, thickeners, jigs, tables, rag-frames. Used in concentrating tin, gold, platinum, zinc, lead, ores, and in purifying coal. **W. cress**, *Nasturtium officinalis*, plant growing wild in streams, also cultivated in beds in running water; leaves used as a salad. **W.-flea**, very small freshwater crustacean of the family *Daphniidae*; swarm in ponds during summer months, swimming with active, jerky motion. Compressed oval form, partly covered by thin transparent bivalve carapace, through which the internal organs can be seen. **W. gas**, gas formed by passing steam and some air over burning coke or anthracite; consists of carbon monoxide and hydrogen, both of wh. burn, and nitrogen and some carbon dioxide wh. do not burn. Used for adding to coal-

gas, firing furnaces, driving gas engines, etc. **W. glass**, sodium or potassium silicate made by melting soda or potash with quartz sand; sold as syrupy liquid, solution of W.G. in water; used in manuf. of artific. stone; "filling" soap; fireproof paint; cementing; preserving eggs. See **SILICIC ACID**. **W. lily**, *Nymphaea alba*, floating leaves and large white flowers wh. rise to surface and expand in sunlight and close and sink at night. Yellow **W.L.**, *Nuphar lutea*, is smaller. See **LOTUS**. **W.-line**, line of intersection of surface of a liquid and floating body, partic. a ship. See **PLIMSOLL MARK**, for water-line of ships. **W.-melon**: see **MELON**. **W. meter**, (phys.) apparatus for measuring amt. of water flowing thr. pipes. Var. systems: vanes turned by water, and attached to revolution counter; pistons driven by water.



Water-lily

**W. of crystallisation**, (phys.) most crystals cntn. water in molecular combination, wh. escapes with heating; e.g., in gypsum, each molecule of calcium sulphate is assoctd. with 2 molecules of water, wh. are expelled in heating, leaving plaster of Paris (q.v.). Salts without W. of C. are said to be *anhydrous*. **W.-plantains**, *Alisma plantago*, perennial plant, grows on banks of rivers and ponds, violet-coloured flowers, broad leaves; *A. natans*, floating water-plantain, white flowers with yellow spot; *A. ranunculoides*, the lesser water-plantain, narrow tapering leaves. **W. polo**, game betw. 2 teams of 7 swimmers with hollow leather ball, wh. has to be thrown into opponents' goal. **W.-power installations**, power stations for obtg. energy afforded by water falling to a lower level; used by electricity works; determining factors, quantity of water available, effective drop; natural water courses are regulated by dams forming reservoirs at high level, from wh. water is led by pipes to turbines at low level. **W. (jet) pump**, for pumping air and gases. Water issuing from jet at high speed plunges into divergent pipe, carrying with it air and creating a vacuum, wh. may be as low as

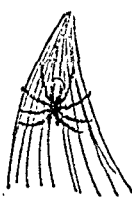


Water-meter

vapour pressure of water. **W.-rail**, an aquatic bird not uncommon in Gt. Brit., in marshy places, where it breeds among the dense reedbeds. Widely distributed through Europe, Asia, and Africa. Migratory. Brown upper, grey underplumage, with white bars at sides and yellowish rump. Very shy and difficult to approach. **W.-rat**, *Microtus amphibius*, common name for a species of vole (q.v.), fnd. throughout Europe. **W.-skaters**, predatory insects, which run about on the surface of ponds and streams. **W.-spider**, aquatic insect frequenting ponds and ditches; constructs a dome-shaped shelter among pond-weeds, filling it with air carried down from the surface on the underside of the body; feeds on various forms of aquatic life. **W. tower**, tank for water set on top of tower, yielding supply at a steady and suffic. pressure. **W. violet**, *Hottonia palustris*, pond plant with submersed divided leaves; white or pinkish flowers, growing out of the water. **W.-wagtails**, small passerine birds, distinguished as "ambulators," or walking birds; they all have a graceful way of running or walking (never hopping like finches), the tail moving constantly up and down. Insect feeders. Species resident in Britain are: pied-wagtail, grey wagtail; visiting summer migrants: yellow, blue-headed, white wagtails. **W.-wheel**, water-power motor of low power suitable only for small fall and slow speeds. *Overshot Wheel*, has a water supply from above, *undershot W.*, from below; *Sprinklers* revolve by repulsion. **W.-works**, provide a supply of pure water for consumers supplied from mains, wh. take water from

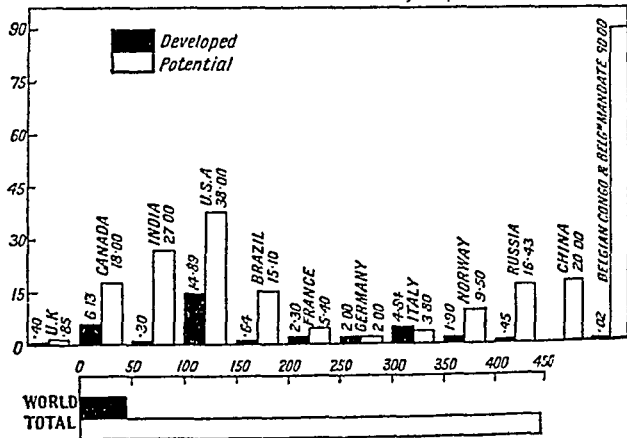


Water-skater



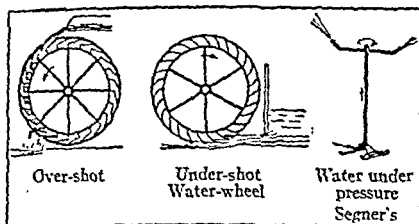
Water-spider

WATER POWER - DEVELOPED & ESTIMATED POTENTIAL, 1930 (HORSEPOWER IN MILLIONS)



Only one-tenth of water-power of world developed; U.S.A., Canada and Italy foremost in development.

reservoirs, to wh. it is raised by pumping. Almost invar. water is filtered and treated with chlorine to remove microbes.



Water-wheels

**Waterbuck**, large antelope of Africa, characterised by its long, sub-lyrate horns, which are ringed nearly throughout their length.

**Waterbury**, tn., Connecticut, U.S.A., on Naugatuck Riv.; pop., 99,900; watch manuf., photographic materials, chemicals.



Water-buck

**Watered stock**, shares in a co. wh. has incr'd. its nominal capital without increasing its assets.

**Waterfarcy**, (vet.) form of *lymphangitis* (inflammation of lymphatic glands) to wh. horses are subject, characterised by excessive swelling of the leg, with pain and fever.

**Waterford**, 1) *marit. co.*, Munster, I.F.S.; area, 708 sq.m.; pop., 78,600; surface generally mountainous (*Knockmaldown Mts.*, 2,609 ft., *Comeragh Mts.*, 2,470 ft.); flat and marshy in E.; rivs.: Blackwater, Suir; dairy-farming, cattle-breeding, fisheries, marble, copper. 2) *Co. tn. of W.*, on Riv. Suir, at head of W. Harbour; seapt.; pop., 27,000.

**Waterhouse**, 1) *Alfred* (1830-1905), Brit. architect; R.A., 1885; treasurer of R.A., 1898; *Owens College and Town Hall*, Manchester; *Natural History Museum*, London, etc. 2) *W., John Wm.* (1849-1917), Brit. painter; R.A. 1895; *The Lady of Shalott*, 1888; *The Magic Circle*, 1886 (both in Tate Gallery), etc.

**Waterloo**, Belgian vill., nr. Brussels; scene of decisive victory of Wellington and Blücher over Napoleon 18 June, 1815; brought Napoleonic Wars (q.v.) to conclusion. British losses are stated at c. 13,000, Prussian at c. 7,000, Fr. at c. 37,000, with all their guns, ammunition, and baggage.

**Waterloo cup**, the "blue riband" of coursing (q.v.), competed for annually in Feb. at Altcar, Lancashire.

**Waterloo with Seaforth**, urb. dist., Lincs, Eng., residential suburb of Liverpool; watering-place, on Irish Sea; pop., 31,200.

**Watermark**, faint design in paper made by a raised wire, worked into the desired

shape, which is fastened on the wire cloth of the mould (hand method), or, in modern machine methods (*see PAPER*), on the "dandy roll," which presses down on the forming sheet just as the pulp is well drained and before the sheet is passed through drying rollers. Early water marks have given names to several sizes of paper, such as foolscap, pot, crown, post, elephant, etc. To-day their chf. function is as a trade-mark in the better papers.

**Waterproofing**, process of rendering matls. resistant to water: 1) textiles: effected by coatings of indiarubber, linseed oil, asphalt, aluminium acetate, copper aluminium formate, cuprammonium, paraffin wax, and combinations of these. Mackintosh fabric is rubber-impregnated; tarpaulin is coated with linseed oil, asphalt, and pigment; Willesden canvas is waterproofed with cuprammonium; shower-proof woollen garments are mostly lightly dosed with paraffin wax. 2) (Bldgs.): Many materials used, chief classes a) plastic, bituminous asphalt, pitch, tar; b) waxes, e.g., paraffin; c) chemically effective substances, such as soap and alum, powdered iron, etc.; d) membrane, consisting of elastic (gen. bituminous) membrane supported on metal linings which allow for expansion and contraction. Cement sprayed on with "gun," afterwards bituminised, or "mastic," mixture of asphalt or coal-tar pitch and cement or limestone dust, very largely used in bldg. operations. Rubber, cellulose, casein, linseed oil, and many other preparations, are used for walls.

**Watershed**, elevation dividing 2 river valls. or basins; line of division betw. 2 riv. systems; (*loosely*) river basin.

**Waterspout**, pillar of water up to 60 or 70 ft. in diameter and 3,000 ft. high, drawn upward by funnel-shaped mass of whirling cloud wh. descends vertically to meet it.

**Watford**, tn. in Herts, Eng.; pop., 56,800; paper mills, silk factory, breweries.

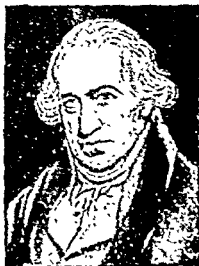
**Watling Island**, one of the Bahamas, W. Indies; first of the New World discoveries of Columbus, Dec. 14, 1492.

**Watling Street**, Roman road in Eng., connecting Dover, London, St. Albans, Wroxeter, and Chester; partly followed by Holyhead Road.

**Watson**, *John*: *see* MACLAREN, IAN. *W.*

**Sir William** (1858- ), Eng. poet; pubd. *Prince's Quest*, 1880; *Wordsworth's Grave*, 1890; *Poems, Brief and New*, 1925; etc.

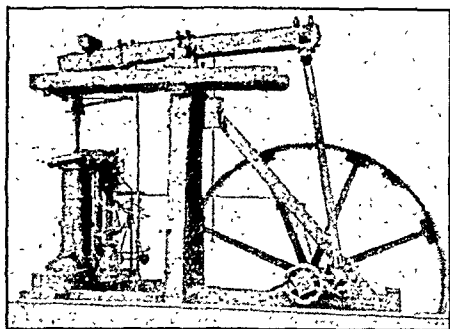
**Watt**, James (1736-1819), Brit. engin.; invtd. condensing steam



James Watt

engine, having double-action rotative engine and sep. air condenser and pump; erected in Birmingham, 1788.

**Watt**, unit of electric-power output or



Watt's Steam Engine

consumption; 1 W. = 0.2386 small calories per second; 1 *kilowatt* = 1000 W. = 0.736 h.p.; 1 *kilowatt hour* = 859734 small calories = 1 Board of Trade Unit.

**Watteau**, Jean Antoine (1684-1721), Fr. painter; *Fêtes Champêtres*.

**Wattenscheid**, tn., Arnsberg, Ger., in the Ruhr dist.; pop., 63,800; coal mines.

**Wattle**, (bot.) name of a species of acacia native to Australia and S. Africa. Also known as *mimosa* (q.v.).

**Wattle and daub**, (bldg.) primitive method of bldg. walls with interlaced twigs daubed with mud or mortar.

**Wattling**, (fort.) plaited or interwoven withes, (q.v.), placed as hurdles for the protection of escarpments (q.v.). **W.-work**, in basket-making, method of plaiting in wh. stakes are placed in ground and withes interwoven across them.

**Watts**, Geo. Fredk. (1817-1904), Brit. historical and portrait painter and sculptor; R.A., 1867; O.M., 1902; painted fresco in Lincoln's Inn Hall, 1853-59; made colossal equestrian group for Rhodes's grave, 1903; presntd. many portrs. and symbolic pntngs. to Nat. Portr. and Tate galleries. **W., Isaac** (1674-1748), Eng. Non-conformist theologian and hymn-writer; pastor of Independent congregation, Mark Lane, London, 1700; pubd. *Horae Lyricae*, 1706; *Divine and Moral Songs for Children*, 1720; etc.

**Watts-Dunton**, Theodore (1832-1914), Eng. man of letters; close friend of Rossetti and Swinburne; contrib. to the *Examiner* and *Athenaeum*; pubd. poems: *The Coming of Love*, 1897; prose-romance, *Aylwin*, 1898; *Poetry and the Renaissance of Wonder*, 1916; ed. Geo. Borrow's *Lavengro* and *Romary Rye*.

**Watts indicator diagram**, (tech.) device showing automatically relation betw. pressure and volume during stroke in piston of steam engine.

**Watzmann**, highest peak (8,901 ft.) of the Berchtesgaden Alps, Bavaria, overlooking Königssee.

**Wave-mechanics** (Heisenberg, de Broglie), most recent develop. of physical theory, accdg. to wh. any moving particle (electron, proton, atom), behaves in certain respects as if it were wave-like in nature. Thus electrons supposed by Bohr (q.v.) to be revolving around nucleus of atom are really closed rings of waves.

**Waveney**, riv. on boundary betw. Norfolk and Suffolk; 50 m.; formerly entered sea at Lowestoft; now turns N. to join Yare, nr. Yarmouth.

**Waverley Novels**: see SCOTT.

**Waves**, are propagated in a medium, and are due to the fact that a periodic or vibratory disturbance of some kind in one part of the medium affects neighbouring parts, and so travels onwards at a cert. speed depend. on medium; in longitudinal waves disturbance is in same direction as that of propagation, e.g., sound waves in air, where particles of air move to and fro in direction of propagation. W. on water surface (sea, pool) are transverse; so are electro-magnetic W. in the ether; state of electro-magnetic disturbance in a direc. at rt.-angles to direc. of waves. By analogy we speak of *crest* and *trough* of all W., meaning extremes of disturbance. **W.-length** is distance betw. 2 crests or troughs. **Frequency**, no. of vibrations per second. **Velocity**, therefore, equals frequency  $\times$  wave-length. **Electro-magnetic wave-lengths**: ( $1\mu = 1/1000$  mm.  $1\mu\mu = 1/1000\mu = 1/1,000,000$  mm.).  $\gamma$  rays:  $0.5 \times 10^{-10}\mu\mu$ ; hardest X-rays:  $10^{-9}$  mm.; soft X-rays:  $10^{-7}$  mm.; ultra-violet rays  $10^{-4}$  mm.; **visible light**: 0.00037 mm. (violet), -0.00077 mm. (red); the other spectral colours in between; heat waves, 0.3 mm., shortest elec. waves produced: 3 mm. Ultra-short W.: 1-10 metres; short waves: 10-100 m.; **broadcasting waves**: 200-2,000 m.; waves of wireless telegraphy: 1.5-15 km.; telephone current: 150-3,000 km.; industrial alternating current: 5,000-20,000 km. **Amplitude** is height of W., diff. of level betw. *crest* and *trough*. **Reflection and refraction** (qq.v.) occur when waves meet boundary of anoth. medium; **stationary W.**, so called when W. are reflected back on themselves: e.g., W. along stretched rope vibrated at one end; W. of sea reflected from shore. See also INTERFERENCE; BEATS; DAMPING; WIRELESS TELEGRAPHY; NODES AND LOOPS.

**Wave theory**, see UNDULATORY THEORY.

**Wax**, *beeswax*, secretion of bees and cert. cochineal insects, resembling fat; yellowish



Wattle

substance, insoluble in water; used for best type of candles; also in polishes, ointments, cert. paints and inks, modelling, etc. Bees consume abt. 10 lbs. of honey to produce 1 lb. wax. **Vegetable w.**, from cert. palms and other trop. plants; **mineral w.**, ceresin, obtd. from *soft paraffin* (ozokerite). **W. flower**, *Hoya carnosa*, Asiatic, trop. plant with thick, glossy leaves and wax-like flowers. **W. myrtle**: see CANDLE TREE. **W. tree**, *Rhus succedanea*, Japanese species of sumach (*q.v.*), from fruits of wh. wax is obtd.; used in China and Japan in candle-making.

**Waxbill**, *Munia punctularia*, species of weaver-bird (*q.v.*).

**Waxwing**, derives its name from the wax-like tips on the secondary quills in adult bird. Found in N. Europe, N. Asia, and N. America, occasional visitor to Brit. in winter, on its southward migration. Handsome, ruddy plumage, with crest on head and yellow tip to tail feathers.

**Wax-work**, modelling or casting of figures, esp. of living objects, from a medium usu. consisting chfly. of beeswax; anc. Egyptians made figures of deities in this way, and Greeks in addition to this made dolls; wax masks of their ancestors played important part in ceremonies of noble Roman families; and in Mid. Ages wax effigies of prominent persons were common. Use in witchcraft (perhaps still surviving) consisted in wounding wax figures of one's enemies, who were themselves believed to suffer corresponding injury; exhibitions of wax-work effigies of prominent or notorious persons popular in 18th cent. (*cf.* RUSSAUND). W. has also been put to great scientific use, esp. in anatomy.

**Wayang**, Javanese shadow puppet show, in wh. coloured puppets are used.

**Wayland, Wieland**, the Smith, figure of Norse mythology. *Wayland Smith's Cave*, a dolmen on Berkshire Downs, E. of Swindon, England.

**Wayzgoose**, annual entertainment held by printing-house employees.

**Waziristan**, dist., in S. of N.W. Frontier Prov., India; mountainous and barren; in Brit. sphere of influence (pol. agencies of Tochi in N. and Wana in S.); 5,100 sq.m.; pop., c. 50,000 (Pathans).

**Weal**, localised swelling of the skin; may arise from insect bites or from blows with a cane; caused by exudation of fluid from blood capillaries.

**Weald, The**, wooded tract, S.W. Kent and N.E. Sussex, Eng., betw. N. and S. Downs; anc. *Forest of Andredsweald*, partly surviving in *Ashdown Forest*; formerly centre iron industry. **Wealden**, pertaining to, resembling the Weald, esp. in its characteristic geological formation; series of sandstone and clay strata forming the lower part of the Lower Cretaceous system, over 2,000 ft. thick.

**Wealth**, (econ.) term used to connote all consumable utilities, requiring labour for their production, and possessing exchange value.

**Weaning**; children are weaned, *i.e.*, gradually broken of the habit of taking nourishment from the breast, in the period following the 8th month of life; the process shd. be complete by the end of the first year.

**Wear**, riv., Durham, Eng., flows past Durham into N. Sea at Sunderland; length 65 miles.

**Weasel**, small, long-bodied, short-limbed carnivore, distribtd.

thr. Eur.: slightly larger than the rat; brown and white fur; short, hairy tail; very destructive; robs nests, kills poultry and rabbits.



Weasel

**Weather**, state of the atmosphere with respect to heat or cold, wetness or dryness, calm or storm, degree of cloudiness and other meteorological conditions; see METEOROLOGY.

**W.-cock**, or *vane*, figure set at the top of steeples, etc., which the wind turns so as to indicate from what quarter it is blowing; they often take the form of some animal (of which the cock is the commonest), though in mod. times usu. made in form of an arrow.

**W. forecast**, prediction of weather in near future, based on position and movements of anti-cyclones and cyclones (*q.v.*), and, on careful consideration, of general meteorol. reports received from selected localities, from wh. a chart showing isobars and isotherms (*q.v.*) and direction and strength of wind is drawn out; *cf.* BUCHAN, ALEX.

**W.-glass**: see BAROMETER.

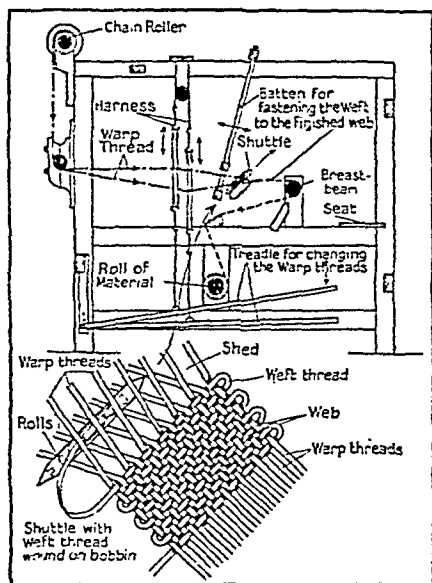
**Weaver**, Sir Lawrence (1876-1930), Eng. archit., architect. ed. of *Country Life*, 1910-16; director of U.K. Exhibits, Brit. Emp. Exhibition, 1923-25; auth. *Memorials and Monuments*, 1925; *Tradition and Modernity in Plasterwork*, 1928.

**Weaverbirds**, singing passerine birds of trop. Africa and Asia; build skilfully woven, long, bag-shaped nests, suspended from branches of palms or trees overhanging water.

**Weaving**, working up of yarns (*q.v.*) into textiles, on looms worked by hand, by foot or by machinery (see JACQUARD POWER-LOOM). Longitudinal threads (*warp*) are raised and lowered in acc. with desired pattern; thr. space thus created (*shed*) shuttle is shot, carrying intersecting thread (*weft*); intersected interlacings (*leashes*) of warp and weft; smooth, twilled, craped, satin leashing webs (*taffetas*).

**Webb**, Sir Aston (1849-1930), Brit. archit.; Pres. of Architect. Assoc., 1884; of Roy. Inst. of Brit. Architects, 1902; and of Roy. Acad., 1919-25; restored St. Bar-

tholomew's, Smithfield; designed new front of Buckingham Palace, etc. **W., Mary** (1881-1927), Brit. novelist: *Golden Arrow*, 1916; *Precious Bane*, 1924. *Femina*—Vic



*Heureuse* Prize, 1925. **W., Matthew** (1848-83), Brit. swimmer, "Captain W."; served in mercantile marine; swam English Channel, Dover-Calais, in 21½ hrs.; killed in attempt to swim rapids and whirlpool, Niagara, 24 July, 1883. **Webb, Sidney** and **Beatrice**: see PASSFIELD.

**Weber, Karl Maria von** (1786-1826), Ger. composer: *Der Freischütz*, *Euryanthe*, *Oberon*; instrumental music, compositions for piano. **W., Wilhelm** (1804-91), Ger. physicist; treatise on waves; devised electromagnetic telegraph.

**Webley**, automatic revolver; .455 in use in Brit. navy.

**Webster John** (fl. 1602-24), Eng. tragic dramatist; *The White Devil*, 1612; *Duchess Malfi*, 1623, etc.

**Webster, Noah** (1758-1843), Amer. lexicographer, lawyer and journalist; started *Minerva* (afterward *Commercial Advertiser*) and the *Herald* (afterwards the *N.Y. Spectator*), 1793; pubd. *Grammatical Institute of the English Language*, 1783-85; *Sketches of American Policy*, 1785; and his grt. *American Dictionary*, 1828.

**Weddell Sea**, large bay betw. W. Antarctic region and Coats Land (10° and 60° W. long.); separated from mainland in S. by ice-barrier; explored by Weddell, 1823, Filchner, 1911-12, and Shackleton, 1915-16.

**Wedekind, Frank** (1864-1918), Ger. dramatist: *Spring's Awakening*.

**Wedge**, piece of wood or metal with a sharp edge, used for splitting tree trunks, etc., when it acts in acc. with law of inclined planes. Most tools work on principle of the wedge, e.g. knife, chisel, axe, nail, needle, etc.

**Wedgwood, Josiah** (1730-95), Eng. ceramist; W. pottery; employed John Flaxman (q.v.) as designer.

**Wedmore**, vill., Somerset; Treaty of W. betw.

Guthrum and Alfred the Great, 878, under wh. the Danes evacuated Wessex and retired N. of Watling Street.

**Wednesbury**, bor., Staffs, Eng., 7 m. N.W. Birmingham; iron and coal-mining centre: manuf. iron, steel; pop., 31,500.

**Wednesday**, 4th day of week, named after Odin (Woden), Norse god, patron of agriculture.

**Wednesday, The**, Eng. assoc. football club, fndd. 1866 at Sheffield (orig. as *Sheffield W.*); Eng. cup winners, 1896, 1906, League champions, 1903, '04, '29, '30.

**Weed**, (bot.) any hardy, rank-growing plant wh. tends to choke cultivated crops or garden-plants; harbours of parasitic insects and plant-diseases.

**Week**, unit of time shorter than a month, consisting in various parts of the world of from 3 to 8 days. Names given to individual days of the 7-day week, which originated in W. Asia and was generally introd. in Europe in 4th cent., suggest that its adoption was due to astrological association with the 7 planets known to the ancient world. The 5-day week, legalised by the U.S.S.R., 1931, abolished fixed Sunday. **Weekly Statement**, of issuing banks (q.v.), publication of balances, important for judging circulation of notes and their backing, and volume of credit cash held by centr. bank for jt. stk. banks. Returns of *B. of Eng.* appear every Friday; those of *Ger.* on 7th, 15th, 23rd and last of every mnth., of *U.S. Federal Reserve Bks.*, every Thursday. See BANK OF ENGLAND. **Feast of Weeks**: see PENTECOST.

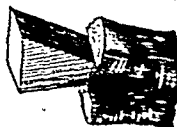
**Weelkes**, Thomas (c. 1575-1623), Eng. composer: madrigals.

**Weever, sting-bull**, *Trachinus draco*, fish of family *Trachinidae*, having poisonous secretion in spines of dorsal fin; **greater W.** (c. 1 ft.) and **lesser w.** (c. 6 in.), both frequent British seas.

**Weevil**, beetle having the head prolonged into a rostrum; herbivorous; many species injurious to trees and plants.



Wedekind, Death-mask



Wedge

**Weft:** see WOOF.

**Wegener, Alfred** (1880-1930), Ger. meteorologist, and Polar explorer; Greenland exped. 1906-08, 1912-13, 1920.

**Wehnelt interrupter**, (elec.) autom. current interrupter; functions by generating and destroying little bubbles of steam in current circuit by means of electrolysis (q.v.).

**Weichsel:** see VISTULA.

**Weichselbaum, Anton** (1825-1900), Ger. pathologist; with *Albert Fraenkel*, disc. pneumonia bacillus.

**Weigall, Arthur Edw. P.B.** (1880- ). Brit. archaeologist; Ins.-Gen. of Antiquities to Govt. of Egypt, 1905.

**Weigela**, plant of the family *Dieracilla* (q.v.).

**Weight**, (phys.) force with wh. a body is attracted to the earth.

**W.-lifting**, athl. display; raising heavy weights (iron bars, dumbbells, etc.) as an exhib. of strength. Record for putting the W., (i.e., casting a 16 lb. iron ball) is 52 ft. 8 in. (L. Sexton, U.S.A., 1932).

**Weighted average:** (math.) the mean of a series of values taking into account the weight or importance of each. If  $x_1, x_2, x_3, \dots$  be the various values and  $w_1, w_2, w_3, \dots$  the corresponding weight or importance of each, the W.A. =  $\frac{x_1 w_1 + x_2 w_2 + x_3 w_3 + \dots}{w_1 + w_2 + w_3 + \dots}$

—e.g., if 1000 men earn £2 a week, 5 men £4 and 1 man £50, the weighted av. of earnings per week of these men is  $\frac{1000 \cdot £2 + 5 \cdot £4 + 1 \cdot £50}{1000 + 5 + 1}$ . If the weights

(w's) are all equal we obtain the *unweighted* or *arithmetic* mean.

**Weighing Machine**, instr. for determining weight of persons, commodities, heavy objects, etc.; var. kinds suitable for special purposes; loaded rly. trucks are weighed on platforms approached by tracks, dial attached indicating weight. Cf. BALANCE; SCALE; SCALES.

**Weights and measures:** see Appendix.

**Wei-hai-wei**, port, Shantung, China, on N. E. coast; pop., 5,500; leased by Gt. Britain, 1898-1930.

**Well's disease**, epidemic spirochaetal jaundice, a disease communicated by spiro-

chaetes, and characterised by fever, shivering jaundice; named from Adolf Well (1848-1926).

**Weimar**, city, Ger., cap. Thuringia, on Riv. Ilm; pop., 26,000; mediæval obs.: Karlsburg Palace; Goethe's House (museum), tombs of Goethe and Schiller. List was musical director here 1840-50, producing many of Wagner's Operas. Ger. Nat. Assembly (1919) adopted constitution of Ger. republic.

**Weinberger, Jaromir** (1866- ). Czech composer; *Schwanke the Beggar*.

**Weingartner, Felix von** (1863- ). Austr. composer and mus. conductor; author of *On Conducting: Memoirs*.

**Weininger, Otto** (1880-1903), Ger. philos.; *Sex and Character*.

**Weir**, barrier across river concentrating chl. fall at one point and regulating flow for purposes of navigat., irrigat., or power. May be *solid* (fixed) or *movable*; latter in various forms: *needle gates*; *shutters*; etc. In *roller w.* dam is formed by steel drum or pipe wh. can be rolled up to permit water to flow underneath.

**Weismann, August** (1834-1914), Ger. biologist. His *Germ-Plasm Theory* maintains that the germ-plasm (germ-cell material) of all organisms is transmitted, unchanged (except by mutation, see HEREDITY), from generation to generation, the individual organism being a by-product or offshoot of the direct line, serving the purpose of transmitting the germ-plasm. Hence inheritance of acquired characteristics is impossible.

**Weissenburg:** see WISSEMBOURG.

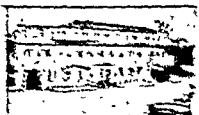
**Weisshorn**, mtns., Switzerland: 1) in Pennine Alps, canton of Valais, 14,805 ft.; 2) in Lepontine Alps, canton of Grisons, nr. Splügen Pass, 9,817 ft.; 3) in Rhaetian Alps, canton of Grisons, nr. Flüela Pass, 10,130 ft.

**Weitting, Wilhelm** (1868-71), Ger. Socialist writer; *Guarantees of Harmony and Progress*.

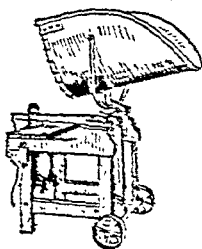
**Wekerle, Alex.** (1848-1921), Hung. statesman; Premier 1897-98, 1900-10, 1917-18.

**Welbeck Abbey**, seat, Dukeries, Notts, Eng. (Duke of Portland); 17th-cent. mansion on site of 12th-century Priory; abbey; underground rooms. duke, c. 1860-70.

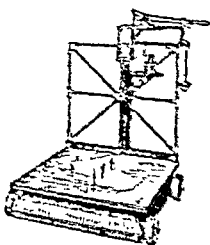
**Welch Fusiliers**, infantry regt.; old 23rd.



Weimar, Goethe's House



Coal weighing machine



Platform weighing machine



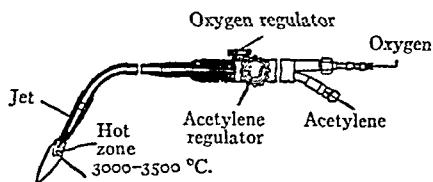
Weingartner

Wrexham; record office, Shrewsbury; 42 battalions in World War.

**Welch Regiment**, Brit. infantry regt.; union of old 41st Foot (1787) and 69th Foot (1760); depot, Cardiff; record office, Shrewsbury; 34 battalions in World War.

**Weld, dyer's weed**, *Reseda luteola*, plant of mignonette family, formerly cultivated in Europe for its yellow dye; contains *lutcolin*, wh. forms deep yellow crystals.

**Welding**, (tech.), process of joining together pieces of same or diff. metals by heating them until soft enough to adhere, when they are rolled or hammered together. **Autogenous w.** by means of elec. arc or oxy-



Burner for Autogenous Welding

acetylene flame, by melting metal at the joints, usu. with add. of metal from wire; **electric w.**, of iron, steel, nickel; parts held in clamps and pressed together, with passage of very strong elec. current, wh. heats them to softening point; **spot w.**, uniting thin sheets of iron in spots by elec. W.; **thermite w.**, by use of thermite (*q.v.*).

**Weldless tube**, seamless tube, (tech.) steel and copper drawn by the *Mannesmann process* up to 16 in. diam. Other metals (brass, lead, etc.) *extended*; molten metal forced from a furnace thr. a die.

**Welfare centres, infant, clinics**, usu. under public management, at wh. mothers can obtain advice and treatment for their young children. **Maternity w. centres**, similar clinics at wh. advice and treatment, when nec., is given to women during pregnancy and after confinement; at some centres, information as to contraceptives and birth control is available. **Welfare work**, organised effort to promote mental and physical efficiency of workers in factories, etc., by provision of healthy conditions of work, recreation clubs, canteens, etc. Having received little attention before 20th cent., W. W. developed rapidly after World War, through experience in munition factories. **W. committees**, usu. elected by workers, appoint *Welfare supervisors* to keep in touch with workers, and advise on all matters relating to their physical well-being.

**Well**, a walled shaft or tube driven into the earth for the purpose of collecting water, which is drawn up with a bucket or by means of a suction pump; *see* ARTESIAN WELL.

**Welland**, riv., E. Eng.; rises Northants, past Stamford and Spalding into Wash;

length, 70 miles. **W. Canal**, ship canal, Canada, betw. L. Ontario and L. Erie, avoiding Niagara Falls; reconstructed 1932; length 27 m.; width 260 ft.; depth 27 ft.; eight locks.

**Wellesley**, Richd. Colley W., Marquess (1760-1842), bro. of Duke of Wellington; succ. as Earl of Mornington (Ir.), 1781; entered Eng. Hse. of Com., 1784; Ld. of Treasury; Gov.-Gen. of India, 1797-1805; exterminated Fr. influence in the Deccan; greatly extended Brit. power in India; Ambass. to Sp., 1808-09; Foreign Sec., 1809-12; Ld. Lieut. of Ireland, 1821-28, 1833-34; Ld. Chamberlain, 1835; cr. Bn. W., 1797; Marquess, 1799.

**Wellesley Province**, prov. of Penang (*q.v.*), Straits Settlements; sugar- and rice-planting; 280 sq.m.

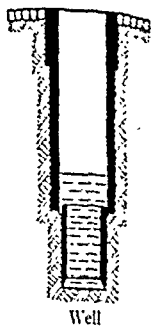
**Wellingborough**, urb. dist. and mkt. tn., Northants; pop., 21,200; ch. (12th- and 13th-cent.); leather trade; agric. centre.

**Wellington**, Arthur Wellesley, 1st Duke of (1769-1852), Brit. soldier and statesm.; distinguished himself in campaigns in India; c-in-c. of Brit. forces in Sp., 1804-14 (*see* PENINSULAR WAR); on Napoleon's escape from Elba (*see* HUNDRED DAYS), W. again commanded Brit. forces in Flanders and, in conjunction with Blücher, defeated Fr. Army at Waterloo, 1815. Pr. Min., 1828-30, and 1834; under his ministry a bill for Cath. emancipation was passed, 1829; Foreign Sec., 1834-35.

**Wellington**, 1) urb. dist., Salop; pop., 8,200; agric. centre; rly. jn.; gave title of duke to Wellesley. 2) Urb. dist. and mkt. tn., Somerset, at foot Blackdown Hills; pop., 7,100. 3) Cap., New Zealand, on Cook Strait, N. Island; pop., 143,000; govt. blds.; two catheds.; Victoria Univ. Coll.; Nat. Museum; parks and gardens; harbour. 4) Prov. dist., New Zealand, in North Island; 10,900 sq.m.; pop., 303,300. 5) Inland tn., New S. Wales, on Macquarie Riv., cap. co. same name; pop. c. 2,000.

**Wellington College**, Eng. public school for boys; fndd. at Crowthorne, Berks, by public subscription in honour of memory of Duke of Wellington, 1853; c. 600 boys.

**Wells**, Herbert George (1866- ), Eng. novelist and sociologist. Typical of his various phases of activity are: *The Time*



Well



Wellington



Machine, 1895; *A Modern Utopia*, 1905; Kipps, 1905; *The History of Mr. Polly*, 1910; *Mr. Brilling Sees It Through*, 1916; *The Outline of History*, 1920; *The World of William Clissold*, 1926. **Wells, Wm.**, "Bombardier" (1889- ), Eng. pugilist; heavy-weight champ. (Eng.), 1911.

**Wells**, city, Somerset, Eng.; cathed. with unsurpassed W. façade; pop., 4,800.

**Wells-next-the-Sea**, small seapt., Norfolk, Eng.; pop., 2,500.

**Wels**, tn., Upper Austria, on the Traun; pop., 17,000; natural gas; grain and cattle trade.

**Wels**: see CAT-FISH.

**Welsbach**, Carl August von (1858-1929), Ger. inventor; W. incandescent gas lamp.

**Welsh**: see LANGUAGE SURVEY, *British*.

**Welsh Guards**, 5th regt. of Brit. Foot Gds.; formed in 1915.

**Welsh harp** mus.) see HARP. **W. rarebit**, toasted bread on wh. is laid Cheddar or Cheshire cheese, melted into a mass, and mixed with milk, mustard, salt, and pepper. **W. terrier**, breed closely resembling the Irish T. (q.v.).

**Welshpool**, mun. bor. and mkt. tn., Montgomery; pop., 5,600; Powis Castle (rebuilt 17th cent.); tanning; agric. centre.

**Weltgeist** (Ger.), the world-spirit. **Welt-politik**, world (international) politics. **Weltschmerz**, world-pain, vague unhappiness about life; sympathy with the sorrows of mankind.

**Welwyn**, mkt. tn., Herts, 22 m. N. of London; pop., 1800. **W. Garden City**, urb. dist., Herts, 2 m. S. of Welwyn; pop., 8,600; fndd. as a satellite tn. of London, 1920.

**Wembley**, urb. dist., Middx., Eng.; residential N.W. suburb of London; pop., 48,500. **W. Park** was the venue of the great Brit. Emp. Exhibition, 1924-5.

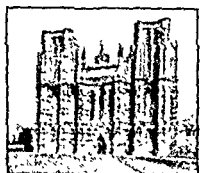
**Wemyss**, par., Fifesh., Scot., on Firth of Forth, incl. E. and W. Wemyss and Buckhaven (q.v.); pop., 24,500; ruined cas.; coal mines; fishing. **W. Bay**, watering-pl., Renfrewsh., Scot., on Firth of Clyde.

**Wen**, harmless sebaceous cyst on the scalp; a prominent and unsightly swelling; treated by operation for removal.

**Wenceslaus**: 1) **St. W.** (c. 911-929), Kg. and patron st. of Bohemia. 2) Kgs. of Bohemia: **W. I-III** (1205-1306). **W. IV.** (1361-1419), son of Emp. Charles IV., German Kg., 1378; deposed 1400; Margrave of Brandenburg.



H. G. Wells



Wells Cathedral

**Wen-chow-fu**, treaty port, Che-Kiang, China, on Riv. Gow; pop., 108,900; exports: tea and silk.

**Wends**, Slav. race in Upper and Lower Lausitz (Ger.); c. 120,000. *Wendish* or *Sorbian* lang. still spoken in parts of Spree-wald (Pruss.) and Saxon Lausitz; see LANGUAGE SURVEY, *Slavonic*.

**Wengen**, health resort, Bernese Oberland (alt. 4,177 ft.), at foot of the *Wengernalp* (6,185 ft.); Wengen Rly. (11 m.), betw. Grindelwald and Lauterbrunnen.

**Wenlock**, mun. bor. and mkt. tn., Salop, inclgd. parishes of Much W. and Little W.; pop., 14,200; remains of Abbey of St. Milburga. **W. Group**, (geol.) pertaining to the middle division of the Silurian (q.v.) system of rock.

**Wen-san**, port, N.E. Korea; see GEN-SAN.

**Wentle-trap**, staircase shell, a small gastropod mollusc, with a fluted, spiral shell, common in rock pools; feeds on seaweeds.

**Wentworth**, Thos.: see STRAFFORD.

**Weregild**, *Wergild*, in A.-S. law, fine exacted for homicide or other crime agst. the person to be paid to kindred of injured person.

**Werlhof's disease**, a condition in wh. there is effusion of blood into the skin, associated with bleeding from mucous membranes, caused by deficiency in coagulating power of blood. 1st recognsd. by Ger. physician, Paul Werlhof, (1699-1767).

**Werner**, Alfred (1866-1919), Ger. chemist; co-ordination theory of valency (q.v.); Nobel Prize (Chem.), 1913. **W. Anton von** (1843-1915), Ger. histor. painter: *Proclamation of the German Empire at Versailles*.

**Wernerher**, Sir Julius Charles (1850-1912), Brit. S. African financier and philanthropist: served in Ger. Army in Franco-Pruss. War; director De Beers Corp. (diamond firm), 1888; bnt., 1905; presented large sums to National Physical Laboratory, Teddington, and S. African University.

**Wernerher der Gärtner**, 13th-cent. Ger. author, tales of vill. life: *Meier Helmbrecht*.

**Wernigerode**, tn., Prussian Saxony, on N. slopes of Harz Mtns.; pop. (incl. Hasserode), 24,000.

**Werra**, riv. (167 m.), Ger.; rises Thuringian Forest; joins Riv. Fulda at Münden to form the Weser.

**Werwolf**, human being believed to be transformed permanently or temporarily into a wolf; common material of folklore stories, esp. in E. Europe. See LYCANTHROPY.

**Wesel**, tn., Rhine Prov., Prussia, on Riv. Rhine; pop., 25,000; Gothic town hall; 13th-cent. church.

**Wesendonk**, Mathilde (1828-1902), wife of Otto W., mistress of Richard Wagner, who set five of her poems to music.

**Weser**, riv. Ger. (298 m.); formed by junction of rivs. Werra and Fulda at Münden; breaks through Westphalian Gate, nr. Münden, into lowlands of Hanover; flows past Bremen into N. Sea below Bremerhaven; 7 m. wide at mouth; canals to the Ems, Elbe, Rhine, and to Hanover; tribs.: Aller, Diehmel, Hunte, Werre.

**Wesermünde**, tn., Hanover, at mouth of the Weser, formed by amalgamation of Lehe and Geestemünde; pop., 77,000.

**Wesley, Charles** (1707-88), Eng. clergyman and hymn-writer, associated with his brother **John** (1703-91), a clergyman of the Ch. of E., in the founding of the Methodists (*q.v.*); John conducted a mission in Georgia, U.S.A., 1735-38, started open-air preaching in Eng. 1739, summoned 1st Methodist Conference, 1744. **W., Samuel** (1766-1837), son of Charles, musical composer and organist; made work of Bach familiar to Eng. organists; **W., Samuel Sebastian** (1810-76), natural son of Samuel, composer and organist; wrote anthem *The Wilderness*, 1832; many times conducted Three Choirs Festival; granted civil list pension, 1873.



John Wesley

**Wesleyans**: see METHODISTS.

**Wessex**, most imp. of the Anglo-Saxon klds. in Brit., 5th-9th century. **W. novels**, Hardy's (*q.v.*) novels dealing with area comprisg. westn. counties of Eng. from Hants and north to Oxford.

**Wessobrunn**, Benedictine abbey, Upper Bavaria; fndd. 770; expropriated 1803; *Wessobrunn Prayer*, important relic of O.H.G. literature.

**West**, Sir Benjamin (1738-1820), Amer.-Eng. historical and portrait painter; studied under Williams, Philadelphia; one of original members of R.A.; succ. Reynolds as pres., 1792; *Death of Wolfe*; *Penn's Treaty with the Indians*; *Death on the Pale Horse*, etc.

**West Africa, British**, general term for Brit. colonies on W. Afr. coast: Gambia, Sierra Leone, Gold Coast, Nigeria (*qq.v.*).

**West Bromwich**, co. bor., Staffs, 6 m. N.W. Birmingham; pop., 81,300; manuf. hardware; coal-mines; seismological observatory. **W. B. Albion**, Eng. assoc. football club, fndd. 1879 as *W. B. Strollers*; won Eng. Cup, 1888, '92, 1931; League Champions, 1920.

**Westbury**, Richd. Bethell, 1st bn. (1800-73), Eng. jurist and statesm.; M.P., 1851-61; solic.-gen., 1852; attorney-gen., 1856, 1859; Ld. Chanc., 1861-65; passed Divorce Act, 1857, and Land Registration Act, 1862; opposed clergy; cr. Bn. Westbury, 1861.

**Westbury**, urb. dist., Wilts; pop., 4,050; on Bratton Hill (Brit. camp), is cut a "White

Horse," said to commem. Kg. Alfred's victory over the Danes at Ethandun (878). cf. WHITE HORSE.

**Westcliff-on-Sea**, residential dist. and summer res., adjoining and forming part of Southend-on-Sea (*q.v.*).

**Westcott, Brooke Foss** (1825-1901), Eng. divine and classical scholar, one of the Revisers of the N. T., 1870-81; regius Prof. of Divinity, Camb., 1870-90; 1st. President, Christian Social Union, 1889; Bp. of Durham, 1890-1901. Author of *The Canon of the N. T.*, 1855; *Social Aspects of Christianity*, 1887, etc.; and, with F. J. A. Hort (1828-92), a critical edn. of the Greek N. T., 1881. **W., Edw. Noyes** (1846-98), Amer. banker and novelist; *David Harum* (pubd. posthum., 1898).

**Westerham**, mkt. tn., W. Kent; b.-place of Gen. Wolfe, hero of Quebec; pop., 3,200.

**Western Alps**, section of the Alps W. of the line Lake Constance-Splügen Pass-Lago Maggiore; includes *Maritime*, *Collian*, *Dauphine*, *Graian Alps*, and *Mont Blanc range*, separating Fr. and It., and *Pennine* and *Lepontine Alps*, betw. Switzerland and Italy.

**Western Australia**, westernmost State, Australia; largest and least populated; includes whole of continent W. of long. 129° E.; 975,900 sq.m.; pop., 420,600. Coast-line 9,500 m. (few good harbours); interior largely a plateau (1,000-2,000 ft.); desert in E.; mtn. ranges in W.: Mt. Bruce (4,024 ft.) in N.W., *Darling* (1,500 ft.; 300 m. long) and *Stirling Ranges* (3,640 ft.) in S.W.; rivs.: Ord, Fitzroy, de Grey, Fortescue, Ashburton, Gascoyne, Murchison, Swan, Blackwood; shallow salt lakes; forests of eucalyptus (Kerri, Karrah); climate temperate, exc. in N. Two-thirds of country fit for pasture: sheep, cattle, horses; wheat, oats, barley; vineyards; gold, iron, lead, copper, tin, coal; exports: gold, wool, wheat, fruit, timber; cap., *Perth*.

**Western Empire**: see ROME; HOLY ROMAN EMPIRE.

**Westerwald**, mountainous part of Rhine Prov., Prussia, betw. rivs. Lahn and Sieg; max. alt., 2,156 feet.

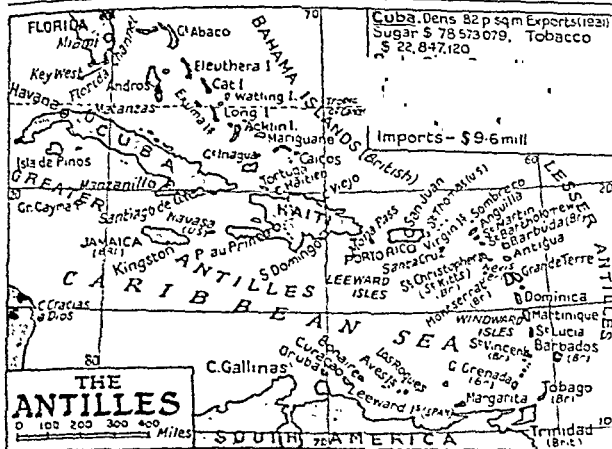
**West Flanders**, prov., Belgium, on N. Sea; includes entire Belgian coast-line; 1,249 sq.m.; pop., 901,600; chf. tns.: *Bruges* (cap.), Ypres; ports: Ostend, Zeebrugge.

**West Galloway**: see WIGTONSHIRE.

**West Ham**, co. bor., Essex, Eng., on Riv. Thames; part of Greater London; shipb., docks, soap, sugar; pop., 294,100.

**West Ham United**, Eng. professional association football club, fndd. 1895; in final Cup Tie (deftd. by Bolton Wanderers), 1923.

**West Hartlepool**, seapt. tn. and co. bor., Durham, Eng.; engineering, shipb., iron works; export: coal; pop., 68,100; see HARTLEPOOL.

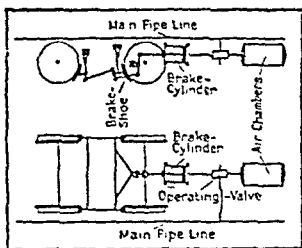


West Indies

**West Indies, Antilles**, archipelago extending from Gulf of Mexico (S. of Florida) to Gulf of Paria (Venezuela); group of larger isls. known as *Greater Antilles*: Cuba, Jamaica, Haiti, Puerto Rico; group N. of Cuba known as *Bahamas*; all the isls. E. and S. of Puerto Rico, incl. Virgin, Leeward, Windward Isls., and Trinidad, are included in *Lesser Antilles*. Total area, 94,800 sq.m. The islands may be regarded as the tops of a submerged mountain range, reaching a height of 10,300 ft. (from sea-floor) in Haiti.

**Westinghouse, George** (1846-1914), Amer. engineer, invtd. **W. brake**, automatic brake worked by compressed air (5 atm. pr.) supplied

from pump on locomotive to pipe-line running along train. At each brake air-chamber, valve, and piston operating brake.



Westinghouse Brake

Brake off as long as pressure maintained in pipe-line; release of pressure (as by train breaking) causes pistons to be operated by air in chamber.

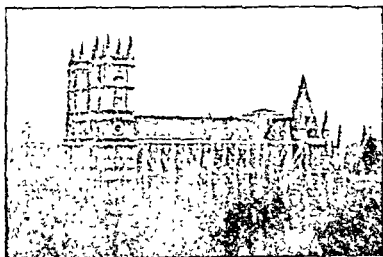
**West Lothian**, or Linlithgowshire, marit. co., S. centr. Scot., on Firth of Forth; area, 120 sq.m.; pop., 81,400; surface low-lying, esp. on coast; agric., dairy farming; coal and iron; cap., *Linlithgow*.

**Westmacott, Sir Richd.** (1775-1856), Brit. sculptor; studied under Canova; R.A., 1811; executed pediment figures over portico of Brit. Mus.; bronze statue of Achilles, Hyde Park, London.

**Westmeath**, inland co., Leinster, I.F.S.; area 680 sq.m.; pop., 56,800; surface diversified (hills, bogs, lakes, incl. Loch Ree); chief riv., Shannon; agric., stock-raising, limestone quarries; cap., *Mullingar*.

**Westminster**, City of, one of two cities of co. of London; pop., 129,535. Formed into bor. of London, 1899; created city by Royal Charter, 1900. Extends from Strand to Kensington Gdns. and from Oxford St. to Thames. See LONDON. **W. Abbey** (Abbey of St. Peter), finest existing example of

Eng. mediaeval archit.; dates from 11th century. Begun by Edward the Confessor, 1050; rebuilt and enlarged by Henry III, 1245. Bldg. is cruciform in plan, measuring 513 ft. in length, 200 ft. in breadth across transepts; interior height of nave 102 ft. N. and W. cloisters added by Edward III; upper stages two W. towers (225 ft. high) bilt. to Wren's design, 1740. Gothic N. front restored by Wren (rebuilt 1878-92 by Scott and Pearson). *Chapel of Henry VII* wh. replaced earlier Lady Chapel (1502-20), is finest 15th-cent. bldg. in Eng.; constituted Chapel of Order of the Bath, 1725. *Chapel*



Westminster Abbey

of Edward the Confessor contains his tomb and was long a place of pilgrimage. At W. end of nave, is tomb of Unknown Warrior, in wh. body of Brit. soldier killed in World War was deposited, 1920; monuments and tombs of many illustrious persons, esp. in *Poet's Corner* (S. Transept). Kgs. of Eng. have been crowned in W. Abbey since 11th cent.; see DESTINY, STONE OF.

**Westminster Assembly**, the meeting of divines summoned by Long Parliament at Westminster, June, 1643, to advise on form of ch. govt.; members mostly Presbyterian; drew up *Larger* and *Shorter Catechisms*,

*Westminster Confession*, and *Directory of Public Worship*, formulating what is still fundamental doctrine of Brit. Presbyterianism.

**Westminster Bank**, Brit. bank, estabd. as London & Westminster B., 1834; amalgamated with London and County Banking Co. as London County and Westminster B. Ltd., 1909, with Parr's Bank Ltd. as London County Westminster and Parr's Bank Ltd., 1918; title changed to Westminster B. Ltd., 1923. See BANKS, BIG FIVE.

**Westminster Cathedral**, R.C. cathedral,  $\frac{1}{2}$  m. E.S.E. of W. Abbey, built 1896-1905 to, designs of J. F. Bentley, in Early Christian Byzantine style; the domed campanile is 284 ft. high.

**Westminster Hall**, oldest part of orig. Palace of W.; built by William Rufus, 1099; enlarged by Richard II, 1394, who caused the open timber roof, having span of 67 ft., to be made; ravages of death-watch beetle necessitated extensive restoration in this roof, 1914-23. Princ. law court of Eng. for sevl. centuries, and many notable trials took place there (More, Strafford, Charles I, Warren Hastings, etc.).



Westminster Cathedral

**Westminster School**, *St. Peter's College*, monastic foundation revived by Qn. Elizabeth, 1560; comprises many of the domestic bldgs. of the former abbey; rest chfly. 18th century. Forty "King's Scholars" have privilege of attending coronations and parliamentary debates. Average of 360 boys.

**Westmorland**, **Westmoreland**, co., N.W. Eng., part of Lake District; area, 783 sq.m.; pop., 65,400; mostly pasture; sheep and cattle breeding; oats; granite and slate quarries; gunpowder works; co. tn., *Appleby*; largest tn., Kendal.

**Weston element**, (elec.) internat. stand. of voltage. A sealed glass cell with cadmium and mercury electrodes. Voltage 1.0183, extremely constant.

**Weston-super-Mare**, seaside resort in Somersetsh., Eng., on Bristol Channel; pop., 28,600.

**West Orange**, tn., New Jersey, U.S.A.; pop., 24,327; Thomas Edison's home and laboratories.

**Westphalia**, prov., Prussia; 7,803 sq.m.; pop., 5,000,000; lies betw. rvs. Weser and Rhine, with Sauerland in S., Wesergebirge in N., Eggegebirge in E., heath and agric. land in low-lying centre; chf. rvs. Weser,

Ems, Ruhr, Lippe; mining (Ruhr coal basin); iron, zinc and copper ores; textiles (Bielefeld and Herford). Divided into dists. of Münster, Arnsberg, and Minden. Cap., *Münster*. Indep. duchy from 1180; kgdm. (with other territ.) under Jerome Bonaparte, 1807-13; allotted to Prussia at Congress of Vienna, 1815. *Peace of Westphalia* (signed at Münster and Osnabrück, 1645) ended Thirty Years' War (q.v.).

**West Point**, vill., N.Y. State, U.S.A., on rt. bank Hudson Riv., 50 m. N. of N.Y. City; mil. academy for army cadets (fdd. 1802); includes Constitution Island.

**West Prussia**, former prov. of Ger.; partitioned by Treaty of Versailles, 1919: E. portion became part of E. Prussia; centr. and S. (Pomorze) ceded to Poland; mouth of Vistula became Free State of Danzig; remainder W. of the Vistula, with parts of former prov. of Posen, became Pruss. Polish, 1466; annexed by Prussia at first partition of Poland, 1772.

**West Sahara**: see RIO DE ORO.

**West Virginia**, ("Panhandle," "Mountain") State, U.S.A.; 24,170 sq.m.; pop., 1,730,000; coal deposits; leather indus.; cap., *Charleston*.

**Westward Ho!**, small seaside resort, N. Devon,  $2\frac{1}{2}$  m. N.W. of Bideford, named after novel by Chas. Kingsley, 1855; noted golf-links.

**Wether**, castrated sheep.

**Wetterhorn**, triple-peaked mtn. in the Finsteraarhorn group, Bernese Oberland, Switz.; *Mittelhorn* (12,166 ft.); *Hasli Jungfrau* (12,149 ft.); *Rosenhorn* (12,100 feet).

**Wettersteingebirge**, mtns. N. Tyrol; group of the Bavarian Alps; *Zugspitze*, 9,722 feet.

**Wettin**, fam. name of Royal H. of Saxony; mediaeval rulers in Meissen and Thuringia; Electors of Saxony. Divided, 1485, into Ernestine and Albertine Lines, the former being ancestors in the direct male line of the Eng. royal family. See SAXONY.

**Wettin**, tn., Prussia, on the Saale; pop., 3,000; castle of the Counts of Wettin.

**Wetzlar**, tn., Rhine Prov., Prussia, on Riv. Lahn; pop., 17,000; iron mines; optical glass industry. Seat of Court of Chancery 1693-1806.

**Wexford**, 1) marit. co. Leinster, I.F.S.; area 907 sq.m.; pop., 95,800; surface varied (*Mt. Leinster*, 2,160 ft.); Riv. Slaney; agric., pasture, fisheries. 2) Cap. Co. W., at mouth Riv. Slaney; seapt.; pop., 12,000.

**Wey** (or *load*), Brit. and U.S. dry meas., 5 quarters (= 40 bushels); of wool,  $6\frac{1}{2}$  tod (= 182 lb.).

**Weybridge**, tn., Surrey, Eng., at confluence Rvs. Wey and Thames; pop., 7,300. Brooklands motor-racing track 1 m. S.

**Weyden, Roger van der** (c. 1400-64), Dut. painter: *Adoration* (Munich).

**Weyman, Stanley John** (1855-1928), Eng. novelist; called to bar, 1881; pubd. *Under the Red Robe*, 1894; *Chipping*, 1906; *Orington's Bank*, 1922; *Queen's Folly*, 1925, etc.

**Weymouth and Melcombe Regis**, seapt. and watering-place, on Weymouth Bay, Dorsetsh., Eng.; opp. Isle of Portland; steamers to Channel Is.; pop., 22,000.

**Whaddon Chase**, Eng. hunt. fndd. 1842; Beds and Bucks.

**Whale**, warm-blooded, entirely aquatic mammal belonging to the Order *Celacea*, which has assumed a fish-like form in correlation with the needs of its peculiar mode of existence. While



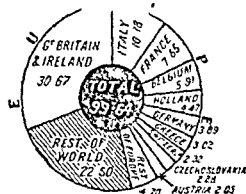
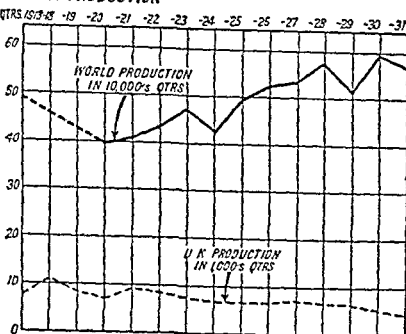
Whale

a few frequent large rivs., the majority are entirely dwellers in the sea. *Celacea* are divided into 2 sub-orders: *whale-bone w.* and *toothed w.*; former comprising single family (*Balaenidae*), latter 3 families, inclgd. the sperm whale (*q.v.*), beaked whales, dolphins, porpoises (*Dolphinidae*), and fresh-water dolphins (*Platanistidae*). Whale-bone W.s include the largest of all living animals, attaining to 70 ft. or more in length. Head is large; front limbs modified into flippers; hind-limbs absent externally, represented by 2 or 3 small bones internally; tail always forked and expanded horizontally; skin hairless. W.s are hunted for the oil, blubber, balleen (whale-bone), spermaceti, and ambergris (*q.v.*) procured from the various species. *Whaling*, formerly from boats by means of a harpoon (*q.v.*), now effected by means of special steamships with aeroplane observation, etc. **Whalebone**, *baleen*, horny plates from palate of Right W. (*q.v.*), formerly used in strips for stiffening women's bodices, etc.; many artific. substitutes. **Whale Island**, small island in Portsmouth harbour; Naval Gunnery School.

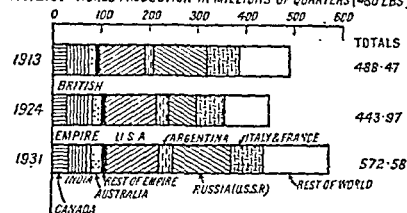
**W'hampton**, abbr. Wolverhampton.

**Wharfe**, riv., N. riding of Yorks; 60 m., flowing past Bolton Abbey and Ilkley to Riv. Ouse at Cawood.

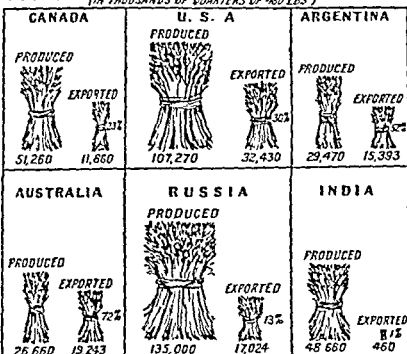
## WHEAT PRODUCTION



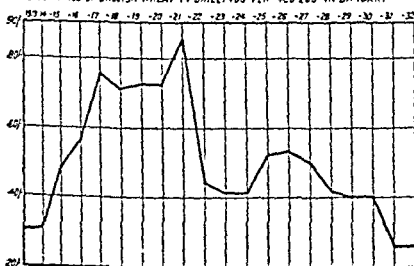
## WHEAT: WORLD PRODUCTION IN MILLIONS OF QUARTERS (450 LBS)



## WHEAT: PRODUCTION & EXPORT OF LEADING COUNTRIES (IN THOUSANDS OF QUARTERS OF 450 LBS)



## WHEAT PRICE OF ENGLISH WHEAT IN SHILLINGS PER 450 LBS IN JANUARY



Russia & U.S.A. are largest producers, and latter the largest exporter; but relatively to prodn., Australia & Argentina are chief exporters; India produces almost entirely for home consumption. U.K. prodn. stimulated during World War by rise of prices, but fall of prices during last decade has involved steady fall in home prodn., now  $\frac{1}{3}$  of pre-war level.

**Whately**, Richard (1787-1863), Eng. theologian and logician; Bampton Lecturer, Oxford, 1822; prof. of polit. economy, Oxford, 1829; Abhp. of Dublin, 1831; advocated Cath. emancipation and unsectarian schools; pubd. treatises on Logic and Rhetoric, 1815; *Christian Evidences*, 1837; etc.

**Wheat**, most important of cereals (derived from *Triticum sativum*), edible grain from wh. is used in making of bread all over the world. Cultivated in most temperate countries, but esp. and on an immense scale in U.S.A., Canada, and Australia. W. has been cultivated from anc. times; prob. origntd. from a wild grass of S.E. Eur. and Asia Minor. Many varieties, either with bearded or beardless ears, princ. being: **Bread w.**, most widely used to make flour



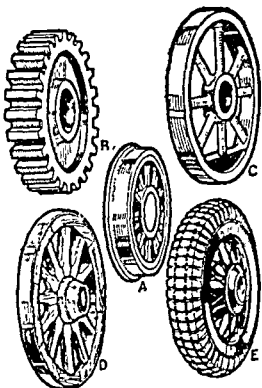
**Wheat** for bread, and largely grown in U.S.A., Canada, and princ. wheat-growing countries; **Polish w.**, tall variety grown in Spain and Medit. countries; **Egyptian cone w.**, indigenous to Egy.; short stem (or *straw*). W. is subject to attack by drought, frost, rodents, insects and fungi (see APHID; MILDEW; RUST, etc.). See also SPELT; GLUME; STRAW; and statistics on previous page.

**Wheatear**, small migrant bird, ranging throughout Old World, member of subfamily *Saxicolinae* and related to the chat.

**Wheatstone**, Sir Charles (1802-75), Eng. physicist and inventor; one of inventors of modern telegraphy; prof. of experimental philosophy, King's Coll., London; with W. F. Cooke, patented electric telegraph, 1837; carried out researches in light, sound, and electricity; invented stereoscope, etc.

**W. bridge**, (elec.) sensitive instr. for measuring elec. resistance of conductors; used with a galvanometer for direct or alternating current (up to frequencies of 15,000 p. second).

**Wheel**, (mech.) circ. disk turning about its centre (*hub*), joined to the circumference (*tyre*, *felloe*,) by the *spokes* (or plain disk). In machinery, cog-, chain-, gear-, friction-wheels; *pulleys* (with belts running over them), fly-wheels to steady motion. Suspension wheels have wire spokes, tension of wh. carries the load. **W.**



Types of Wheel

- A) Locomotive
- B) Gear
- C) Gas engine flywheel
- D) Cart
- E) Motorcar

**lock**, musket lock, 16th-17th cents., produc. sparks by means of a serrated wheel revolving agst. a piece of iron pyrites.

**Wheeling**, tn., W. Virginia, U.S.A.; pop. 61,650; centre of large coal-fields; china; iron and steel; glass, paper.

**Whelk**, common gastropod, mollusc of the family *Buccinidae*. Carnivorous; burrows in sand and mud in search of bivalve molluscs, on which it feeds, boring a neat, round hole in their shells and rasping out its prey by means of the armoured raduli on its long proboscis.



Whelk

**Whernside**, mtn., W. riding of Yorks; 2,414 ft., part of Pennine Chain.

**Whey**, residue liquid of milk after separation of fat and casein, consists of water, sugar of milk, salts, and albumen; used as a cheese or a drink. W. sometimes mixed with food for pigs.

**Whiff**, sculling-boat resembling a shorter and narrower skiff (*q.v.*).

**Whig**, orig. Whigamore, nickname given to Scots Covenanters, applied after Restoration (1660) to party wh. opposed Crt. policy and brought abt. Revolution, 1688. Predominant thr. 18th cent. and authors of Reform Bill, 1832. Name gradually replaced by Liberal.

**Whin**: see FURZE.

**Whinchat**, small migrant bird, ranging from Africa to Arctic Circle; frequents meadows, and makes nest on the ground.

**Whip**, 1) in Eng. Parl. system, member in each party apptd. to secure attendance of M. P.s, select party spokesmen, and inform leaders of party feeling. 2) See WHIPPER-IN.

**Whipper-in**, whip, hunt-servant, subordinate to the huntsman (*q.v.*), responsible for keeping hounds together in the field.

**Whippet**, small variety of greyhound (*q.v.*), used for rabbit-coursing and racing.

**Whip-poor-will**, bird of N. Amer., related to night-jar; derives its name from its peculiar cry.

**Whipsnade**, vill., S. Beds, 3 m. S.W. Dunstable; zoological park, under same ownership and management as Zoological Gdns., London, opened, 1931.

**Whip-snake**, common venomous, arboreal snake of S. Asia, with slender, long body and tail, which enables the reptile to curl tightly round bough and strike to a long distance at any passing prey.

**Whirligig-beetles**, small, predatory, blue-black water-beetles, with legs adapted for swimming; gyrate in circles on surface of water.

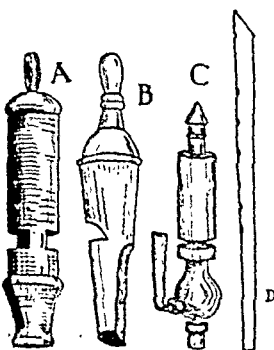
**Whirlpool**, violent, rapid movement of water in circular sweep; rapid, circular eddy.

**Whirlwind**, swift, circular movement of cylindrical or funnel-shaped column of air.

**Whisky, whiskey**, alcoholic liquor obtd.

by distillation of malted grain, esp. barley; name derived from Celtic *uisquebaugh*, water of life.

**Whist**, card-game for 4 players (2 a side), in which every trick taken over 6 counts 1 pt. (5 pts. = game; 3 games = rubber). Trumps are made by turning up a card.



Types of Whistle  
A) Police B) Dog C) Steam  
D) Tin-, or Penny-Whistle  
(Musical)

**Whistle**, instr. for making shrill sounds; tube with a diagonal slot or vibrating tongue.

**Whistler**, James McNeill (1834-1903), Anglo-Amer. painter and etcher, settled in England. Portraits, Nocturnes, etc.; author of *The Gentle Art of Making Enemies*; etc.



Whistler

**Whitby**, seaside tn. at mouth Riv. Esk, N. Riding, Yorks, Eng.; fisheries; manuf. jet; ruins of abbey founded by St. Hilda, 657, home of Caedmon (q.v.); bombarded by Ger. cruisers, 1914; pop., 11,500.

**White**, Sir George Stuart (1835-1912), Brit. soldier; served in India during Mutiny, 1857; 2nd in commd., 2nd Afghan War, 1878-80; took part in Nile expedn., 1884-85, and Burmese War, 1885-87; c.-in-c. in India, 1893; in 2nd Boer War defended Ladysmith, Nov. 2, 1899-Mar. 1, 1900; Gov. of Gibraltar, 1900-04; gov. of Chelsea Hospital, 1905; field marshal, 1903.

**White**, Gilbert (1720-93), Eng. divine and naturalist; *Natural History of Selborne*.

**White**, Henry Kirke (1785-1806), Eng. poet; pubd. *Clifton Grace* . . . and *Other Poems*, 1803; his *Remains with a Life* by Southey, pubd. 1807.

**White Army**, counterrevolutionary troops who fought the *Red Army* during and after the Russ. Revolution (1917-22). **W. butterflies**, common species, white with few black spots; caterpillar of white butterfly devours cabbage-leaves and other vegetables. **W. Canons**: see PREMONSTRATENSIA. **W. Eagle**, Order of the, Pol. order of knighthood, fndd. 1703, reconstituted 1921.



White Butterfly

**W. Guards**: see GUARDS. **W. House**, Washington, official residence of the President of the U.S.A. **W. Lion**, Order of the, Czechoslovakian order, fndd. 1922; conferred only on foreigners. **W. Mountain**, nr. Prague. Defeat of Bohemian Army by Tilly, 1620. **W. Mountains**: see APPALACHIAN MTS. **W. Nile**: see NILE. **W. paper**: see BLUE BOOK. **W. Plains Battle-field**, nat. memorial (1926), New York State, U.S.A., commem. indecisive battle betw. Washington and the British, 1776. **W. River**, right trib. of Mississippi, Arkansas, U.S.A., 690 miles. **W. Russians**, E. Slav race (c. 8,000,000), inhabit. the Soviet Repub. of **W. Russia**, a region (43,000 sq.m.) near Latvian-Pol. Russ. frontiers, extending across the Dvina in N. and Pripiet in S. Polish part, Polesia; in Latvian part, Lettgallen; smallest State of Soviet Union; pop., 5,246,400. Cap. Minsk.

**White Sea** (c. 36,000 sq.m.), betw. Kola and Kanin penins., N. Russia; ice-bound in winter; considerable fishing; connected with the Baltic by the Stalin Canal (opened 1933), 141 m., Soroka-Leningrad, passing thr. Lakes Onega and Ladoga. **W. slave traffic**, enticing and smuggling women and girls for immoral purposes. Internat. agreement for its suppression concluded at Geneva, 1922. **W. Star Line** (*Oceanic Steam Navigation Co., Ltd.*), Brit. Transatlantic s.s. co. with world-wide connections; "Majestic," 56,621 tons (formerly largest ship in world); "Olympic," 46,439 tons (largest Brit.-built ship, 1911). Fndd., 1869, by T. H. Ismay.

**Whitebait**, fry (newly hatched young) of several varieties of edible fish, such as herring, sprat, etc.; valued as a delicacy.

**Whitechapel**, populous district in met. boro. of Stepney, London; largely inhab. by aliens.

**Whitefield**, George (1714-70), collab. with John Wesley in indg. *Methodism*.

**White-fish**, general term for 1) such freshwater fish as dace, roach, chub, and several other members of the carp family. Usually applied to those species having no barbels, or cutting edge to their jaws, with throat teeth arranged in one or two rows, and dorsal-fin short, without bony ray. Plentiful in Europe and Asia, scarcer in N. America. 2) Shell-less, non-oily sea-fish, as brill, cod, had-dock, hake, plaice, sole, and whiting.

**Whitefriars**, dist. in City of London, betw. Fleet St. and Thames Embankment; site of monastery of the White Friars or Carmelites (1241-1541); cert. rights of sanctuary contd. to exist there until 1697 (see ALSATIA); now mainly a centre for newspaper offices and printing works. See CARMELITES.

**Whitehall**, London, Eng.; thoroughfare from Parliament St. to Charing Cross, named after palace built by Henry VIII,

burnt (1698), except Banqueting Hall, now Royal United Services Institution, from the windows of which Kg. Charles I stepped onto the scaffold. Name W. used to denote government offices, many of wh. are there; Cenotaph; statue of Charles I at N. end; Horse Guards; New Scotland Yard.

**Whitehaven**, seaport tn., Cumberland, Eng.; at entrance Solway Firth; collieries; pop., 21,100.

**White Horse, Vale of**, vall. of the Ock (18 m.; joins Thames at Abingdon), Berks; on White Horse Hill (855 ft.), bounding vall. on S., is rude fig. of a horse (374 ft.) cut in the turf; trad. assoc. with Kg. Alfred's victory at battle of Ashdown (q.v.), though now believed to be work of anc. Britons. See also WESTBURY.

**Whiteing**, Richard (1840-1928), Eng. journalist and novelist; on staff of *Manchester Guardian* and *Daily News*; pub. *The Island*, 1888; *No. 5 John Street*, 1899; etc.

**White lead**, basic lead carbonate,  $2\text{PbCO}_3 \cdot \text{Pb(OH)}_2$ ; until recently the most important white pigment, owing to its covering power. Made by action of vapour of vinegar (acetic acid) on metallic lead, forming acetate of lead, and carbon dioxide evolved from putrefying organic matter. Turns black when traces of sulphuretted hydrogen are present in atmosphere. Poisonous to painters constantly working with it. See LEAD.

**Whitethroat**, small European bird of family of warblers (q.v.).

**Whitewash**, mixture of whiting and some binder, such as size. For outside work, boiled oil may be added; or foll. mixture may be used (Kemp): slaked-lime,  $\frac{1}{2}$  bushel; common salt, 1 lb.; sulphate of zinc,  $\frac{1}{2}$  lb.; sweet milk, 1 gallon.

**Whitgift**, John (c. 1530-1604), Eng. divine; Lady Margaret prof. of divinity, Camb., 1563; master of Trinity, 1567; Vice-Chanc., 1570; Bp. of Worcester, 1577; Abp. of Canterbury, 1583; persecuted Puritans; helped to draw up *Lambeth Articles*; took part in Hampton Court Conference, 1604; fndd. hospital and schools, Croydon.

**Whiting**, 1) fish of cod family, having no barbel on chin; sides silvery, dark spot at root of ventral fin; range from Norway to Mediterranean; abundant round coasts of Britain and Ireland. 2) (Tech.) Mineral chalk (calcium carbonate) refined by elutriation (q.v.).

**Whitley Bay**, pleasure res., Northumberland, part of urb. dist. of Whitley and Monkseaton; pop., 24,200.

**Whitley Councils**, or *Joint Industrial Councils*, bodies composed of representatives of employers and workers in industries in Gt. Brit., set up as result of report of committee presided over (1916) by J. H. Whitley to discuss and advise upon general interests of

industry, collect information and statistics, conciliate in disputes, etc.

**Whitlow**, suppurat at base of finger nail; painful, purulent infection; may lead to loss of finger nail.

**Whitman, Walt** (1819-92), Amer. poet; *Leaves of Grass*.

**Whitstable**, tn. and seaside resort, Kent, Eng.; pop., 11,200; oyster fisheries.

**Whit-Sunday**, Eng. name for Pentecost (q.v.), 50 days after Easter; commemoration of descent of the Holy Ghost upon the Apostles (Acts ii, 1 ff.). Prob. from *white* garments of candidates for baptism conferred on that day.

**Whittier**, John Greenleaf (1807-92), Amer. poet; *Voices of Freedom*.

**Whittington**, Sir Richd. (d. 1423) London merchant; alderman, 1393; sheriff, 1394; mayor, 1397-98, 1406-07, 1419-20: m. Alice FitzWaryn; bequeathed his large fortune to charities, esp. for the foundation of almshouses and rebuilding of Newgate prison; legend of his cat fndd. on ancient folk-tales.

**Whitworth**, Sir Joseph (1803-87), Eng. inventor and manufacturer; made many improvements in tools, etc.; obtained true plane surfaces; standardised system of screw threads; fndd. firm noted for manufacture of breech-loading arms; firm amalgamated with that of Sir Wm. Armstrong as Armstrong-Whitworth, 1897.

**Wholesale trade**, sale of goods to dealers for further sale or for finishing.

**Whooper** (ornith.) see: SWAN.

**Whooping cough, pertussis**, infectious disease, esp. common in children, which causes spasmodic fits of coughing, often followed by vomiting.

**Whortleberry**, small shrub, bearing purplish, edible berries; known also as bilberry (q.v.).

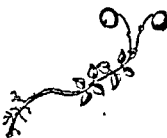
**Whymer**, Edw. (1840-1911), Brit. explorer and mountaineer; made 1st ascent of Matterhorn, 1865; visited Greenland, 1867, 1872; organised expdn. to Ecuador; twice ascended Chimborazo, 1880; pubd. *Scrambles among the Alps*, 1871; *Travels among the Great Andes of the Equator*, 1892, etc.

**Whyte-Melville**, George John (1821-78), Eng. soldier and novelist; retired from army with rank of capt., 1849; killed in the hunting field. Pubd. *Digby Grand*, 1853; *Kale Coventry*, 1856; *The Gladiators*, 1863; etc.

**Wichita**, city, Kansas, U.S.A., on Arkansas Riv.; pop., 111,100; munic. univ. (fndd. 1926); Friends' univ.; meat packing, flour mills, aeroplanes; airport.



Walt Whitman



Whortleberry



**Wick**, royal burgh and co. tn.; Caithness, Scot.; pop., 7,500; fishing.

**Wicken Fen**, sanctuary for wild creatures, Cambridgesh., c. 650 acres; in possession of Nat. Trust since 1928.

**Wickliff, Wickliff**: see WYCLIFFE.

**Wicket** (cricket), 3 stumps surmounted by balls (q.v.); 2 Ws. (27-28" X 8-9") are spaced 22 yds. apart. **Matting w.**, strip of coconut matting used when turf is not available. **W. frame**, (naut.) section of ship at its widest part, generally at thwart-kips.

**Wickham**, Sir Henry (1846-1928), Brit. explorer; his experiments in Eng. with seeds of Brazil rubber trees gave rise to rubber plantation industry of the East.

**Wicklow**, 1) marit. co. Leinster, I.F.S.; area, 781 sq.m.; pop., 57,600; surface mountainous (*Wicklow Mtns.*; *Lugnaquilla*, 3,039 ft.); rivs.: Liffey, Slaney, Avoca; agric., pasture, lead, copper, granite; oyster anderring fisheries at Arklow. 2) Co. tn., on Riv. Vartry; pop., 3,500.

**Widal**, Ferdinand (1862-1929), Fr. physician; disc. (with *Gruber*) diagnosis of typhus from blood serum (*Widal's reaction*).

**Widcombe-in-the Moor**, vill. Devonsh.; famous ch. (Cathed. of the Moors); annual fair, orig. of song *Widcombe Fair*.

**Widin**: see VIDEN.

**Widnes**, bor., Lancs, Eng.; 11 m. S.E. Liverpool; manuf. chemicals, soaps, candles, canures; pop., 40,600.

**Widow's pension**, system intro. in Gt. Brit., 1925, modified 1929, by wh. State pensions are paid to widows of insurable men at age of 55.

**Widsith**, O.E. poem containing enumeration of famous kgs. known to Germanic tradition; extant only in Exeter Book (q.v.).

**Widukind** (d. c. 1004), Saxon historian, monk of Benedictine abbey of Corvey; wrote early and contempt. history of Saxony.

**Wiegand**, Theodor (1864- ), Ger. archaeolog.; excav. in Priene and Pergamon.

**Wieland**, 1) **Christopher Martin** (1733-813), Ger. poet; novels, tales in verse; transld. Shakespeare. 2) **W., Heinrich**, Ger. chemist (1877- ); research on constitution of acids; Nobel Prize (Chem.), 1927.

**Wien**, Wilhelm (1864-1928), Ger. physicist; carried out researches on heat radiation; Nobel Prize (Physics), 1911.

**Wiener Neustadt**, tn., Lower Austria, on the Fischa and the *W.-Neustadt Canal*; pop., 37,000; machinery, ironworks.

**Wiener Wald**, *Vienna Forest*, N.E. spur of E. Alps, nr. Vienna; *Schöpfli*, 2,920 feet.

**Wieniawski**, Henri (1835-80), Pol. violinist and composer.

**Wieringen**, isl. N.W. of Zuyder Zee, Holland; joined to mainland by causeway.

**Wierz**, Antoine (1806-65), Belg. historical painter; W. Museum (Brussels).

**Wiesbaden**, inland watering-pl., Hesse-Nassau, Prussia, on S.W. slopes of Taunus Mtns., 3 m. N. of the Rhine; pop., 153,300; hot min. springs; wine trade. Occupied by French, 1918-25; by British, 1925-30.

**Wieselburg**: see MOSON.

**Wig**, covering for head made of real or artificial hair mounted on close-fitting net frame; manuf. of W. orig. in Fr. in 14th century. In Eng. pt. of offic. dress of Ld. Chanc., Speaker, clerks of Hse. of Com., judges, and barristers.

**Wigan**, co. bor., Lancs, Eng.; pop., 85,400; centre of coal-mining dist.; manuf. iron, cotton, linen.

**Wiggin**, Kate Douglas (1857-1923), Amer. novelist; *Penelope's Progress*, 1898; *Rebecca of Sunnybrook Farm*, 1903, etc.

**Wight, Isle of**, isl. Eng. Channel, off coast of Hants, from which it is separated by the *Solent* (2-4 m. wide) and *Spithead* (1½-4 m. wide). Part of Hants, but separate admin. co. (pop., 88,400); length (E. to W.) 23 m., width 13 m. (area, 145 sq.m.). Mild climate; undulating surface, chalk soil; favourite holiday resort; great yachting centre (Coves Regatta); cap., *Newport*.

**Wigtownshire, West Galloway**, marit. co., S.W. Scot., comprising *Rhinns of Galloway* (double penins. W. of Loch Ryan and Luce Bay), the *Machars* (betw. Luce and Wigtown bays), and the *Moors* (in N.); 485 sq.m.; pop., 29,300. Surface mainly low; agric. and grazing; largest tn., Stranraer. **Wigtown**, co. tn. and royal burgh; pop., 1,300.

**Wigwam**, skin tent or bark hut of N. Amer. Indians.

**Wilberforce, Samuel** (1805-73), Eng. divine, rector of Brightstone, Isle of Wight, 1830-41; chaplain to Pr. Consort; Bp. of Oxford, 1844; Bp. of Winchester, 1868; high churchman, but did not join Oxford Movement; known as "Soapy Sam" from his persuasiveness of speech and manner. **W., Wm.** (1759-1833), Eng. philanthropist and orator; led campaign for abolition of slavery; father of above.

**Wilbye**, John (1574-1638), Eng. composer: *Madrigals*.

**Wilcox**, Ella Wheeler (1855-1919), Amer. poet and novelist; pubd. *Poems of Passion*; *Poems of Pleasure*, etc.

**Wild**, Jonathan (c. 1682-1725), Eng. robber and receiver of stolen goods; hanged at Tyburn; subject of Fielding's *History of the Life of the Late Mr. Jonathan Wild, the Great*, 1743.

**Wild boar**, the wild pig (*Sus scrofa*) of Europe, N. Africa, Asia Minor, and Centr.



Wigwam

Asia. **W. duck**, the mallard (*Anas boschas*), See **DUCKS**. **W. fowl**, birds prized for sport, but not strictly game, e.g., woodcock, duck, snipe, etc. They have no close time (q.v.), but are protected under the Game Laws and the Wild Birds Protection Acts.

**Wilde**, Oscar (1856-1900), Eng. poet and author; sentenced to 2 yrs. imprisonment for immoral practice, 1895; plays: *Salome*, 1893, *Importance of Being Earnest*, 1895, etc.; *Ballad of Reading Gaol*, 1898; novel: *Picture of Dorian Gray*, 1891; essays: *Intentions*.



Wilde

**Wildgans**, Anton, (1881-1932), Austr. author; dir. Burgtheater, Vienna; plays: *Poverty*, *Love*.

**Wilhelmina**, 1) **W. Sophia Frederica**, Margravine of Bayreuth (1709-58), favourite sister of Fredk. the Great. 2) **W.** (1880- ), dau. of William III (1817-90), Kg. of the Netherlands, whom she succd. as Qn., 1890, her mother being Regent till 1898.

**Wilhelmsburg**, part of Hamburg, Ger., on an isl. in the Elbe; pop., 33,000; chem. works; iron foundries; petroleum refineries; flour mills.

**Wilhelmshaven**, port, Hanover, Prussia, on the N. Sea; Ger. naval station; shipp., seaside resort; pop., 26,000.

**Wilhelmstrasse**, street in Berlin in which Ger. Gov. bldgs. are situated; name also used to designate Ger. Foreign Office.

**Wilkes**, John (1727-97), Brit. politician and agitator; imprisoned for attacks on Bute ministry in his paper the *North Briton*, 1763; liberated; expelled from Parliament, 1764, for scandalous *Essay on Woman*, intended only for private circulation; outlawed: several times re-elected to Parliament but expelled as ineligible; sheriff of London, 1771; lord mayor, 1774; in same year agn. elected M.P. and allowed to take his seat, wh. he retained until 1790.

**Wilkes-Barre**, city, N.E. Pennsylvania, U.S.A., on Susquehanna Riv.; pop., 86,650; centre of anthracite region; iron, steel, textiles, machinery.

**Wilkie**, Sir David (1785-1841), Scot. painter; R.A., 1811; succ. Lawrence as royal painter in ordinary, 1830; *Village Politicians*; *Blind Fiddler*; *Sir Walter Scott and His Family*.

**Wilkins**, Sir Geo. Hubert (1888- ), Brit. explorer; accomp. Stefansson's Canad. Arctic exped., 1913-17; 2nd in commd. Brit. Imperial exped., 1920-21; accomp. Shackleton's exped., 1921-22; led Brit. Mus. exped. in tropical Australia, 1923-25; with Lieut. C. B. Eilson crossed Arctic in monoplane from Alaska to Spitsbergen, April 21, 1928,

and Graham Land, Antarctic, 12 Dec., 1928 cruised under ice N. of Spitsbergen, in submarine Nautilus, 1931; pubd. *Undiscovered Australia*, 1928; *Flying the Arctic*, 1928.

**Will** or testament, legal decl. of man's intention wh. he "wills" to be performed after his death; pers. appd. by testator to carry out his directions and requests and to dispose of property accordg. to will is an *executor*.

**Willesden**, urb. dist., Middx., part of Greater London; pop., 184,410.

**Willitt**, Wm. (1856-1915), Brit. builder; suggested "daylight saving," 1907; see **SUMMER TIME**.

**Willette**, Leon Adolphe (1857- ), Fr. artist and illustrator.

**William**, name of 2 emperors of Germany: **W. I** (1707-1871-88), Emp.; Kg. of Prussia, 1861; milit. gov. of Westphalia and the Rhineland, 1849; regent, 1859; pres. of N. Ger. Federation, 1867; commanded Austro-Prussian armies in Franco-Prussian War, 1870-71. His grandson, **W. II** (1859- ), Emp., succd. his father, Fred. Will. (1831-88), in 1888; dismissed Bismarck, Mar., 1890; strengthened Germany's milit. and naval forces; formed Triple Alliance as defensive measure agnst. Entente Cordiale; issued ultimatum to France, 2 Aug., 1914 (see **WORLD WAR**); fled to Holland, 10 Nov., 1918; formal abdication 28 Nov.; interned; permitted residence at Doorn. M. 1st. Princess Augusta Victoria of Schleswig-Holstein-Augustenburg, 1881 (d. 1921); 2nd, Princess Hermine of Schönaich-Carolath, 1922. Author of *My Memoirs*, 1922; *My Early Life*, 1926.

**William**, Kgs. of: 1) *England*: **W. I**, the *Conqueror* (1027-66-87), Duke of Normandy, 1035; promised succession to Eng. throne by Edw. the Confessor; deftd. Harold at battle of Hastings (Senlac), 1066; crowned at Westminster, 25 Dec., 1066; forced Malcolm of Scotl. to pay homage, 1072; suppressed rebellion of Norman barons in Eng., 1075-76; ordered compilation of *Domesday Book* (q.v.). His son, **W. II**, Rufus (1056-87-1100), elected by Witan; suppressed rebellion, 1090; invaded Scotl., 1093; seized Normandy, 1096; accidentally killed while hunting in New Forest. **W. III**, of *Orange* (1650-89-1702), grandson of Charles I of Eng.; stadholder of United Netherlands, 1672; deftd. Louis XIV of Fr., 1672; m. Mary, elder dau. of James II; Eng. Crown settled on W. and M., 1689; deftd. James at battle of Boyne, 1690; formed Grand Alliance, 1701; took part in events preceding War of Spanish Succession (q.v.). **W. IV**, (1765-1830-37), 3rd son of George III; served in the Navy; succeeded bro. Geo. IV; Reform Bill, 1832. 2) *Netherlands*: **W. I** (1772-1815-43), elected 1st kg. of monarchy of the Netherlands formed by Congress of Vienna, 1815;

unable to prevent secession of the Belgians, 1830-32; abdicated, 1840, in favour of his son, **W. II** (1792-1840-49), served under Wellington in Sp.; recognised Belgian Independence; reign marked by extensive reforms. His son, **W. III** (1817-49-90), abol. slavery in W. Indies, 1860; incorporation of Limburg, 1866; Luxemburg recognised as neutral territ. under House of Orange. 3) *Scotland*: **W. the Lion**, (1143-65-1214), invaded Engl., captured at Alnwick, 1174; released, Treaty of Falaise, 1174; paid homage to Kg. John, 1200. 4) *Sicily*: **W. I, the Bad**, (d. 1166), subdued bns., 1156; supported Pope Alexander III agnst. emperor. His son, **W. II, the Good**, (d. 1189), m. Joan, dau. of Hy. II of Eng.; unsuccessful attack on Byzantine Empire. 5) *Württemberg*: **W.** (1781-1816-64), 2nd. Kg. of Württemberg; abol. serfdom, 1819; upheld Germanic Union, but joined Austria in opposing Prussian preponderance.

**William**, Prince of: 1) *England*: **W.** (d. 1120) only son of Hy. I; drowned in wreck of the "White Ship." 2) *Germany*: **W.** (1882- ) ex-Crown Pr.; m. Cecilia, sister of Grand Duke of Mecklenberg-Schwerin; apptd. to command of 5th Army, 1914; fled to Holland, 1918; renounced all rights of succession, 1 Dec., 1918; returned to Oels, Silesia, 1923; memoirs, *I Seek the Truth*, 1926. 3) *Orange*:

**W. I, the Silent** (1533-84), Ct. of Nassau; fndd. Rep. of United Provinces, 1581; assass. by Balthazar Gerard. His grandson, **W. II** (1626-50), m. Mary, eldest dau. of Chas I of Eng.; attempted to restore Chas. II. 4) *Wied*: **W.** (1876- ), grandson of Emp.

**W. I**; accepted Albanian throne, 1914; attempted to maintain neutrality in World War; forced to leave Albania, 3 Sept., 1914; invited to return, 1915; throne occupied by Ahmed Zogu, 1928.

**William of Malmesbury**: see MALMESBURY.

**William of Wykeham** (c. 1323-1404). Eng. ecclesiastic and statesm.; surveyor of works at Windsor to Edw. III, 1356; Keeper of Privy Seal; Bp. of Winchester; Ld. High Chanc., 1367; fndd. New Coll., Oxford; Winchester Coll.; rebuilt large part of Winchester Cathedral.

**William, Order of**, Dut. order of knight-hood, fndd. 1815.

**Williams, George** (1821-1905). Eng. social worker; fndd. Young Men's Christian Assoc. (q.r.), 1844. **W., Ralph Vaughan**: see VAUGHAN-WILLIAMS.

**William Tell**, opera by Rossini (q.r.), 1829.

**Willibrord, St.** (657-739), Northumbrian

missionary; Abp. of Utrecht, 696; the "Apostle of the Frisians."

**Willington**, Freeman Freeman-Thomas, 1st E. of (1866- ), Brit. administrator; M.P., 1900-10; Gov. of Bombay, 1913-19; of Madras, 1919-24; Gov.-Gen. of Canada, 1926-30; Viceroy of India, 1931; cr. visct. 1924, Earl 1931.

**Will o' the wisp**, *ignis fatuus*, small blue dancing flame seen over marshes; prob. produced by spontan. combustion of volatile phosphorus compounds in presence of air.

**Willoughby**, Sir Hugh (c. 1500-54), Eng. navigator; explored in arctic regions, 1553-54, and perished with his 62 companions on coast of Lapland.

**Willow**, large family of trees and shrubs (*salix*) with dioecian catkin-flowers; widely distributed from Arctic to tropics at high altitudes and in lowlands. Many varieties have been identified. Boughs used for weaving; wood to make cricket bats. Some varieties very ornamental. **W.-borer**, caterpillar of the goat-moth; bores long tunnels in trunks of willow and other trees. **W.-herb**, *Epilobium angustifolium*, rosebay, handsome garden plant with long racemes of rose-coloured flowers.

**Willstätter**, Richd. (1872- ), Ger. chemist; synthesis of chlorophyll; Nobel Prize (Chem.), 1915.

**Will to power**, or **master morality** (Nietzsche), morality of the "Superman" (q.r.) as opposed to "slave morality" of Christianity and Socialism.

**Wilmington**, 1) vill., Sussex; ruins of Norman Priory; Long Man of W., rough fig. of man cut on side of Downs, several times renewed. 2) City, Delaware, U.S.A.; pop., 128,000; R.C. and Prot. Episc. bprics.; iron and steel works.

**Wilno, Vilna**, 1) prov. N.E. Poland, drained by Riv. Viliya; 11,240 sq.m.; pop., 1,005,570. 2) Cap. of prov., on Riv. Viliya; Gr. Orthodox abpric.; R.C. bpric.; univ.; timber and metal industries. Occupied by Poland, Oct., 1920; annexation confirmed by Conference of Ambassadors, 1923, despite protests of Lithuanians.

**Wilson, Charles Thomas Rees**, (1869- ), Eng. physicist, Nobel Prize (Physics),



Lord Willington



Willow



William the Silent



Willow-herb

1927. **W., Sir Henry Hughes** (1864-1922), 1st bnt.; Brit. soldier; served Burma, 1885-87, 1887-89; S. Africa, 1899-1901; K.C.B., 1915; in World War, Asst. Chief of Gen. Staff to Lord French, 1914; Brit. Mil. Rep. at Versailles, 1917; field-marshal, 1919; bnt., 1919; killed in London by Irish political assassins. **W., John** (Christopher North) (1785-1854), Scots writer, and prof. of Moral Philosophy, Edinburgh; *Noctes Ambrosianae*, etc. **W., Thomas Woodrow** (1856-1924), Amer. statesm.; 28th Pres., 1912-20; endeavoured to keep U.S.A. neutral in World War, but compelled to join Allies, 1917; announced Fourteen Points (q.v.) as basis of peace proposals, Jan., 1918; reelected U.S.A. at Peace Conference, 1919 (see VERSAILLES, TREATY OF), but failed to secure support for his proposals, except in reg. to League of Nations. Failed in Candidature for re-election to Presidency, 1920. Nobel Peace Prize, 1919.

**Wilson Dam**, on Tennessee Riv., at Muscle Shoals, Alabama, U.S.A.; 81 ft. high, 4,300 ft. long; power generating. **W. Mountain**, nr. Pasadena, California, U.S.A.; 5,680 ft.; observatory, with tower telescope, 150 ft. high (largest in world); estab. 1904-05; now controlled by Carnegie Inst. of Washington.

**Wilton**, mun. bor., Wilts; pop., 2,200; W. House, seat of Earl of Pembroke; cattle and sheep fairs; manufac. of carpets.

**Wilton diptych**, two-winged wood panel, painted by unknown artist, c. 1395; (left) Richard II being presented by SS. John, Edward and Edmund to (right) Virgin and Child, attended by angels; purchased for Nat. Gall., 1929, for £90,000.

**Wiltshire or Wilts**, S. midland co., Eng.; area, 1,375 sq.m.; pop., 303,300; rolling chalk uplands, incl. *Salisbury Plain* and *Marlborough Downs* (960 ft.); contains Stonehenge and Avebury Circle; agric., dairy-farming (bacon); sheep-breeding; carpets at *Wilton*; co. tn., *Salisbury*.

**Wimbledon**, mun. bor., 8 m. S.W. of London, Eng., pop., 59,500; part of Greater London; lawn-tennis championships.

**Wimborne, Wimborne Minster**; mkt. tn., Dorset, on Riv. Stour; minster (fndd. by Edw. the Confessor), E. Eng. and Norm.; pop., 4,000.

**Wimereux**, small seaside resort 3 m. N. of Boulogne, Fr.; hospital base during, and Brit. G.H.Q. at end of, World War (April, 1919-20); golf-course.

**Wimple**, covering for head and chin made of linen or white silk; in gen. use by women in Mid. Ages; now worn by nuns.

**Wincey**, strong cloth with cotton warp and woollen weft, used for underclothing and night attire.

see CRANE; WINDLASS.

**Winchelsea**, bor., Sussex; once an "Ancient Town" (addn. to Cinque Ports, q.v.) and important port; pop., 700.

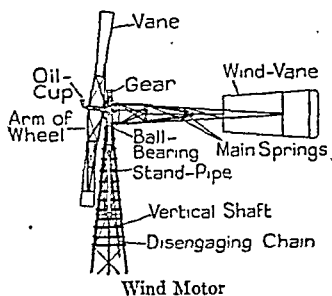
**Winchester**, city and co. tn. of Hampshire, on Riv. Itchen, 11 m. N.E. Southampton; pop., 24,000; ancient capital of England (residence of Kg. Alfred and Kg. Canute); longest mediaeval cathed. in Europe; public school for boys, fndd. by William of Wykeham, 1382. **W. firearms**, repeating firearms, gen. rifles with under-lever action.

**Winckelmann**, Joh. Joachim (1717-68), Ger. archaeol.; *History of Ancient Art*.

**Wind**, current in atmosphere produced by variation of air-pressure due to differences of temperature; *ground winds* slower than those of higher altitude on account of friction on earth's surface. See also FERREL'S LAW; BUYS BALLOT'S LAW; ANEMOMETER; BEAUFORT SCALE. **W. resistance**, reduction of: see STREAM-LINES. **W. spout**, funnel-shaped air-eddy, reaching height of 3,000 ft.; frequently carries water or sand with it. Cf. TORNADO; WATERSPOUT. **W. Cave**, nat. park (1903) in S. Dakota; 19 sq.m.; cave having many miles of passages with pe-



Winckelmann



Wind Motor



Windmill

culiar formations. **W.-flower**: see ANEMONE. **W.-mill**, machine employing wind-power to grind corn, pump water, etc., by means of sails wh. revolve on pressure from wind. **W. motor**, supplies power by using force of the wind acting on vanes or sails. **W. River Range**, offshoot of Rocky Mtn. system (q.v.) in Wyoming, U.S.A.; Fremont Peak (q.v.). **W. tunnel**, apparatus used for testing aircraft and parts of same, usually on models. Consists of long tunnel, usually narrowest in middle or working part, through wh. air can be driven at great speed by powerful fan.

**Windau**: see VENTSPILS.



Windmill

**Windaus**, Adolf (1876- ), Ger. chemist; Nobel Prize (Chem.), 1928; prod. artificial increase of vitamins by subjecting ergosterine to ultra-violet rays. Substitute for cod-liver oil.

**Windbills:** see ACCOMMODATION BILL.

**Windermere** 1) lake, Westmorland and Lancs; largest in Eng. (10½ m. by ¼-1¼ m.); many islands, wooded shores, mtns. surround head; outlet Riv. Leven, draining into Morecambe Bay. 2) Tn., Westmorland, Eng., on E. shore Lake W., 8½ m. N.W. Kendal; pop., (with *Bowness-on-Windermere*) 5,700.

**Windgall**, (vet.) soft swelling on horse's fetlock.

**Windhoek**, cap. S.W. Africa (q.v.), 250 m. from coast; pop., 13,700 (4,600 whites).

**Winding-up**, procedure for dissolution of companies; either voluntarily by initiative of shareholders, or compulsorily by Order of Court. See also LIQUIDATION.

**Windisch-Grätz**, Pr. Alfred zu (1787-1862). Aust. gen.; suppressed rebellions in Prague and Vienna, 1848.

**Windlass**, appar. for moving loads, by means of ropes or chains wound on to drums, operated by hand, steam, or electr.; used mainly on ships.

**Window**, opening in wall of a bldg. to

admit light and air; existed from earliest times in form of narrow, open slits; ch. windows provided with frames filled in with glass, from 6th cent. Varying types of W. important in distinguishg. periods of architecture. See III.

**Window dressing**, (banking) manipulation by wh. monthly balance sheet shows bank to be in a stronger position than would otherwise appear; practice much criticised in Eng. still followed by jt. stk. banks, though to a diminishing extent; effected by calling in loans from discount market, arranging that bill portfolios (q.v.) shall be light on day of the balance, and other means.

**W.-envelope**, envelope with address space transparent, or cut out, through wh. address on letter itself appears. **W.-glass**, produced by blowing large cylinder from plastic glass, cutting it, and spreading it out on iron plate. Thickness defined by ozs. p. sq. feet. See GLASS. **W. Tax**, tax levied in Eng., accdg. to number of windows, in all inhabited houses; introduced 1695 to cover cost of recoinage of silver; repealed 1851 and replaced by Inhabited House duty.

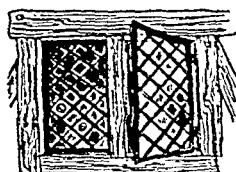
**Windsor**, House of, royal house of Gt. Brit.; known as H. of W. since 17 July, 1917, when Geo. V relinquished family name of Saxe-Coburg-Gotha together with all rights to Ger. titles for himself and those members of his family who were Brit. subjects.



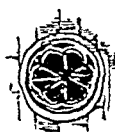
Windlass



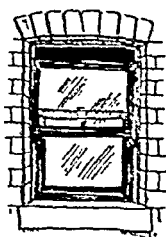
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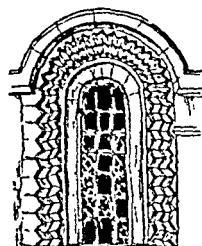
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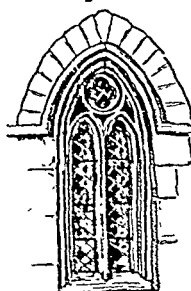
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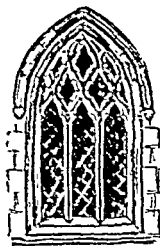
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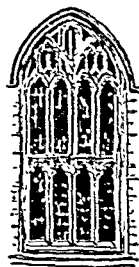
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6



7



8

Types of Window

1) Anglo Saxon (Deerhurst, Glos.)

2) Lattice

3) Round (1350 Oxford)

4) Sash

5) Norman (Iffley, Oxon.)

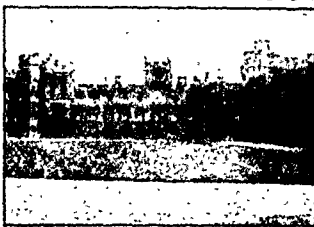
6) Early English (Ravensthorpe, N. Hants)

7) Decorated (Great Milton, Oxon.)

8) Perpendicular (New College, Oxford)

**Windsor**, 1) royal tn. in Berks, Eng.; on Riv. Thames, 23 m. W. of London; pop., 20,300; 11'.

**Castle**, dating from 13th cent. (re-stored 19th cent.), a royal residence, with St. George's Chapel (tomb of



Windsor Castle

many Eng. kgs.), Albert Memorial Chapel, Round Tower; Windsor Great Park contains *Frogmore Mausoleum* (q.v.). Across the river lies Eton (q.v.). 2) River port, Ont., Canada; opp. Detroit; pop., 67,500.

**Windward**, direction from wh. the wind blows; side of ship towards the wind; ant.: *leeward*. **W. Islands**, Brit. group, West Indies, part Lesser Antilles; S. of Leeward Is.; includes St. Lucia, St. Vincent, and *Grenada* (cap.); total area, 510 sq.m.; pop., 162,300.

**Wine**, alcoholic drink made from fermented fruit juice, usu. of the grape. Produced from N.W. Europe to Asia, esp. in Medit. region. See **VINE**. **Sparkling W.** fermented in bottle; contains consid. amount of carbon dioxide (added in inferior brands).

**Spirits of W.:** see **ALCOHOL**. **W. vinegar**, made from wine and other alcoholic fluids by action of vinegar bacteria (*Bacterium aceti*).

**Wineglassful:** see **OUNCE** 2).

**Wingate**, Sir Francis Reginald (1861- ), Brit. gen. and administrator in Sudan, 1899-1916; served in Nile exped., 1884-85; Dongola campaign, 1896; Khartum, 1898; High Commiss. of Egy., 1916-19; *Mahdism and the Egyptian Sudan*, 1891; *Ten Years' Captivity in the Mahdi's Camp*, 1892.

**Wingfield Sculls**, sculling race rowed on the Thames from Putney to Mortlake (4½ m.), by which the English amateur championship is decided; instituted in 1830. Fastest time is 21 min. 47 sec. (T. D. A. Collet, 1929).

**Wings**, (theat.) side walls of stage.

**Winnington-Ingram**, Arthur Foley (1858- ), Brit. prelate; Bp. of London since 1911; *Victory and After*, 1919; *Some World Problems*, 1927.

**Winnipeg**, 1) cap., Manitoba, Canada, at confluence



By courtesy of the High Commissioner for Canada

Winnipeg, Business District

and Red rivs.; cathed., univ.,

parks; rly. centre; chf. grain market; fur auctions. 2) Lake, Manitoba, Canada, fed by riv. same name; outlet Riv. Nelson; alt. 700 ft.; area, 9,470 sq.m.; av. depth, 62 feet.

**Winnipegosis**, lake, Manitoba, Canada; 120 m. by 16; water area (many isls.), c. 2,000 sq.m.; outlet Waterhen Riv. to Lakes Manitoba and Winnipeg.

**Winter**, (astron.) period betw. the W. solstice (Dec. 22nd) and vernal equinox (Mar. 21st) in N. Hemisphere; or betw. summer solstice (June 22nd) and autumnal equinox (Sept. 23rd) in S. Hemisphere.

**W. aconite**, *Eranthis*, plant of family Ranunculaceae; early flowering, bearing bright yellow blossoms; found in temperate regions. **W. berry**, shrub of N. Amer. of genus *Ilex*, bearing red berries; also known as black alder. **W. cherry**, fruit of *Physalis*

*alkekengi*, solanaceous herb, of Centr. and S. Amer.; also known as strawberry tomato. The fruit is juicy and acidulous and is used in folk medicine for gravel and gout. **W. King**, nickname of Frederick V. Elector Palatine (q.v.), Kg. of Bohemia during winter of 1619-20. **W.-moth**, a small moth well known as a fruit-tree pest; appears in Nov.; female has very abbreviated wings. **W. sports**, inclusive term for such open-air exercises or amusements as require ice or snow as their medium; esp. skating, tobogganing, ski-ing, curling, etc.

**Wintergreen**, (bot.) 1) name given to several var. of *Pyrola*, rather rare plants with white or pinkish flowers, found princ. in woods in N. of England. 2) *Gaultheria procumbens*, evergreen Amer. shrub, leaves of wh. yield methyl salicylate, specific for rheumatism.



Wintergreen

**Winterthur**, tn., canton of Zurich, Switz.; pop., 55,000; machinery, locomotive works, textiles.

**Wipper:** see **WUPPER**.

**Wirballen:** see **VIRBALIS**.

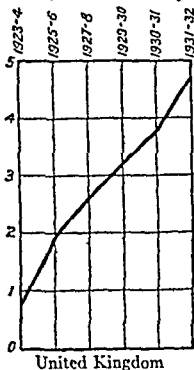
**Wire**, narrow strand of metal, made by drawing bars of metal thr. a succession of draw plates (steel, diamond) pierced with conical holes; at each drawing diam. is slightly reduced. Wire annealed by heating betw. each reduction. *Hand-drawn W.* is left hard and unannealed after last drawing. **Wired glass**, thick sheet-glass inlaid with wire netting; used for skylights, bec. if broken it does not fall apart.

**Wireless licences**, in most countries broadcasting radio is either a Govt. monopoly or under the control of a public or semi-public Corporation, and a licence must be paid for all receiving sets. The accompanying graph shows increase in U.K. receiving sets since 1923, the figure for 1931-32 being 4,630,000.

Numbers of receiving sets in certain other countries, at latest available dates, are: U.S.A. (1931) 12,564,000; Germany (1931), 4,000,000; France (1929), 1,500,000; Japan (1931), 960,000; Sweden (1931), 550,000; Netherlands (1931), 523,600; Canada (1931), 523,100.

**Wireless telegraphy and telephony**, transmission of signs and speech by electromagnetic waves first observed by Hertz, 1888; first practically applied by Marconi, 1900, who built English wireless station at Poldhu. At first, *spark-transmitters* generating *damped waves* were used with Morse code-signals, reception by *coherer*. Modern stations use *undamped waves*, generated by high-frequency dynamos (for long waves) or by three electro *triode valves*. A high-frequency alternating current flows in and out of the aerial or antenna, wh. has capacity like condenser, but radiates carrier waves in all directions (unless directive aerial used). For telephony, these waves are *modulated* by a *microphone*, wh. imposes variations on aerial current exactly corresponding to sound waves falling on microphone. Waves received by second *aerial*; high aerials are most effective, but small *frame aerials* most convenient, and selective for direction; gas-pipes, etc., may sometimes serve. Receiving set must be *tuned* so as to respond to frequency of carrier wave. Tuning by varying *inductance* (honeycomb coils) or *capacity* (condenser). High-frequency current will not pass telephone receiver and must first be rectified; simplest method by *crystal* (mineral, e.g., galena, in loose contact with metal point), or valve with grid leak. For long-distance reception, H.F. current is first amplified, then rectified, then further *low frequency* (speech current) amplification, until *loud speaker* can be operated. Amplification in *stages*, various possibilities of *coupling* make variety of circuits; great range rendered possible because 1) Earth is conductor; 2) the Heavieside layer, conducting (ionised) stratum of atmosphere, 15 to 20 m. high, reflects waves back. Long waves cannot be sent out in one direction only; hence, great power necessary for long distances; *short waves* can be concentrated like searchlight to *beam*, but will not bend round earth. *Selectivity* of receivers becoming more and more necessary, as number of powerful stations increases; best attained by

WIRELESS (RECEIVING  
LICENCES IN MILLIONS)



United Kingdom

*superheterodyne* receivers. These contain generator of oscillations, which are fed into receiving circuit along with waves received, producing beats, or, in effect, reducing frequency of oscillations received to same low and constant value whatever frequency of reception. Remainder of receiver is adapted to this frequency only. See **AMPLIFICATION**; **VALVE**, etc.

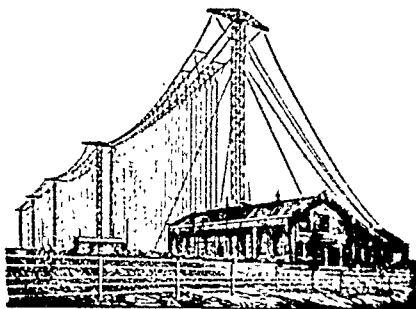
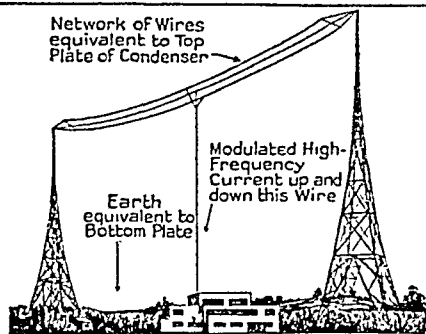
The Plate on next page shows: *Transmitting Aerial*: long grid of parallel horizontal wires, suspended by insulators between tops of two high towers, forming with earth a capacity (condenser), into which high-frequency alternating current is fed from wave generator, modulated by microphone or land-line current. Modulated waves radiated in all directions. *Beam Aerial* for short waves: two similar parallel grids, one radiates, other acts as reflector (like polished metal behind lamp). *Triode (three-electrode) valve*: filament of tungsten wire coated with thorium, heated by current, produces electrons (*q.v.*) inside grid or cage of tungsten wire; outside these anode plate of sheet tungsten. Positive end of H.T. battery is applied to anode, which then attracts electrons, producing current. Small voltages applied to grid cause electron current to vary. *Low-frequency amplifier*: varying output from transformer applied to grid causes much larger variations in anode circuit, which includes loud speaker, by which variations of current are transformed into sound. *Triode as detector* with grid-leak: oscillations received are rectified in grid circuit, and influence anode circuit as above. *Transmitting circuit*: grid connected through coil to earth; coil in anode circuit coupled inductively to grid coil. Slightest variation of anode current acts on grid coil, varying potential of grid, this reacts on anode circuit which again reacts on grid; powerful oscillations are thus built up, which can be fed to aerial by induction. *Broadcasting*: Land telephone wire frequently made use of both for transmitting from microphone to radiating station, and also for transmitting material received by wireless to station for re-broadcasting. *Weakest link* is listener's loud-speaker, which fails to respond to lowest and highest frequencies, and introduces much distortion.

**Wis.**, abbr. Wisconsin.

**Wisbech**, bor., Isl. of Ely, Cambridgesh., Eng., on Riv. Nene; in agric. and fruit-growing dist.; pop., 12,000.

**Wisby**: see **VISBY**.

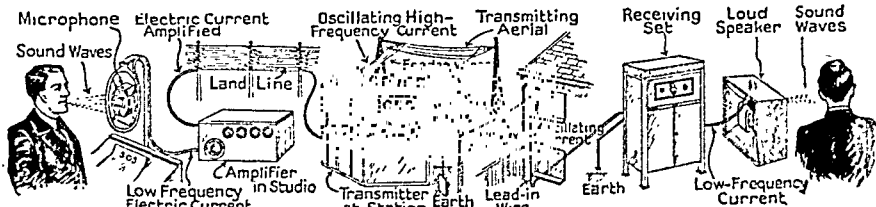
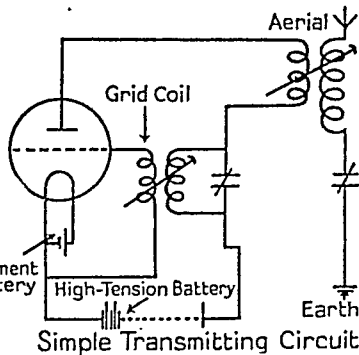
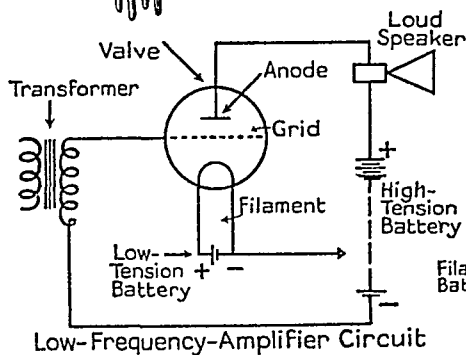
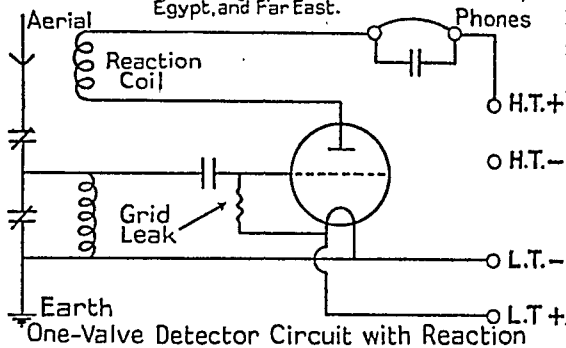
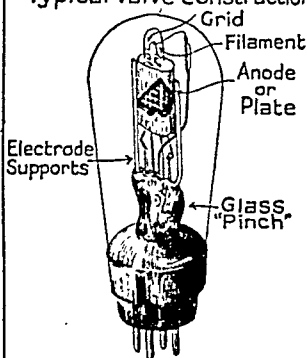
**Wisconsin**, 1) ("Badger") State of U.S.A., betw. Mississippi R. and St. Lawrence lakes; 56,066 sq.m.; pop., 3,000,000; rich corn land; copper, iron, and zinc mines; wood and leather indust.; cap., *Madison*; largest tn., Milwaukee. 2) Left trib. (600 m.) of the Upper Mississippi.



Transmitting Aerial and Broadcasting Station

Masts, Aerials, and Reflectors of Marconi Short-wave Beam Station, Dorchester, for high-speed Telegraph Services with N. and S. America, Egypt, and Far East.

Typical Valve Construction



THE BROADCASTING SEQUENCE SIMPLY EXPLAINED



**Wisdom of Jesus ben Sirach:** see ECCLESIASTICUS. **Wisdom of Solomon,** apocr. bk. of composite authorship, written in Alexandria in 1st century B.C. **Wisdom teeth:** see TEETH.

**Wiseman,** Nicholas Patrick Stephen (1802-65), Brit. R.C. prelate; rector of Eng. Coll. in Rome, 1828-40; ordained bp. and made pres. of Oscott Coll., 1840; made 1st Abbp. of Westminster, and cardinal, 1850.

**Wise Men, The Three:** see MAGI.

**Wisla:** see VISTULA.

**Wismar,** seapt., Mecklenburg-Schwerin, Ger., on Baltic; pop., 27,000; shipb., machinery, fisheries.

**Wissembourg,** tn. in Lower Alsace, Fr., dépt. Bas-Rhin; defeat of French by Prussians and Bavarians, 1870; pop., 5,430.

**Wissmann,** Hermann von (1853-1905), Ger. African traveller; acquired Ger. E. Africa for Germany.

**Wistaria,** *Kraunhia chinensis*, Asiatic climbing shrub cultivated for its handsome blue flowers on racemes.

**Witch,** woman who, acc. to pop. superstition, is in league with devil and is believed to possess dangerous powers of magic or witchcraft. Belief in witches was widespread in Mid. Ages. *Witch trials* took place in Eng. until late 18th century. **W. hazel,** *Hamamelis virginia*, spotted alder; bark and leaves contain an astringent principle much used in med. in form of a distilled solution. **W. knots,** morbid bushy growths on trees caused by parasitical fungus.

**Witches' ring,** fungus-circle in meadow, caused by the mycelium fertilising from one point in every direction (cf. FAIRY RING).

**Witenagemot, Witan,** national council of Eng. in Anglo-Saxon period; during heptarchy each kgdm. had its own W.; with unification of realm, Ws. merged into one; comp. of royal princes, bps., caldormen of shires, and kg.'s nominees or thegns; gave consent to royal promulgation of laws, grants of land, appointments, etc., and acted as crt. of justice.

**Witham,** 1) Eng. riv. (80 m.); rises Rutland; flows past Grantham, Lincoln, and Boston into the Wash. 2) Mkt. tn., Essex, Eng., 5 m. N.N.W. Maldon; agric.; pop., 4,450.

**Withe,** willow, osier or supple branch used in basket and chair-making.

**Withers,** ridge between the shoulder-blades of a horse.

**Witness,** pers. who speaks to a fact from his own knowledge.

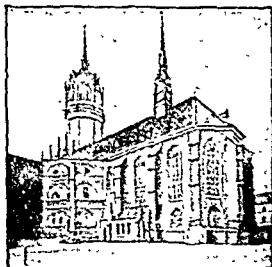
**Witney,** urb. dist. and mkt. tn., Oxon.; pop., 3,400; blankets.

**Witt,** Joh. de (1625-72), Dut. statesm.; maintained sea power agst. Eng.; enemy of Louis XIV.

**Witte,** Serge J., Ct. (1849-1915), Russ. statesm.; Pr. Min., 1905-06; instit. many reforms and increased nat. revenues; negot. Peace of Portsmouth (U.S.A.) with Japan, 1905.

**Wittelsbach,** Bavarian dynas.; duke since 1180; pr., 1623, kgs. of Bavaria, 1806. Two Ger. emps.: Louis the Bavarian, 1314-46, and Charles VII, 1742-45; collat. line in Palatinate since 1214; on Swed. throne, 1654-1718.

**Wittenberg,** tn., Saxony, Prussia, on the Elbe; pop., 24,000; Schlosskirche, with Luther's tomb; his 95 theses nailed to its doors in 1517 began the Reformation.



Schlosskirche, Wittenberg

**Witwatersrand** ("The Rand"), hilly dist., Transvaal, S. Africa (5,900 ft.); gold fields; chf. tn., Johannesburg.

**Woclawek,** tn., prov. of Warsaw, Poland, on left bank of the Vistula; pop., 40,285; R.C. bishopric.

**Wood,** (bot.) *Isatis tinctoria*, cruciferous plant almost 3 ft. high, grows wild; formerly cultivated for the blue dye obtnd. from the leaves, used by early Britons to stain their bodies.

**Woden,** Anglo-Saxon deity corresp. to Scandinavian Odin and Teut. Wotan; prob. identical with Rom. Mercury; god of victory and magic; his name is present in "Wednesday."

**Woermann,** Adolf (1847-1911), Ger. merchant and politic.; co-indr. of Woermann steamship line; acquired Cameroons 1884, presented to Ger. Empire.

**Woëvre,** fertile dist., Lorraine, betw. the Meuse and the Moselle; densely populated; scene of desultory fighting in the World War.

**Woffington,** Margaret, or Peg (1716-60), Irish actress; Garrick's mistress; appd. in Dublin, 1737-40; London début as Sylvia in *The Recruiting Officer*, Covent Garden, 1740; excelled in male characterisation; seized with paralysis, 1757.

**Wöhler,** Friedrich (1800-82), Ger. chem.; synthesis of urea, 1st synthesis of an organic substance; disc. beryllium and aluminium.

**Wohlgemuth,** Michel (1434-1519), Ger. painter and draughtsman; taught Dürer.

**Woking,** urb. dist., Surrey, Eng., on Riv. Wey; residential; pop., 29,900. Crematorium; mosque (1889).

**Wolcot,** John ("Peter Pindar") (1738-

1810), Eng. satirist, physician, and landscape-painter; satirised George III, Boswell, etc.

**Woldemaras**, Augustine (1883- ), Lith. statesm.; 1st. Pr. Min. of Lithuania, 1917-20; 1926-29 (Dictator).

**Wolf**, Hugo (1860-1903), Ger. song composer: *Mörke-Lieder*; opera: *Der Corregidor*; *H. Srenade*.

**Wolf**, carnivore, ancestor of the domestic dog; once to be found throughout Eur., today chfly. confined to northern portions of both Old and New World. In the winter they hunt deer and cattle in packs; are also dangerous to man.



Wolf

**W.-fish**, fish akin to the blenny (*q.v.*) inhabiting all Northern seas; some species are 6 ft. long; mouth is crammed with tuberculated teeth adapted for grinding

the hard shells of molluscs, crabs, and lobsters. **W.-hound**, breed of large dogs

formerly kept for hunting wolves. *Irish W.*, larger than deerhound (*q.v.*); over 2 ft. 6 in. in height at shoulder. *Russian W.*, see BORZOI. **W.-spider**, species of spider which

hunts its prey; egg-sac carried by the female; frequents damp situations.

**Wolfe**, Humbert (1885- ), Brit. poet and author;

*London Sonnets*, 1920; *The Unknown Goddess*, 1925; *This Blind Rose*, 1928; *Dialogues and Monologues*, 1928.

**Wolfe**,

James (1727-59), Brit. soldier; served at Dettingen, 1743; Falkirk and Culloden, 1746; Lawfeldt, 1747: commdd. division under Amherst at siege of Louisbourg, 1758; major-gen. and commdr. of expedtn. agnst. Quebec; captured city after unsuccessful attempts, but was fatally wounded.

**Wolfenbüttel**, tn., Brunswick, Ger., on the Oker; pop., 20,000; cas.; library (early Bibles).

**Wolf-Ferrari**, Ermanno (1876- ), Ger.-Ital. composer; operas: *Jewels of the Madonna*; *Susanna's Secret*.

**Wolfram**: see TUNGSTEN. **Wolframite**, a mineral ore yielding tungsten (*q.v.*).

**Wolfram von Eschenbach** (c. 1170-1220), Med. Ger. poet; epic, *Parzival*.

**Wollin**, isl. (95 sq.m.), Pomerania, Ger.,

E. of Usedom, opposite the Stettiner Hafl; seaside resort.

**Wolseley**, Garnet Joseph W., 1st visct. (1833-1913), Brit. gen.; served in Crimean war; in India during the Mutiny; in Chinese War, 1860; Ashanti War, 1873-74; Gov. of Natal, 1879; destd. Arabi Pasha at Tel-el-Kebir, 1882; failed to relieve Gen. Gordon, 1884-85; c-in-c. in Ireland, 1890-95, and of Brit. Army, 1895-1900; cr. bn., 1882; visct., 1885; field-marshal, 1894.



Wolsey

**Wolsey**, Thomas (1475-1530), Eng. prelate and statesm.; Abp. of York, Cardinal, Ld. Chanc. of Henry VIII, 1515; fndd. Christ Church, Oxford.

**Wolstanton**, urb. dist. Staffs, Eng., in Potteries (*q.v.*); coal and iron; pop., 30,500.

**Wolverhampton**, co. bor., Staffs; pop., 133,200; in "Black Country"; manuf. hardware, motorcars, bicycles.

**Wolverine** (or *Glutton*), comparatively large carnivore inhabiting forests of the Northern districts of both hemispheres, preying on birds and small mammals and even attacking reindeer. Allied to weasel, but more bear-like in form, body and limbs being stout, with large, partially plantigrade feet, short, bushy tail, dark fur with light, saddle-shaped area on back.



Wolverine

**Woman suffrage**, right of women to parlmty. franchise was granted in U.K. in 1918 (*Repr. of the People Act*), when 9 mill. women, over 30, received the vote; in 1928 franchise was extended to women over 21, adding about 5,240,000 female voters to the parlmty. register.

**Wombat**, heavily built marsupial from Australia and Tasmania; harmless and inoffensive; makes deep burrows by means of its powerful claws, and subsists on the roots excavated in this manner; entirely nocturnal in habit.



Wombat

**Wood, Francis Derwent** (1871-1926), Brit. sculptor; prof. of Sculpture at R. Coll. of Art, S. Kensington; in charge of Masks for Facial Wounds Dept., World War; bust of *Henry James*, 1914, Tate Gall.; *Machine-Gun Corps Memorial*, Hyde Park Corner, etc.

**W., Sir Henry Evelyn** (1838-1918), Brit. soldier; served in Crimean War, Ind. Mutiny, Ashanti, and in S. Africa, 1879-1881; commdd. brigade in Egypt. expedtn., 1882; sirdar, 1883-85; quarter-master-gen., 1893-

97; adjutant-gen., 1897-1901; field marshal, 1903; assisted in organisation of the Territorial Force; pubd. *Achievements of Cavalry*, 1897; *From Midshipman to Field Marshal*, 1906; *Winnowed Memories*, 1917. **W. Sir Hy. Jos.** (1870- ), Eng. mus. conductor. Assocd. with Promenade Concerts since their inception, 1895. **Wood, Leonard** (1860-1927), Amer. soldier and administrator; soldier and administrator; Span.-Amer. War, 1898; Gov. of Cuba, 1899-1902; brig.-gen., 1901; chief of staff of U.S. Army, 1910-14; candidate for Presidential nomination, 1920; Gov.-Gen. of Philippine Isls., 1921-27.



Sir Henry Wood

**Wood**, the hard, fibrous substance forming the trunks and branches of trees covered with bark and augmented yearly by rings (*cambrum ring*). The young wood (*alburnum* or sap-wood) is distinguished from the inner, more mature wood (*duramen* or heart wood). W. may be classed as: *soft* (conifers), *hard* (pear, oak, beech), and *cabinet* (mahogany, ebony, etc.). Used for bldg., paper-making, carpentering, and turnery, also as fuel. *The Seasoning and Preservation of Wood*: wood must be dried slowly and thoroughly before being used, otherwise objects made from it change shape or crack owing to contraction. Kiln drying by artificial heat now superseding air-drying; care is nec. to avoid outside layer drying quickly and preventing escape of moisture from within. W. decays only when moist, by action of micro-organisms wh. feed on proteins; preservation effected by impregnation with antiseptics (creosote, corrosive sublimate, chloride of zinc, sulphate of copper, sugar, etc.), usu. with use of vacuum or pressure, or both. Living tree may be injected, before felling, with preservative wh. is then carried thr. wood by sap. *See* **TIMBER**. **W. alcohol**, **wood naphtha**, impure methyl alcohol, *methanol* ( $\text{CH}_3\text{OH}$ ), obtd. by destructive distillation of wood (heating in closed, airtight retorts), also synthetically; used as solvents for varnishes, in prodn. of formaldehyde, as an antifreeze and as denaturant in methylated and indus. spirits; poisonous, producing blindness; alternative name in U.S.A. for methylated spirits (*q.v.*). W. distillation also produces *pyroligneous* or W. acid (brown fluid), chf. ingredient acetic acid; a by-product is charcoal (*q.v.*). **W.-engraving**, a method of reproduction by printing. The picture or design is cut in the wood-block (usually boxwood), the portions wh. are to appear black being left in relief. A popular art in Japan, it reached high excellence in Ger. in 15th and 16th cent. (Dürer, Altdorfer). Revived in England by Bewick

in early 19th cent., it was later much used for book and magazine illustration, with special brilliance c. 1860 (Millais, Sandys, Tennyel) until superseded by photography. Recently revived as an independent art. **W.-wasp**, hymenopterous insect allied to saw-flies (*q.v.*); larvae live in tree trunks, especially pine, sometimes doing considerable damage by boring through the wood. **W. wool**, wood in the form of long, thin shavings; used for packing, filtering water, etc. **W.-working machines**, sawing, planing, routing, and polishing machines, turning lathes, all of wh. have very rapid motion. Modern cabinet-making and other W.-w. almost entirely by machines.

**Woodbine**: *see* **HONEYSUCKLE**.

**Woodbridge**, urb. dist. and mkt. tn., E. Suffolk, on Riv. Deben; pop., 4,700; river port in agric. district.

**Woodchuck**, small, brown, burrowing rodent of N.E. Amer.; species of marmot (*q.v.*).

**Woodcock**, bird related to snipe (*q.v.*) but differing in having successive broad bars of black and buff on back of head and neck; frequents woodland and forests rather than open marshes; slender legs and long bill. Resident of Gt. Brit. and with wide geographical range over Europe and Asia, migrating S. to Mediterranean and Africa in winter.



Woodcock

**Wooden Horse**, in Virgil's *Aeneid*, hollow horse brought into Troy (*q.v.*), in wh. Gr. soldiers were hidden; these emerged at night and admitted Gr. army. *See* **LAOCOÖN**.

**Woodford**, urb. dist., Essex, Eng.; residential part of Greater London, S. of Epping Forest; pop., 23,900.

**Wood Green**, mun. bor., Middx., Eng., part of Greater London; pop., 54,200.



Wood-louse

**Wood-louse**, terrestrial crustacean of the sub-order *Isopoda*; short, broad, greyish or brownish-coloured, with body arched above, flat underneath; some can roll themselves into a ball. Found in damp situations among moss, under rotting logs or flat stones. One large species (*Ligia*) found on seashore between tide marks.

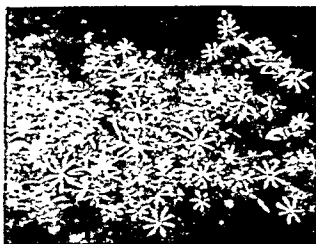
**Woodpecker**, scansorial or climbing bird with broad tail, powerful beak, and long, worm-like tongue furnished with pointed, horny-barbed tip. Excavates holes in trunk and branches of trees in search of insects, on which it feeds. **Green w.** or **yaffle**, the



Woodpecker

commonest British species, has loud, laughing cry; **great and lesser spotted w.** are British residents, and, like green W., widely distributed in Europe, parts of Asia and Africa.

**Woodruff**, *Asperula odorata*, small herb c. 12 in. high; pretty, sweet-smelling white flowers. Used in folk med. as a stomach tonic.



Woodruff

**Woods, Lake of the:** see LAKE OF THE WOODS. **Woods and Forests, Commissioners of**, Brit. body apptd. under presidency of Min. of Agric. and Fisheries, to control landed estates of Crown whose revenues go to Exchequer.

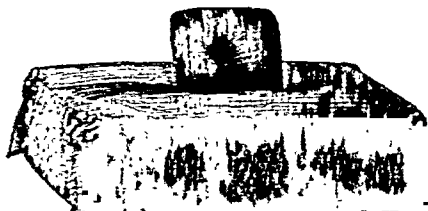
**Wood's alloy**, consists of 2 parts tin, 2 parts cadmium, 4 parts lead, 8 parts bismuth; melts at about 70°C. (158°F.).

**Woodward, Henry** (1832-1921), Eng. geologist; fndd. Malacological Soc. and was its president, 1893-95; pres. of Geological Soc., 1894-96; ed. *Geological Mag.*, 1864-98. His brother, **Horace Bolingbroke W.** (1848-1914), was assistant-director of the Geological Survey; and pres. of the Geologists' Association, 1893-94.

**Woof, weft**, threads crossing warp (q.v.) from selva to selva.

**Wookey Hole**, cavern (500 ft. long), Som., 2 m. N.W. Wells; Riv. Axe flows from mouth; bones of prehistoric animals and other remains found.

**Wool**, hairs that curl and are therefore closely bound together; above all, hair of sheep, goats, camels, etc.; sheep's W. is shorn once or twice a year. Best W. given by *merinos*; also spun, as carding or worsted wool. **Woolsack**, seat occupied by Ld.



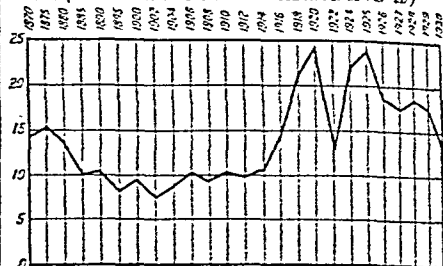
Woolsack

Chanc. in Hse. of Lds. (orig. adopted as symbol of nat. importance of wool trade).

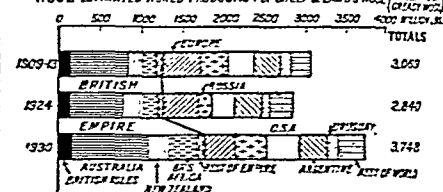
**Woolly aphid**, minute insect which conceals itself beneath a covering of white flocculent wax; very harmful to apple trees, occurring on the trunk and limbs. **W.-bear caterpillar**, name given to larvae of ermine and tiger moths, on account of being thickly

clothed with long hair. **W.-monkeys**, S. Amer. monkeys with woolly hair and prehensile tails, frequenting the branches of the dense forest and feeding on fruits, insects, and birds' eggs.

WOOL (U.K. IMPORT PRICES OF RAW WOOL IN PENNE PER LB)



WOOL-ESTIMATED WORLD PRODUCTION OF SHEEP & LAMBS' WOOL (IN TONS)



Almost all countries have recently substantially increased production, partly causing great fall of prices after 1925. Australia prod. about  $\frac{1}{2}$  & Brit. Emp. nearly  $\frac{1}{2}$  total.

**Woolner, Thomas** (1825-92), Eng. sculptor and poet; member of Pre-Raphaelite Brotherhood; prof. of sculpture, R.A., 1877-79; statues: *Puck*; *Constance and Arthur*; *Macaulay*; *Palmerston*; etc.; poems: *My Beautiful Lady*, 1863; *Pygmalion*, 1888; *Tiresias*; etc.

**Woolwich**, met. bor. (incl. Plumstead and Eltham), S.E. London, Eng., S. bank Riv. Thames; dockyard, arsenal; depot Roy. Artill.; Royal Mil. Acad.; Royal Herbert Hosp.; Woolwich Common; pop., 146,900.

**Woolworth, Frank Winfield** (1852-1919), Amer. merchant; fndr. of W. 5 and 10 cent stores; (3d. and 6d. stores); commenced operations in Eng., 1910; business incorporated as F. W. Woolworth Co., 1911; **Woolworth Bldg.**, N.Y., finished 1912; 790 ft. high, with 60 stories.

**Worcester, 1)** city and co. bor., co. tn. of Wores, on Riv. Severn; pop., 50,500; 13th-cent. cathed.; manufactures gloves, sauce; porcelain factory. **Battle of W.**, 1051, defeat of Charles II by Cromwell. **2)** N. American town in Mass., on the R. Blackstone; pop., 195,300; Clark Univ.; manuf. iron, steel, boots, woollens; several educational institu-



Worcester Cathedral

tions. **W. College**, Oxford; fndd. 1714, under bequest of Sir Thomas Cookes (d. 1701). **Worcestershire**, inland co., W. Eng.; 715 sq.m.; pop., 420,200; rivers include Severn and Avon; contains *Malvern Hills* (Worcs Beacon, 1,395 ft.); many fertile valls. (*Vale of Evesham* famous for fruit); mkt. gardening, agric., cattle: and sheep-breeding; Droitwich, centre of salt industry; manuf. hardware, china, glass, carpets (at Kidderminster); co. tn., *Worcester*.

**Wordsworth**, William (1770-1850), Eng. poet; one of the Lake School of poets; Poet Laureate, 1843. *Lyrical Ballads*, 1798; *The Prelude*, 1805, etc.



Wordsworth

**Workers' Educational Association**, fndd. 1903, in Gt. Brit., "to stimulate and satisfy workers' demand for education" by organising tutorial classes, study circles, etc., and to work for national system of educ. giving equal opportunities to all. **W. organisations:** see TRADE UNIONS.

**Workhouse:** see POOR LAW INSTITUTION.

**Working capital**, (commer.) cash, or other assets easily convertible into cash, used for purchase of materials, pymt. of wages, etc., as contrasted with fixed capital in bldgs. and equipment. **W. classes**, section of community wh. exchanges labour for wages; ant.: *upper class, middle class*. **W. hours:** see HOURS OF LABOUR. **W. Men's College**, institution, in London, Eng., for adult educ. of working classes, fndd. 1854, by F. D. Maurice.

**Workington**, bor. and seapt., Cumberland, Eng., at mouth Riv. Derwent; iron and steel; coal mines; fisheries; pop., 24,700.

**Workmen's Compensation Acts**, Brit. Acts of Parl. from 1906 onward, giving workpeople legal right to compensation for injury arising from employment, whether or not employer is to blame; in effect compels employer to insure his workpeople agst. accident. (See EMPLOYERS' LIABILITY.)

**Works, Office of**, dept. of Brit. Govt. charged with control of Kg.'s palaces and all nat. buildings. Also administers law for preservation of anc. monuments. **W. school**, day continuation school provided by employer, usu. in conjunction with local educ. authority, for juvenile workers.

**Workshop**, munic. bor., Notts, Eng., on border Dukeries (*q.v.*), near N. end Sherwood Forest; priory; coal-mines; pop., 26,300.

**World history**, PREHISTORIC PERIOD: formation of social groups apparent from earliest periods; prob. originating in hunting and predatory bands; not necess. family units. Form. of States begins with settlement and agric. Hist. begins with foundation of towns (oldest cities dated back to

very early period; Tihuanacu in Bolivia est. to be 13,000 yrs. old). *Development:* man first a hunter, then pastoral, finally an agriculturist. Earliest forms (primeval hunters) still exist to-day, e.g., in the Amazon jungles. Relig. communities very anc.; idols found in lowest human strata. Orig. of most important inventions (fire, plough, metal-working), obscure. High degree of craftsmanship at very primitive stages (artist. carving on bone and ivory; drilling of hard stone). *Periods:* Palaeolithic (unground, chipped flint tools), Mesolithic or Epipalaeolithic, and Neolithic (ground and polished tools; pottery). *Age of Metals:* earliest known, gold, silver, copper, then bronze. Bronze Age: ornaments (fibulae, bracelets); weapons (swords, spear-heads, daggers). Iron age (Hallstatt period). *ANTIQUITY:* Hist. begins c. 4000 B.C. *Semitic peoples:* Egyptians, Assyrians, Babylonians, Phoenicians, Israelites. Complete civilisations on Nile, in Mesopotamia and Asia Minor (writing, systems of weights and measures, monumental buildings.) Conq. by Indo-Germanic (Aryan) invaders from Asia: *Persians and Macedonians*. In Greece, city states, constantly at war. Highly devel. Gr. civilis. (basis of all Western culture), spread by expeditions of Alexander the Great after Macedonians' conq. of Greece. Entire Mediter. basin connected by cultural and econ. relations (Carthage). Devel. of Roman State on the Ital. penins.; first kgdm., then repub.; gradual conq. and absorption of neighbouring peoples. Under Caesar milit. power and polit. organisation created Empire stretching from Gaul to Syria. Mingling of Gr. and Rom. culture (c. time of birth of Christ). Develop. of internal organisation; under subseq. Emperors (esp. Augustus and Diocletian). Large farms (*latifundia*) worked by slaves; colonies. Spread of Christianity despite severe persecution; final recog. by Constantine. Council of Nicaea, 325; Athanasius upheld agst. Arianism. Fathers of Church (St. Augustine). Rom. Emp. divided 395; West. Emp. (Africa, Cent. and W. Eur.), Eastern (Byzantine Emp.) Balkans, Asia Minor, Egypt, Constantinople. *MIDDLE-AGES:* migration of peoples. Invasion of Germanic tribes (Goths, Vandals, Lombards, Franks) into Balkans, thr. It. and Sp. to Gothic Conq. of Rome by Odoacer, 476; formation of Frankish Emp. on Rhine by Clovis, 486. Decay of Western, advance of Eastern, Rom. Emp. Consolidation of Christianity (Patriarchs of Rome, later Popes; Gregory the Great, d. 604). Foundation of Islam by Mohammed, 622; spread by force of arms thr. Asia Minor, Pers., and N. coast of Afr. Arab Emp. (Caliphate) in Near East; caps. Damascus and Bagdad. Invasion of Sp., 711; wars with Visigoths. Arabian (Moor-

ish) art and science prominent factor in civilis. of Mid. A.: Union of Germanic peoples by Charlemagne, Kg. of Franks. His crt. a centre of intellectual activity. Evangelisation of Eur. Divis. of Empire under Charlemagne's successors; formation of Fr. and Ger. Basis of mediaeval State: Feudal system, chivalry, hered. and milit. nobility. Rise of Holy Roman Emp. under Saxon and Frankish Emps. (919-1125). Formation of States by neighbouring peoples of Eur.: Pol., Bohemia, Hung., etc. Rise of other Eur. States; Eng. (under Norman rule from 1066); Russ. converted to Christianity (988) by missionaries from Byzantium, cap. of still powerful East. Rom. Emp. Development of city States in It. (Venice, Genoa, Pisa). Important trade centres, relations with East. Rise of citizen (burgher) class, first in It., later in N. countries; gilds. Independence of eccles. and secular princes (principalities, territorial States). Crusades by Germanic and Latin nations. Crt. of Frederick II in Palermo, centre of culture. Colonisation of Eur. E. of the Elbe, crusades agst. heathen Pruss.; State of the Teutonic Order (Marienburg). Dissension betw. eccles. and civil power; Papacy failed to gain temporal power in W. Eur. In Fr. victory of monarchy over separate principalities; centralisation; cultural hegemony of W. Eur. Rivalry of Habsburgs (Ger.) and Valois (Fr.), end of 15th cent. At the same time, growing power of E. Eur.: Turk. invasion, fall of Byzantine Emp. It.'s intellectual leadership in Eur.; secularisation of Papacy. Precursors of Reformation: Wycliffe, Huss. Polit. reformers: William of Occam, Marsiglio of Padua. Decay of Feudal system. Struggle for power in cities betw. ruling families and rising merchant and artisan classes. Beginning of social movements, peasant revolts; leagues betw. cities. Increase of power of territorial princes. Attempts of Maximilian I at constitutional reform. MODERN HISTORY: *revolu. inventions at close of Mid. A.*: Gunpowder changed aspect of war; end of chivalry, use of mercenaries, later, standing armies; printing made literature more widely accessible, rendering spread of Reformation possible. Voyages of discovery changed the conception of world, bringing about new econ. conditions resulting from enlarged field of colonisation. Columbus (Amer.), Vasco da Gama (round Africa to India). Humanism, orig. in It. (Petrarch). Classical revival (Renaissance); flourishing period of art; beginnings of mod. science. Reformation (Luther, Zwingli, Calvin), cause of religious wars throughout Eur. Philip II of Sp. supported by wealth of his colonies, chief adversary of Reformation. Struggle of Netherlands for freedom. Thirty Years' War caused Ger. to lose her position

as a world power for centuries. Rise of Fr. as centralised absolute monarchy (Louis XIV). Eng. leading naval power, after Great Rebellion (Cromwell). Rise of Brandenburg-Prussia while Aus. defended herself agst. Turk. invasion. Swed. hegemony in N. overthrown by Russ. (Peter the Great). Period of enlightenment: wars betw. Pruss. under Frederick the Great and Aus. (Silesian Wars). Invention of the steam engine 1769; dawn industrialism. Eng. a world power; conq. of Fr. colonies in Amer. Separation of the U.S.A. (Washington). Financial disorganisation and mal-administration by nobility brought abt. Fr. Revol. (1789). Rise of bourgeoisie (*tiers état*). Beginning of democratic constitutions. Napoleon's efforts to create a Eur. Emp. thwarted by unanimous resistance of legitimist Eur. Rising agst. Napoleon's military rule in Sp., Port., and the Tyrol, 1808-09. Wars of Liberation, 1813-14; Congress of Vienna; attempt to restore former polit. constitution in Eur., 1815. RECENT TIMES: Indus. revol. increasing mechanisation of production; techn. improvements: blast furnaces, coke, etc.; creation of industr. proletariat. Social movements. Period of Eur. rly: construction. Restoration period (Metternich). Constitutional struggles in almost all States. Independence of Amer. Colonies of Sp. 1810-25 (Simon Bolivar). "July Revolution" in Paris, 1830, end of Charles X's attempts to restore absolute monarchy. Belg. revol., 1830; separation from Holland, indep. kgdom. Fall of Louis Philippe (Paris revol., Feb., 1848). France a Repub.; Pres.; Pr. Louis Napoleon, Emp., 1852 (Napoleon III). Revol. movements all over Eur. Revol. in Berlin, Mar., 1848. Constitutions granted in Prussia, Austria, Italy, etc. Period of reaction. Crimean War (Eng., Fr., and Turk. agst. Russ.) 1854-56. Beginnings of Ital. unity, 1858 (Cavour). Fr. and Sardinia unite agst. Aus., 1859; Kgdm. of It. (Victor Emmanuel II). Constitutional and nationalist struggles in Aus. (Magyars, Slavs); Aus.-Hung. agreements, 1867. Ger. unity under Pruss. leadership (Bismarck); war with Aus., 1866; (expulsion of Aus. from Ger. Confed.). Franco-Prussian War, 1870-71. Ger. Emp. under Wilhelm I of Pruss. Fall of Napoleon III; 3rd French Repub. Period of Imperialism and class warfare. Bismarck's policy of alliances; union of the 3 Emperors: Aus., Ger., Russia. Russo-Turk. War, 1878-79; Congress of Berlin, 1879. Russ. dissatisfied. Alliance of Ger. and Aus., 1879; inclusion of It., 1882. Re-insurance Treaty with Russ., 1887. Ger. colonisation imp. economic factor. Rise of labouring classes to polit. power. Anglo-Ger. rapprochement by Heligoland-Zanzibar Treaty, 1890. Non-renewal of Ger.

re-insurance treaty with Russ. leading to negotiations betw. Russ. and Fr. (1891). Awakening of the East; Chin.-Jap. War, 1894-95. Entry of U.S.A. into world polit.; beginning of tension betw. Gr. Brit. and Ger.; failure of negot. for an alliance, 1898-1901. Triple Entente (Fr., Gt. Brit., Russ.). Russo-Jap. War (1904-05). Jap. supreme in Far East. World War (*q.v.*), 1914-18. POST-WAR PERIOD: Econ. and monetary crises a consequence of war, during wh. overseas producers of raw materials had laid down their own manuf. plants. Eur. econ. supremacy disappearing. Russ. revltn. estab. by expuls. of last White gen., Wrangel. Fr. leading milit. power. Kuo-ming-tang carry through Chinese revltn. Fascism in Italy (1922). Bourbons expelled in Sp. 1931. Nazi revltn. in Germany, 1933. Unemployment cont. increasing outside Russ.; est. (1932) 30,000,000 unemployed.

**World market:** see MARKET. **World Monetary and Economic Conference**, London, 1933, under pres. Ramsay MacDonald, 66 nations represented; obj. to restore internatl. trade and stabilise exchanges; proposal to give 5 or 6 nats. power to control exch. rates vetoed by U.S.A. on grounds of objection to gold standard and intention to devaluate dollar acc. to U.S. internal needs.

**World War, 1914-18. Introductory:** Factors tending to Europ. conflict were the militarisation of Ger. together with her need for colon. expansion and sea-power, bringing her into rivalry with Gt. Brit.; mutual mistrust of Fr. and Ger., result of War of 1870 and annexation of Alsace-Lorraine; conflicting interests in Near East (Aus. and Russ.); internal troubles of Aus., discontent of Slav. subjects; irredenta question (Aus. and It.); grouping of Powers into two camps: Ger., Aus., and It. in Triple Alliance; Eng., Fr., and Russ. in Triple Entente (Eng. also in alliance with Jap.). Ger. influenced by Eng. embarrassments in Ire. *Outbreak of War*, 28 June, 1914, Archduke Franz Ferdinand of Aus. assass. at Sarajevo, Bosnia, by Serb.; Aus. sent ultimatum to Serb. and, professing to find reply inadequate, declared war July 28. Russ. mobilised; Ger. sent ultimatums to Russ., and Fr., mobilised, and declared war on Russ. Aug. 1 and Fr. Aug. 3. On July 26 Eng. proposed confer. of Eng., Fr., Ger., and It.; Ger. refused. On July 31 Eng. asked Fr. and Ger. to guarantee Belg. neutrality. On Aug. 4, Ger. having invaded Belg., Brit. sent ultimatum, non-acceptance of wh. meant a state of war at midnight. *Operations. 1914:* Their plan being to crush Fr. before dealing with Russ., Ger., after brief checks before Liège and Namur, advanced rapidly thr. Belgium. Fr. forces sent agst. them driven back to line Paris-Verdun.

Brit. expeditionary force, under Sir John French, supporting left wing, meet Germans at Mons; retreat to near Paris, Smith-Dorrien fighting fine rearguard action at Le Cateau. Sept. 6-13, battle of the Marne; German retreat to behind Riv. Aisne. Outflanking efforts on both sides extended line to sea; on E. it reached Swiss frontier. Beginning of trench warfare. Brit. naval div. sent to Antwerp, wh. fell Sept. 9. Ger. attempt to break Brit. line at Ypres. Oct.-Nov. Russ. invaded E. Prussia; def. at Tannenberg Aug. 31, by Hindenburg and Ludendorff, who advanced to Niemen. In Aus., Russ. took Lemberg Sept. 3 and occup. most of Galicia. Aus. invasion of Serbia repulsed. Turkey entered war on Ger. side; and closed Dardanelles. *At sea:* Battle of Heligoland Bight, Aug. 28. Intensive mine-laying and beginning of submarine warfare by Ger. Escape of "Goeben" and "Breslau" to Constantinople. Defeat of Cradock by von Spee at Coronel, Nov. 4th; of von Spee by Sturdee, at Falkland Isls. Dec. 4. Capture of Tsingtao by Jap. (who had declared war Aug. 23) Nov. 7. 1915: On W. front, trench warfare. Attempts to break enemy line: Neuve-Chapelle, Mar. 10-13; Hill 60, Apr. 17-22, followed by Ger. counter-attack (2nd battle of Ypres), Apr. 22-May 25, when Ger. first used poison gas; Festubert, May 15-25; Loos, Sept. 25-Oct. 8. In Dec. Sir John French succeeded by Sir Douglas Haig in Brit. command. Russia, short of munitions, lost ground on both fronts. After an unsuccessful naval attack in Dardanelles, a milit. force, incl. Australians and New Zealanders (Anzacs) sent to Gallipoli; two landings effected but main attack failed and force withdrawn at end of year. It. joined Allies, May 25, and Bulg. declared war (Oct. 14) on Serb., wh., invaded by Mackensen, was practically destroyed. Allies established base at Salonica. Brit. forces, advancing on Bagdad, besieged in Kut. *At sea:* Brit. raid on Ger. battle-cruiser squadron at Dogger Bank Jan. 23. Intensified U-boat (submarine) warfare by Ger.; sinking of neutral shipping, including "Lusitania," May 7. Eng. countered by increasing severity of blockade. 1916: Conscriptio intro. in Eng., Feb. Ger. attack on Verdun, commenced Feb. 21. Brit. counter-offensive on Somme, July 1; first use of tanks. Renewed Russ. offensive agst. Aus. Rum. entered war and invaded Transylvania; checked by Ger. under Falkenhayn and Mackensen, and Rum. invaded. Surrender of Kut, Apr. 29. Ger. E. Afr. (Tanganyika) conq. by S. Afr. and Ind. troops under Smuts. First air-raids on Eng. In Dec. Asquith resigned and Lloyd George became Pr. Min. *At sea:* Battle of Jutland, May 31-June 1, British victory, but Ger.

Grand Fleet escaped into mine-fields. 1917: Ger. commenced unrestricted U-boat campaign, Jan. 31; Amer. entered war, Apr. 5. First Russ. revol. (Kerensky), Mar.; offensive agst. Aus., July, but defection of Russ. troops; Bolshevik *coup d'état*, Nov. During winter Ger. line had been withdrawn to Arras-Laon. Unsuccessful Fr. offensive in Champagne, Apr., followed by mutiny in Fr. army and supersession of Nivelle by Pétain as c.-in-c. Brit. victory at Messines, June, foll. by long-drawn battle of Passchendaele. "Tank battle" of Cambrai, Nov.-Dec. Ital. collapse at Caporetto, Oct. 25; withdrawal to Piave. Abdic. of Kg. Constantine and entry of Gr. on side of Allies, June. Bagdad taken Mar. 11. 1918: Russ. and Rumania out of war (treaties of Brest-Litovsk, Mar. 3, Bukarest, May 7). Ger. prepares great offensive on W. front. Second battle of the Somme, Mar. 21-28; Brit. retreat. Foch appointed c.-in-c. of Allied forces. Battle of the Lys, Apr. 9. Arrival of first Amer. troops, and destruction of submarine bases at Ostend and Zeebrugge. Apr.: third Ger. offensive (Soissons-Reims line), May 27: advance checked at Château-Thierry. Unsuccessful offensive at Reims July 15, foll. by Fr. counter-attack (second battle of Marne). General allied advance began Aug. 8 (battle of Amiens), culminating in breaking of Hindenburg Line at end of Sept. Faced with defeat, and with internal troubles owing to failure of food supplies, Ger. approached Pres. Wilson, who agreed to negotiation on basis of his Fourteen Points (*q.v.*). Their allies were collapsing; Bulg. invaded by joint army, obtained armistice, Sept. 30; Turk., after fall of Damascus, Aleppo, and Mosul, Oct. 30; Aus., attacked by It. Nov. 3. On the W. front Allies still advanced, Cambrai falling Oct. 10. Ludendorff resigned command Oct. 27; mutiny in Ger. Navy and gen. strike at Hamburg, Oct.-Nov.; revol. in Berlin and flight of Kaiser to Holland, Nov. 9. Armistice signed, Nov. 11, on condition of evacuation of all territory W. of Rhine, surrender of Ger. fleet and an effective quantity of guns and munitions. See also VER-SAILLES, TREATY OF.

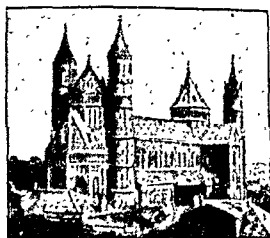
**Worm**, 1) (tech.) screw cut so as to gear with toothed wheel, forming *W.-gear*, useful bec. direct. of drive is altered by a rt.-angle, and bec. very high ratio (up to 1:20) can be used to reduce speed of high speed motors (electric, steam turbine) and to incr. speed, as in gramophone governor. 2) Invertebrate animal having, generally, a soft, long, and, usually, jointed body; e.g., earth-worm, lug-worm, tape-worm, thread-worm. **W.-conveyor**, **w.-feed**, screw of a few turns, with very deep threads, revolving in a tube or trough, pushes powder or paste forward; used in domestic mincer, for corn, flour,

cement, etc. **W. seed**, 1) the tiny fruit of *Chenopodium ambrosioides*, plant native to U.S.A. and Centr. Amer., contains volatile oil (oil of chenopodium) used to expel worms in children. 2) *Santonica*, dried unexpanded flower heads of *Artemisia maritima*, small plant growing in Eur. and Asia; contains *Santonin*, widely used to expel round worms.

**Wormwood**, *Artemisia absinthium*, bitter herb, wild and cultivated; Worm- downy leaves and yellow flowers, used wood in manuf. of absinthe, vermouth, etc. Found in temperate regions of Eur. and N. America.

**Worms**, city, Hesse-Darmstadt, Ger., on the Rhine; pop., 49,000; cathed. (11th-cent.),

Luther memorial; leather works, breweries, vineyards (*Liebfraumlilch*). Traditionally connected with the Nibelungs. *Concordat of W.* closed investiture controversy (*q.v.*), 1122; "perpetual peace" proclaimed by Maximilian, 1495; at *Diet of W.* (1521) Luther appeared before Charles V; burnt by the French, 1689; French terr., 1801-15.



Worms, Cathedral

**Wormwood Scrubs**, open space in W. London, bor. of Hammersmith; here is a large prison, for male convicts, built in 19th cent. by Sir Edmund Du Cane on "separate block system." See PRISON.

**Worship**, 1) honour, dignity ("a man of great worship"); 2) veneration and adoration accorded only to a deity; relig. observances; 3) intense admiration or respect felt for any person or thing; 4) conventional formula of respect in addressing a magistrate or mayor.

**Worsted**, fine twisted yarn of long staple; cloth from long combed wools.

**Wort**, in brewing, infusion of malt bef. fermentation in the making of beer.

**Wörth**, vill., Lower Alsace, on the Sauer; Ger. victory over the French under MacMahon, 1870.

**Wörther See**, lake, Carinthia, Austria; 7 sq.m.; 1,445 ft. abv. sea-lvl.; power station.

**Worthing**, bor. and seaside resort, W. Sussex, Eng.; pop., 46,200.

**Worthington pump**, (mechan.) direct acting pump for water, operated by steam pressure, wh. is greatest at beginning of stroke, excess power being used to compress air in oscillating cylinders, and being given out again in latter part of stroke.

**Wotan**: see WODEN.

**Wound-wort**, *Stachys sylvatica*, labiate



wild plant, hairy stem, c. 3 ft. high, purple flowers, nauseous odour; **marsh w.**, (*S. palustris*), is taller and with paler flowers; **corn w.** (*S. arvensis*) grows c. 6 in. high. Used in folk med. for gout, to stop bleeding and heal wounds, etc.

**Wouwerman**, Philip (1619-68), Dut. painter and etcher.

**W.R.**, abbr. West Riding (of Yorkshire.)

**Wrangel**, Peter Nikolaievich, Bn. (1877-1928), Russ. gen. com. div. of Cossacks, 1915; led unsuccessful counter-revn. ("White Army") in Crimea, 1920.

**Wrangel Island**, in Arctic Ocean, sep. from N.E. Siberia by Long Str.; c. 1,820 sq.m.; pop., 60 (Chukchees, Esquimaux, Russ.); trapping, fishing. Claimed for the U.S.A., 1881; since 1924 for U.S.S.R.

**Wrangler**, in Cambridge Univ., gainer of 1st class in mathematical tripos (*q.v.*); **senior w.**: holder of 1st place in 1st class; this individ. order of merit abolished, 1909.

**Wrap**, Brit. linear meas., 10 yds.; 7 wraps = 1 hank of worsted.

**Wrasse**, thick-lipped marine fish of the family *Labridae*. Body covered with cycloid scales; teeth or jaws conical, those on lower pharyngeal-bones are adapted to crush shells of molluscs and crustaceans; colours frequently brilliant. **Ballan w.**, **cook w.**, and **cork-wing w.** are common on British coasts, and range from 6 to 18 in. in length. Many vividly coloured tropical species live among the coral reefs.

**Wrath, Cape**, headland (300 ft.), extreme N.W. of Scotland.

**Wratislav**, Kg. of Bohemia, 1061-92.

**Wrekin**, The, isolated hill, Shropshire, Eng.; (1,335 feet).

**Wren**, Sir Christopher (1632-1723), Eng. scientist and archit.; prof. of astronomy, Oxford (1660); surveyor-gen. (1669); rebuilt St. Paul's and many City churches after Gt. Fire; also Monument; Chelsea Hosp.; Sheldonian Theatre, Oxford; pres. Roy. Soc., 1680.

**Wren**, very small brown passerine bird, common all over Britain and more or less throughout Europe. Has a loud, short, cheerful song which may be heard for greater part of year. Mainly insect-feeder, but also eats small seeds and berries in winter. Builds beautiful dome-shaped nest, with small side entrance, in ivy-covered banks, hedges, and similar situations.

**Wrestling**, sport in wh. 2 pers. try to throw each other to the ground; a feature in games of anc. Gr.; still practised in var. parts of Gt. Brit. under diff. rules, e.g. Cumberland, Cornwall, and Devon, Catch-as-Catch-can, and Graeco-Roman (*q.v.*).

**Wrexham**, mun. bor. and mkt. tn., Denbighsh., N. Wales; pop., 18,600. Burial-place of Elihu Yale, benefactor of Yale University.

**Wright, Sir Almroth**

(1861- ), Brit. bacteriol.; introd. inoculation agst. typhoid; consulting physician to B. E. F., 1914-19.

**W., Joseph** (1855-1930), Eng. philologist; auth. of *English Dialect Grammar*, 1905, etc., and ed. of *English Dialect Dictionary*, 6 vols., 1898-1905. **W., Orville** (1870- ), and his bro. **Wilbur** (1867-1912), pioneer aviators (biplanes); see AVIATION. **W. Field**, aerodrome, Dayton, Ohio, U.S.A.; named after the Wright Brothers.

**Wringer**, machine for pressing water out of wet linen betw. two rotating cylinders of wood (often covd. with rubber), and pressed together by springs. **Mangle**, small type of W. for domestic use.

**Wrist**, joint which connects the forearm and hand; contains eight carpal bones in two rows: four next to the forearm, the scaphoid, semilunar, cuneiform, and pisiform; four next to the hand: the trapezium, trapezoid, os magnum and unciform.

**Writ**, order from Crown to elect members of Hse. of Com.; also order from a crt., esp. one requiring attendance for purp. of defending legal proceedings. **W. of execution**, authority granted by the crt. to levy execution (*q.v.*) for enforcement of its judgment.

**Writer to the Signet. (W.S.)**, pers. performing, in Supreme Ct. of Scot., duties similar to those of solicitor and attorney in England. **W.'s cramp**, an occupational neurosis (*q.v.*) characterised by spasms or muscular convulsions and pain in fingers and arm; caused by over-strain and adoption of faulty writing position.

**Writing-down**, ascription of lower value to assets in a company's balance sheet to allow for depreciation, etc. **W.-d. of capital**: see CAPITAL REORGANISATION.

**Writing off**, (book-keeping) reduction in value of cert. assets as they appear in books of a company for purpose of arriving at actual or presumed reduction in value of assets (esp. machinery, bldgs.) due to depreciation or fall in market value; goodwill (*q.v.*) also freqtly. **written-off**.

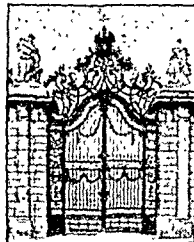
**Wrought iron**, malleable iron of fibrous structure with carbon content up to 1.6%; tough, pliable.



Greek Wrestlers



Sir Christopher Wren



Wrought-Iron Gate

**Wroxeter**, tn., Salop., Eng., on site of Roman Viroconium (capital of Cornovii); much of Roman work recently exposed by excavation; linked with London and Chester by Watling Street (*q.v.*); plundered by Saxons in 6th century.

**Wryneck**, small migrant bird regularly arriving in England in early April, often called the cuckoo's mate, both arriving about same time. Range over greater part of Europe and parts of Asia, wintering in trop. Africa. Name derived from its habit of twisting and turning its head.



Wryneck

**W.S.**, abbr. Writer to the Signet (*q.v.*).

**Wuchang**, cap. prov. of Hupeh, China, on the Yangtze-kiang; pop., 620,400.

**Wuchow**, port, prov. of Kwang-si, China, on the Si-kiang; pop., 93,700; treaty port.

**Wuhu**, tn., prov. of An-hwei, China, on the Yangtze-kiang; pop., 136,600; treaty port.

**Wulfenite**, yellow lead ore, a mineral compound of molybdic acid and lead oxide.

**Wundt**, Wilhelm (1832-1920), Ger. philos. and psychol.; *Psychology of Nations* (10 vols.); *Characteristics of Physiological Psychology*; etc.

**Wupper** (known in upper course as *Wip-per*), riv., Ger., right trib. of the Rhine, joining it 7 m. below Cologne; flows through industrial region; see WUPPERTAL. **Wuppertal**, industrl. tn. in Prussian Rhineland, formed (1920) by union of Elberfeld and Barmen, with Vohwinkel, Kronenberg, Ronsdorf, part of Lüttringhausen, etc.; pop., 415,750.

**Württemberg**, **Wurtemberg**, repub., Ger., betw. Bavaria and Baden; 7,532 sq.m.; pop., 2,600,000; includes part of Black Forest, Upper Swabia, Swabian Alb; drained by rivs. Neckar and Danube; agric.; vineyards; cattle-breeding, forestry; salt; iron. Cap., *Stuttgart*; univ. at Tübingen; chf. indust. tns. Heilbronn, Esslingen, Cannstadt, Reutlingen. Countyship, 11th cent.; duchy, 1495; kingdom, 1806; repub., 1918.

**Wurtz**, Charles Adolphe (1817-84), Fr. chemist; procured establ. of chair of organic chem. at Sorbonne, 1875.

**Würzburg**, city, Ger., cap. Lower Franconia, Bavaria, on the Main; pop., 98,000; bpric. since 741; 11th-cent. cathed.; cas.; univ.; baroque and rococo bldgs.; breweries, vineyards.

**Wurzen**, tn., Saxony, Ger., on the Mulde; pop., 19,000; cathed. (12th-cent.); machinery, carpet factories.

**Wuthering Heights**, novel by Emily Brontë. (Ellis Bell), 1846.

**W. Va.**, abbr. West Virginia.

**Wyandotte**, breed of domestic fowls: see POULTRY.

**Wyatt**, Sir Neumünster Church, Würzburg Thos. (c. 1503-42), English diplomat and poet; friendships with Anne Boleyn and Thos. Cromwell caused his imprisonment in Tower (1536-41); introd. Petrarchan sonnet-form into Eng., also wrote epigrams and satires. **W.'s Rebellion**, unsuccessful insurrection, Jan., 1554, against Qn. Mary in favour of Lady Jane Grey, led by Sir Thos. Wyatt the Younger (son of above), who was deserted by his followers and executed (Apr., 1554) on Tower Hill.

**Wycherley**, William (c. 1640-1716), Eng. playwright and courtier; m. Ctess. of Drogheda, c. 1680; imprisoned for debt but freed by Jas. II; noted for his profligacy; *Love in a Wood*, 1669; *The Plain Dealer*, 1674; *The Country Wife*, 1675; etc.

**Wycliffe**, John (c. 1325-84), Eng. philosopher, theologian, and reformer; rector of Lutterworth, Leics; freqtly. tried for heresy; made 1st complete trans. of Bible c. 1382.

**Wye**, riv., Wales and Eng.; rises in Plynlimmon; flows past Hereford and Monmouth into Severn estuary (Bristol Channel), 2 m. below Chepstow; fine scenery; length 130 m.

**Wyllie**, Wm. Lionel (1851-1931), Eng. painter, esp. of sea subjects; works include *Battle of the Nile*, 1899, Tate Gall.; pub. *J. M. W. Turner; London to the North*; etc.

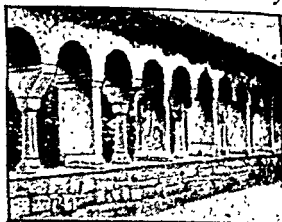
**Wyndham**, Sir Charles (1837-1919), Eng. actor; 1st appd. London, 1862; served in Federal Army, U.S.A., as brigade surgeon; returned to London stage, 1866; acquired Criterion Theatre, 1873; opened Wyndham's Theatre, 1899; New Theatre, 1903; remembered esp. for his repres. of Chas. Surface and David Garrick.

**Wynfrith**: see BONIFACE.

**Wyo.**, abbr. Wyoming.

**Wyoming**, ("Equality") State, U.S.A., traversed by Rocky Mtns.; 47,914 sq.m.; pop., 224,000; agric. by artif. irrigation; sheep farming; coal mines; cap., *Cheyenne*.

**Wyttschaete**, mkt. tn., Belgium, nr. Ypres, E. of Kemmel Hill. Captured from Germans by British in battle of Messines, 1917.



# X

**X**, Rom. numeral 10; (math.). 1st unknown quantity. (chem.) Symb. of xenon (*q.v.*).

**X-rays**: see RÖNTGEN RAYS.

**Xanthi**, tn., Thrace, Greece; pop., 33,725; carpet weaving, trade in Yenidje tobacco.

**Xanthippe**, wife of Socrates (*q.v.*). Taken as prototype of shrewish woman.

**Xavier**, St. Francis (1506-52), Jesuit missionary, companion of Ignatius Loyola (*q.v.*), Ap. of the Indies; 1st missionary to Far East.

**Xe**, chem. symbol of xenon.

**Xebec**, small, three-masted vessel used in the Mediterranean, square rigged on the main, and lateen (*q.v.*) on the fore and mizen masts; see RIGGING.

**Xenion** (Gr.), "guest's present," biting poems, esp. distichs by Schiller and Goethe (from epigrams of Martial) agst. contempy. authors.

**Xenon**, (chem.) element, sym. X; at. wt. 131.3; rare gas in air in sm. quantities.

**Xenophanes** (c. 560-470 B.C.), Gr. philos.; fndd. Eleatic school (*q.v.*).

**Xenophobia** (Gr.), hate, fear of strangers; distrust or dislike of foreigners.

**Xenophon** (c. 430-354 B.C.), Gr. histor.; com. Gr. troops in exped. of Cyrus the Younger; described march in *Anabasis*; wrote of Socrates in *Memorabilia*.

**Xerophytes**, plants wh. can subsist with

a small amount of moisture; desert plants, such as cacti (*q.v.*).

**Xerxes**, Pers. kg. (485-465 B.C.), led expedition agst. Gr.; deft. at Salamis (*q.v.*), 480 B.C. See PERSIAN WARS.

**Ximenez de Cisneros**, Francisco (1436-1517), Span. statesm., Abp. of Toledo.

**Xingu**, riv., (c. 1,240 m.) Brazil, S. Amer.; rises in Matto Grosso plateau and enters Amazon; nvgl. c. 120 miles.

**Xylography**, the art of wood-engraving (*q.v.*). **Xylogy**, science of woods and their fibrous structures.

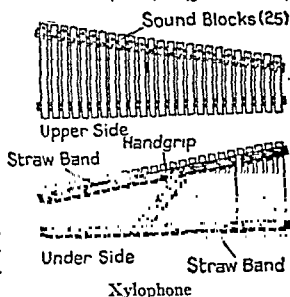
**Xylol**, **xylene**,  $C_6H_4(CH_3)_2$  (3 isomers)

(*dimethylbenzine*), derivative of benzenes found in coal and wood tar used as solvents.

B.p. of ortho-X,  $142^\circ$ ; para-X,  $138^\circ$ ; meta-X,  $139^\circ$ . Difficult to separate.

**Xylonite**, a variety of celluloid (*q.v.*).

**Xylophone**, percussive instr. consisting of wood blocks tuned to the scale and played with hammers.



# Y

**Y**, (chem.) symbol of yttrium; (math.) 2nd unknown or variable quantity. **Y-bacillus**, y-shaped bacillus, one of the types of dysentery bacillus.

**Y**, **The**, S.W. inlet of Zuider Zee; largely drained; Amsterdam lies on S. shore. N. Sea Canal to Ymuiden.

**Yablonoi** ("Apple Mtns."), mtn. chain, S.E. Siberia, U.S.S.R., near Mongolian frontier; Transbaikalian plateau, 5,270 ft. abv. sea-lvl.; gold and other rich deposits.

**Yacht**, orig. a single-masted, decked-in sailing-boat, for sporting purposes; later name also applied to larger craft (steam yachts, motor yachts). For racing purposes yachts are now rated accdg. to length, beam, girth, and sail-area. *Classes*: for **schooners** and **yawls** over 23 mtrs. rating (time allowance, 4 secs. per mtr. per m.); 10 classes for **cutters** of 23, 19, 15, 12, 10, 9, 8, 7, 6 and 5 mtrs. rating (no time allowance). Cf. AMERICA CUP, and see Ill., RIGGING.

**Yahoo**, in *Gulliver's Travels* (q.v.), animal of human form, but having brutish intellect and passions.

**Yahrzeit** (Yiddish), Jew. term for anniversary of death of a parent, when surviving sons take part in a synagogue service; see KADDISH.

**Yahveh**: see JEHOVAH.

**Yaila Mountains**, range, S.E. Crimea, A.S.S.R. (Chatyr-Dagh, 5,350 ft.); sub-tropical flora on S. slopes; northern slopes treeless.

**Yak**, long-haired, ox-like ungulate of Tibet; utilised by inhabitants of those highlands and arid regions as a means of transport, and for its flesh, milk, and hide. Also known as the *grunting ox*, from its strong, grunting cry.

**Yakuts**, Turkish Tatars of N.E. Siberia, nomads (c. 250,000) with reindeer herds.

**Yakutsk**, 1) auton. Soc. Sov. Repub., N.E. Siberia; c. 1,520,000 sq.m.; pop., c. 288,000 (Yakuts, 87%, Tungus, and Russ.); furs, mammoth ivory; gold and silver mines. Least explored area in Russia, and has cost lives of many scientists. Av. Jan. temp. —46° Fahrenheit. 2) Cap. of the prov., on bank of Riv. Lena; pop., 10,590; soil frozen all the year.



Yak

**Yale University**, New Haven, Conn., U.S.A.; orig. Collegiate School of Connecticut, fndd. 1701, owing to relig. and polit. differences with Massachusetts, which led to secession from Harvard (q.v.). Establ. at New Haven and named *Yale College* (1718), after Elihu Yale (d. 1721), who gave donation to school of books and money. Received new charter, 1745, and title of univ., 1887. There are 77 bldgs., Connecticut Hall (1752) being the only one dating from 18th cent. now existing.

**Yalta**, port, S.E. coast Crimean S.S.R.; pop., 28,850; fashionable health resort.

**Yalu**, **Yalu-kiang**, riv. (310 m.) Korea, forming boundary with Manchuria; rises in Pepi-shan, falls into Korea Bay. Scene of two Jap. victories (one naval) over the Chinese, 1894; 2 land victories over the Russians, 1904.

**Yam**, edible tubers of various tropical plants.

**Yana**, riv. (720 m.), Russ., Centr. Siberia, rises in Verkhoyansk mtns., and falls into Arctic Sea.

**Yanaon**, smallest Fr. colony (5 sq.m.), India, in Godavari delta; port; pop., 5,250.

**Yangtze-kiang**, **Ch'ang-kiang**, most import. riv. in China and 4th longest in the world (c. 3,000 m., 1,700 nvgbl. for steamers); rises in E. slopes of Tibetan plateau and empties into Yellow Sea; in places falls 8 ft. in 1 m.; last 200 m. almost a dead level; subject to severe floods.

**Yankee**, **Yank**, nickname for citizens of New Eng. or N. States., applied to all inhabitants of U.S.A. **Yankee-Doodle**, song pop. in pre-revolutionary times, regarded as one of nat. airs of U.S.A.

**Yannina**, **Jannina**, 1) tn., Epirus, N. Greece; pop., 20,490; 2) dist., pop., 181,000; olives, currants, gold and silver brocade. Scene of heavy Turkish defeat in Balkan war, 1912.

**Yap**, isl., Caroline group, N. Pacific; 87 sq.m.; pop., 7,750; cable station. Formerly Ger.; since World War under Jap. mandate.

**Yard**, 1) (meas.) Brit. and U.S. linear meas., 3 feet. **Sq. yard**, Brit. and U.S. sq. meas., 9 sq. feet. 2) (Naut.) Long solid cylindrical timber, tapering towards each end, slung cross-wise to a mast for purpose of extending a sail. **Lateen y.**, is suspended

obliquely for extending a lateen (triangular) sail; **square y.**, suspended at right angles to the mast for extending square sails. **Yard-arm**, that portion at each end of the Y. outside the sheave-poles through which the sheets (q.v.) are reeved. See **ILL.**, **RIGGING**.

**Yarkand**, tn. in oasis of Sin-kiang, Chin. Turkestan, Asia; pop., 200,000; carpet-making, leather manuf.; silk trade.

**Yarmouth**, 1) or **Great Yarmouth**, co. bor. and seapt. tn., Norfolk, Eng., at mouth of Riv. Yare; pop., 56,800; great fishing centre; popular holiday resort.



Bridge and Town Hall, Great Yarmouth

2) Seapt. on N. coast of Isle of Wight; pop., 900; ferry to Lymington (Hants). 3) Seapt., W. extremity Nova Scotia; pop., 7,100.

**Yarn**, thread made by spinning, used for textile fabrics and needlework; several twisted together to make thicker thread and string.

**Yaroslavl**, chf. tn. of Y. prov., Russ. S.F.S.R. (c. 12,340 sq.m.; pop., 1,340,300), on Riv. Volga; pop., 114,275; rly. junct.; cotton, chemical and leather indus. Oldest tn. on Volga, fndd. 1024.

**Yarra Yarra**, riv. (90 m.), Victoria, Australia; flows from Great Dividing Range past Melbourne into Port Phillip Bay.

**Yarrow**, Sir Alfred (1842-1932), British engineer and shipbuilder. Boiler of his name used in most navies. Baronet, 1916.

**Yarrow**, riv. (15 m.), Selkirksh., Scot.; flows from St. Mary's Loch through Yarrow Vall. (celebrated in Scot. song) to conflu. with Riv. Ettrick (q.v.), above Selkirk; combined streams flow into Riv. Tweed.

**Yarrow**, milfoil, *Achillea millefolium*; wild flower c. 12 in. high; clusters of small white or pinkish blossoms. Used in folk med. as a tonic and diaphoretic. Sneezewort, *A. plarnica*, larger white flowers, so-called because dried and powdered leaves were formerly used as snuff.



Yarrow

**Yashmak**, long, triangular veil covering the face, except the eyes, and reaching nearly to the ground; worn by Moslem women in public, but now discontinued in Turkey.

**Yasna** (Pers.: Prayer); see **AVESTA**.

**Yasnaya Polyana**, Russian vill. near Tula-Orel rly., c. 128 m. S. of Moscow; b.-place of Tolstoy (museum and tomb).

**Yataghan**, short curved oriental sword.

**Yaw**, (naut.) to steer ship out of her course; movement of vessel by wh. she temporarily alters her course.

**Yawl**, small sailing-vessel, cutter-rigged with a jigger-mast. See **ILL.**, **RIGGING**.

**Yaws**: see **FRAMBOESIA**.

**Yb**, (chem.) symbol of ytterbium (q.v.).

**Y.C.**, abbr. Yale College (U.S.A.).

**Year**, term commonly used for nearest practicable approximation to the period occupied by the earth in its revolution around the sun. **Calendar y.**, acc. to Gregorian Calendar (q.v.), is 365 days, with Leap Year (q.v.) of 366 days; variously computed by various calendars. **Equinoctial, solar, or tropical y.**, period occupied by one complete journey of the earth through the ecliptic (q.v.), 365.2422 days. **Sidereal (q.v.) y.**, 365.25636 days. **Anomalistic y.**, period from perihelion (q.v.) to perihelion, 365.25964 days. **Lunar y.**, period occupied by 12 lunar months (q.v.). **Y. of Confusion**, the first year of the Julian Calendar (q.v.), which contained 445 days. See **CALENDAR**.

**Yeast**, substance consisting of a number of micro-organisms; ordinary yeast is *Saccharomyces cerevisiae*; ferments sugar, forming alcohol and carbonic acid, used in indust., where fermentation is reqd., and in bread-making. Contains vitamins B<sub>1</sub> and B<sub>2</sub>. Used medicinally for skin diseases and the treatment of beri-beri.

**Yeats**, William Butler (1865- ), Irish poet; Senator of Irish Free State from 1922 to 1928. Greatly influenced intellectual life of his time; led movement to establ. Irish Theatre (Abbey T.) in Dublin; fndr. of Irish Lit. Soc.; Nobel Prize (Lit.), 1923. Poems: *Wind Among the Reeds*; *Secret Rose*; plays: *Countess Cathleen*; *Land of Heart's Desire*; essays: *Cutting of an Agate*; *Per Amica Silentia Luna*.



W. B. Yeats

**Yedo**, name of Tokyo (q.v.) until 1868.

**Yelsk**, Russ. port on Sea of Azov; pop., 38,140; sulphur springs.

**Yellow fever**, infectious tropical disease causing fever and jaundice; virus transmitted by a mosquito. **Y. hammer**, *y. bunling*, a common British finch, frequenting agric. land and commons, feeding on insects in summer, and seeds of various weeds at other seasons. In winter assemble in flocks and frequent vicinity of farmsheds. See also **BUNTING**. **Y. pine**, timber from various American pines, such as *P. echinata* and *P. arizonica*; durable wood, suitable for ship- and boat-building. **Y. press**, applied collectively to newspapers of sensational and jingoistic type. **Y. River**, **Hwang-ho**, 2nd longest riv. in China (c. 2,600 m.), rises in Tibet and flows into Gulf of Pe-chih-li; liable to floods; nvgl. for short distance only. **Y. Sea**, **Hwang-hai**, betw. China and Korea, so known because of its colour; shallow and partly silted up. **Y. spot**, *macula*, point of sharpest vision on the retina

of the eye, immediately opposite the centre of the pupil.

**Yellowstone Falls**, on Y. Riv. in Montana, U.S.A. Upper Falls, 110 ft.; Lower Falls, 310 feet. **Yellowstone National Park**, on Y. Riv., trib. of Missouri; in N.W. corner of Wyoming, 3,400 sq.m.; geysers, boiling springs; volcanoes; lakes, waterfalls; bird and animal preserve (elk, bison, wolves, panthers); Grand Canyon of Y. (1,000 ft. deep); nat. park since 1872. **Y. River**, right trib. of Missouri Riv., Montana, U.S.A., 800 miles. **Y. Trail**, highway from Plymouth Rock, on Atlantic, to Seattle, on Puget Sound, U.S.A.; 3,400 miles.

**Yemen**, indept. State, Red Sea coast, S.W. Arabia, betw. Asir (N.) and Aden Protectorate (S.); ruled by Imam; c. 75,000 sq.m.; pop., c. 3,500,000. Coastal plain barren; inland plateau of El Jebel produces coffee, millet, wheat; exports hides and skins, coffee, sesame; cap., *Sana*; ports: Hodeida, Mokha.

**Yen**, Jap. gold coin, money of account and monetary unit, = 100 sen (*q.v.*), or c. 2s. 0½d. (\$.49).

**Yeng-pyen**, tn. in N. Korea; pop., 185,600; paper mills, iron mines.

**Yenisei**, riv. (c. 2,700 m.), Asiatic Russia, rises from junct. of Bei Khem and Chua Khem, N.W. Mongolia, flows N.E. into Arctic Ocean; fed by sev. tribs.; chf. port, Igarka. **Yeniseisk**, tn., Siberian area, Russ. S.F.S.R., on Riv. Yenisei; pop., 11,309; gold mines; fisheries and fur-trade.

**Yeoman**, in the Mid. Ages, a free farmer, as distinct from a serf. **Y. of signals**, in the Royal Navy, petty officer (*q.v.*) in charge of signalling. **Yeomanry**, in Brit. Army, the cavalry or mounted infantry of the Territorial Army.

**Yeoman of the Guard**, bodyguard of the Eng. sovereign (inst. 1485) consisting of 100 men officered by retired army officers of military and social distinction. Like the warders of the Tower, who wear the same Tudor uniform, they are popularly called Beefeaters. See also GENTLEMEN AT ARMS.

**Yeovil**, bor., Somerset, Eng., on Riv. Yeo; Perp. ch., 15th cent. tower; glove-making; dairy-farming, pop., 19,100.

**Yerba maté**: see MATÉ.

**Yersin**, Alex. Emile (1863– ), Swiss bacteriol.; disc. plague bacillus 1894; fndd. Pasteur Insts. in China (Canton) and Annam.

**Yes Tor**, hill (2,027 ft.), Dartmoor, Devon, 3 m. S.W. of Okehampton.

**Yew**, *Taxus*, conifer with red berries and poisonous leaves. Has a very fine-grained

wood, formerly used for long bow (see ARCHERY); Y. now chiefly ornamental.

**Yezidis, Izedi**, oriental sect of alleged satanists, with beliefs related to those of anc. Assyro-Babylonian religion.

**Yezo, Hokkaido**, most northerly of chf. isls. forming Japanese Emp.; c. 34,000 sq.m.; pop., 2,498,600 (20,000 Ainus); well wooded, mtns. (*Ishikaridake*, 5,639 ft.); coal mines, timber indus.; fisheries. Cap., *Sapporo*; pop., 180,000.

**Yggdrasil**, (Norse myth.) ash tree whose roots surround the world.

**Yiddish**, mixed dial. of M.H.G. and Hebrew; now used esp. in Poland, Russia, and America; also spec. lit. (Sholem Alechem, Peretz).

**Yield**, (finan.) income derived from an investment. Expressed as a per cent. of its market price, e.g., £1 share paying 5%, market price of wh. is 30 shillings, has a yield of 3⅓%.

**Y.M.C.A.**, abbr. Young Men's Christian Association.

**Ymuiden**, seapt., Holland, prov. N. Holland, on N. Sea, at W. end of N. Sea Canal from Amsterdam; pop., 11,000.

**Yodel**, to sing with rapid alternations from head to chest notes. Practised in mountain districts to call from one mountain to another.

**Yoga**, Ind. philos. system, aiming at separation of the senses from earthly existence through meditation and asceticism. The *Yogi* followers of the Yoga, by a process of self-hypnotism combined with severest form of asceticism, attain powers that are apparently supernatural.

**Yoghourt, Yakourt**, E. Europ. drink of thick, sour (mare's) milk, fermented with maya (ferment obtd. from stomach of sheep).

**Yohimbine**, alkaloid from African *yohimbe* bark, used as an aphrodisiac.

**Yoke**, 1) part of harness fitted to neck of animals. 2) Wooden collar fitting the shoulders for carrying pail or bundle on each side. 3) (Tech.) Connection, usually cast-iron magnet for galvanic batteries.

**Yokohama**, important port and largest commercial town of Japan, 16 m. S. of Tokyo; pop., 621,600; earthquake, 1923, destroyed 75% of the buildings.

**Yokosuka**, port in Tokyo Bay, Japan; pop., 111,700; naval dockyard.

**Yom Kippur**: see ATONEMENT, DAY OF.

**Yonge**, Charlotte Mary (1823–1901), Eng. novelist, religious and educational writer; *Heir of Redclyffe*, 1853; *The Daisy Chain*, 1856; etc.

**Yonkers**, tn., New York State, U.S.A., on Hudson Riv.; pop., 135,000; residential suburb of New York.



Yeoman of the Guard

**Yonne**, 1) dépt. France; 2,885 sq.m.; pop., 277,230; agric., iron industry; cap., *Auxerre*; 2) left trib. (120 m.) of the Seine.

**Yorck von Wartenburg**, Joh. David, Ct. (1759-1830), Pruss. F.M. of Eng. extraction; negotiated *Convention of Tauroggen* with Russ., 1812; wh. led to Wars of Liberation.

**York**, collat. line of Eng. dynas. of Plantagenet (*q.v.*); descended from Lionel, Duke of Clarence, 3rd s. of Ed. III, and Edmund, Duke of York, 5th s. of Ed. III. Included kgs. Ed. IV, Rich. III, Ed. V. See WARS OF THE ROSES. **York, Dukes of:** 1) **Edmund de Langley** (1341-1402), 5th s. of Ed. III; 2) **Richard**, grandson. (thr. Richd., E. of Cambridge) of Edmund de Langley; killed at battle of Wakefield, 1460; 3) **Richard** (c. 1474-83), 2nd s. of Ed. IV, murdered in Tower; 4) **Henry** (1725-1807), bro. of Charles Ed. (the Young Pretender), cardinal, Bp. of Frascati; the last of the Stuarts; 5) **Frederick Augustus** (1763-1827), 2nd s. of Geo. III, Prince-Bp. of Osnabrück, 1763-1802.



Duke of York

Title frequently, as now, borne by 2nd son of Kg. of England, *viz.*, 6) H.R.H. Albert Frederick Arthur George, 2nd heir to the Crown; b. 14 Dec., 1895; m. (26 Apr., 1923) Lady Elizabeth Bowes-Lyon (dau. of the Earl and Ctes. of Strathmore), H.R.H. the Duchess of York. The D. and Dchss. have two children—H.R.H. Pess. Elizabeth (*q.v.*), and H.R.H. Pess. Margaret Rose, b. 21 Aug., 1930.



Duchess of York

**York**, 1) city (Rom. *Eboracum*), co. bor., and co. tn. of Yorkshire, on Riv. Ouse; pop., 84,800; famous minster (see of Abp. of York, Primate of Eng.); cas.; city walls; important rly. centre; manuf. hardware, glass, beer, leather. The Brit. *Cædr Ebrauc* became Rom. cap. of N. Britain and hqrs. 6th Legion. Visited by Hadrian, A. D. 120; Severus d. here, 211; Constantine the Great proclaimed emp., 306. A centre of Eur. learning, 8th-9th century. 2) Tn., Pa., U.S.A.; pop., 55,300; manuf. cars, agric. implements. 3) Cape, N. extremity **York Penins.**, Australia; lat. 10° 41' S.; long. 142° 33' E.



York Minster

**Yorkshire**, marit. co. in N. Eng., largest in Eng.; area, 6,067 sq.m.; div. into three *Ridings*; pop., E.R., 483,100; N.R., 469,400;

W.R., 3,352; 200. The surface rises generally W. to Pennine chain (*Wharfedale*, 2,414 ft.), with rolling heather-clad *moors*; undulating chalk *wolds* in S.; in centre lies the Vale of York. Of the rivers, the Swale, Ure, Nidd, Wharfe, Aire, and Derwent, all join the Yorkshire Ouse, which, with the Don, drains into the Humber. Nearly all these tributary rivers flow through picturesque *dales* called after them. The cliff scenery on the coasts is very imposing. The *E. Riding*, the smallest, is mainly agric. (principal tn., Hull). The *W. Riding* has an extensive coalfield, and contains Leeds, Bradford, Sheffield, and other great manufacturing towns. The *N. Riding* includes the rich iron district of Cleveland. Co.tn., *York*. **Y. terrier**, small "toy" breed of dog, with very long coat.

**Yorktown**, small tn., Virginia, U.S.A.; pop., 1,000; scene of capitulation of Lord Cornwallis to Washington, 19 Oct., 1781.

**Yosemite Falls**, on Y. Creek in Y. Nat. Park, California, U.S.A.; Upper Falls, 1,430 ft.; Middle Falls, 620 ft.; Lower Falls 320 feet. **Y. Valley**, California, U.S.A., on W. slope of Sierra Nevada; 1,151 sq.m.; cliff walls (max. alt. 5,000 ft.); high waterfalls; nat. park since 1890.

**Yoshihito**, Haru no Miya (1879-1926), Emp. of Japan, 1912-26, his son Hirohito (*q.v.*) acting as regent from Nov., 1921.

**Yoshiwara** (Jap.), quarter of ill-fame of Japanese cities, orig. of Yedo (Tokyo).

**Youghal**, sept., co. Cork, Munster, I.F.S., on *Youghal Harbour* (estuary Riv. Blackwater); pop., 5,600.

**Young**, Arthur (1741-1820), Eng. traveler and agricultural and scientific writer; sec. to Bd. of Agriculture, 1793; toured England, Wales, Ireland, and France; pubd. *A Farmer's Tour through the East of England*, 1770-71; *A Tour in Ireland*, 1780; *Travels in France*, 1792-94.

**Young**, Brigham (1801-77), Mormon leader; orig. carpenter and glazier; converted, 1831; elected to succ. Jos. Smith (*q.v.*) as pres. of Ch., 1844; organized emigration from Nauvoo to Utah, 1846-48; Gov. of Deseret, 1849; of Utah Territory, 1850; preached polygamy; fndd. Deseret Univ., Salt Lake City, Mormon Temple, etc.

**Young**, Edward (1683-1765), Eng. poet; *Night Thoughts*. **Y., Owen D.** (1874- ), Amer. financier and politic.; agent-gen. for Reparations Payments, 1923-24; prepared Young Plan (*see below*) for Ger. reparations. **Y., Thomas** (1773-1829), Eng. natural philos.; optical research; interference of light rays.

**Young England**, group of aristocratic Tories who, c. 1844, opposed Tory democracy to Liberalism, partic. defending the Corn Laws. **Y. Germany**, a group of liberal

writers: Börne, Gutzkow, Heine, Laube, etc., organised c. 1830, freq. censured by the Bundestag, and finally dissolved after 1848.

**Y. Ireland**, group of Ir. polit. agitators, 1840-50. **Y. Men's Christian Association** (Y.M.C.A.), Brit. organisation fndd. by G. Williams, 1844; orig. religious in character, tended increasingly to exercise influence by social means also. Now internat. with world cmtee. in Geneva. Membership over 1,600,000. **Y. Plan**, prop. by a special committee under the presid. of Owen D. Young, in Paris, June, 1929. Discussed at two Conferences at The Hague (Aug. 29th and Jan. 30th); accepted after alterations, under official designation of "The New Plan" (19 Jan. 1930). See BANK FOR INTERNAT. PAYMENTS, see also REPARATIONS. **Y. Turks**, offic. known as Committee of Union and Progress, a nationalist movement orig. in 1908; notable leaders, Talaat, Enver and Mustapha Kemal; expelled Abdul Hamid II and ended sultan's autocracy. **Y. Women's Christian Association** (Y.W.C.A.), Brit. organisation, fndd. 1855, for purpose of providing homes and social clubs for business women. Now internat., with membership of over 250,000.

**Younghusband**, Sir Francis (1863- ), Brit. soldier and explorer; Centr. Asian Exped., 1886, mission to Tibet, 1902-04; *Heart of a Continent* (1896).

**Youngstown**, city, Ohio, U.S.A., on Mahoning Riv.; pop., 170,000; steel works; centre of agric. district.

**Ypres**, John Denton Pinkstone French, 1st E. of (1852-1925), cavalry leader in 2nd Boer War, 1899-1902; Chf. of Imp. Gen. Staff, 1912; F.-M., 1913; c.-in-c. Brit. Army in Fr., 1914-15; in U.K. 1915-18; Ld. Lieut. of Ire., 1918-21.

**Ypres**, tn., W. Flanders, Belgium; pop., 15,100. Cloth Hall, begun in the 13th cent. and completed 100 years



Earl of Ypres

later, was destroyed (with remainder of town) during World War. Scene of notable and prolonged battles, 1914, '15 and '17. Menin Gate (q.v.) commemorates missing Brit. soldiers.

**Ypsilanti**, Alexander (1792-1828), Gr. cmdr. in revolt agst. Turkey, 1821; deftd. and imprisoned in Austria.

**Ysaye**, Eugène (1858-1931), Belg. violinist; studied under Wieniawski and Vieuxtemps; one of finest masters of violin; his concerts with the pianist Raoul Pugno (b. 1852) became famous throughout Europe. *Poème élégiaque* for violin and orchestra, etc.

**Yser**, riv. (48 m.), rises N. Fr., flows through Belgium and falls into N. Sea at Nieuport-Bains. German advance to Channel ports in 1914 stopped on left bank by Allied troops after *Battle of the Yser* 16 Oct.-16 Nov.

**Yssel**, canalised arm of the Rhine, from Arnheim to the Zuider Zee.

**Ystad**, Swed. port on Baltic; pop., 11,470; coastal shipping; fashionable summer resort.

**Ytterbium**, rare metallic chem. element, sym. Yb; at. wt. 173.5.

**Yttrium**, rare metallic chem. element, sym. Y; at. wt. 88.92; sp. gr. 4.57.

**Yuan-shi-kai** (1858-1916), Chin. states-m.; President of China, 1912.

**Yucatan**, penins., Mexico, Centr. Amer., separated from Cuba by Y. Channel; includes N. of Mexican State of Y. (16,000 sq.m.; pop., 386,000, chfly. Maya Indians) and small parts of Guatemala and Brit. Honduras. Cap. of Y. State, *Merida* (q.v.).

**Yucca**, liliaceous plant native to Centr. Amer.; often has tree-like, fibrous spiky leaves and white blossoms. Sometimes cultivated.

**Yugoslavia**: see JUGOSLAVIA.

**Yukon**, prov. N.W. Canada, on Arctic Ocean, betw. Alaska (W.), Mackenzie Terr. (E.), and Brit. Columbia (S.); 207,100 sq.m.; pop., 4,200; drained by Riv. Yukon (c. 2,300 m.); contains *Mt. Logan* (19,800 ft.), highest mtn. in Canada; gold mining (Klondike); cap., *Dawson*.

**Yukon**, riv. in Alaska, N. Amer., empties into Bering Sea; 1,765 miles.

**Yule**, orig. name of a pagan Norse festival; later applied to feast of Christmas (q.v.).

**Y.-tide**, Christmas-time. **Y.-log**, large block or log of wood wh. used to be brought into the house ceremoniously at Christmas-time and burned on the hearth.

**Yünnan**, prov. S.W. China, bordered N. by Sze-ch'uen, E. by Kwei-chow, W. by Burma, Fr. Indo-China on S.; c. 149,000 sq.m.; pop., c. 11,000,000 (includg. Shans and Lolos); mostly tableland at alt. of 6,000-7,000 ft.; rich in copper, silver, and gold; cap., *Yünnan-fu*, pop., 151,600 (many Mahomedans); carpet weaving.

**Yurta**, round tent made of felt, used by the Kirghiz, and other Siber. and Chin. nomadic tribes.

**Yuzovka**: see STALIN.

**Yverdon**, tn., canton Vaud, on Lake Neuchâtel, Switzerland; pop., 9,000; sulphur springs. **Y. castle**, occupied by Pestalozzi, educationist, 1805-25.

**Y.W.C.A.**, abbr. Young Women's Christian Association.



**Z**, 3rd unknown or variable quantity (math.). **Z.**, abbr., Zeppelin.

**Zaandam**, Dut. tn., prov. N. Holland; on Riv. Zaan; pop., 33,000; saw-mills; paper, cement, tobacco.

**Zabaikal**, prov. Asiatic Russia, nr. Mongolian front., c. 114,500 sq.m.; pop., 533,420; home of many pre-Revolution political exiles; chf. tn., *Chita* (q.v.).

**Zabern**: see SAVERNE.

**Zacatecas**, State, centr. Mexico; 27,345 sq.m.; pop. 465,000; desolate upland, silver mines; cap. **Z.**; pop., 15,500; 8,170 ft. abv. sea-level.

**Zaccheus**, (N.T.), tax-gatherer of Jericho; climbed tree to witness arrival of Jesus, and became his disciple (Luke xix).

**Zachary**, 1) father of John the Baptist; 2) Pope, 741-52, St., helped Pepin to Frankish throne.

**Zacynthus**: see ZANTE.

**Zadok**, (O.T.), chief priest, temp. David, made High Priest by Solomon. **Z.**'s descendants contd. to hold this office until its abolition under Antiochus Eupator (d. 162 B.C.).

**Zagazig**, cap. prov. Sharqiya, Egy., on Nile Delta; pop., 53,000; corn and cotton trade.

**Zaghlul Pasha**, Saad (1850-1927), Egypt. statesm. and nat. leader; demanded independence, 1918; twice arrested for violent hostility; Pr. Min., 1924; resigned, 1924, after murder of Sir Lee Stack.

**Zagreb**, **Agram**, cap. Croatia-Slavonia. Jugoslavia, on Riv. Save; pop., 108,675; Croat univ.; R.C. cathed.; linen, leather, carpets, tobacco, chemicals.

**Zaimis**, Alexander (1855- ) Gr. statesm.; many times Min. and Pr. Min.; Pres., 1929.

**Zaleski**, Aug. (1883- ), Pol. statesm.; For. Min., 1926.

**Zama**, anc. tn., N. Africa; here Scipio decisively defeated Hannibal, 202 B.C.

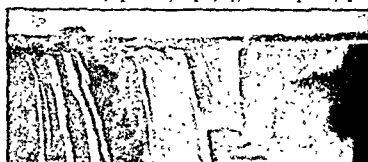
**Zambezi**, largest riv. (2,200 m.), and N. limit S. Africa; flows through E. Angola, N. Rhodesia (forming boundary betw. N. and S. Rhodesia), and Portug. E. Africa; drains through delta into Ind. Ocean; aggreg. nvgbl. length (three sections impeded by Victoria Falls, q.v., and other falls and rapids), 1,600 m.; tribs.: Lungwebungu, Loangwa, Kwando, Shire. Explored by Livingstone, 1851-53.

**Zambo**, half-breed in Span. Amer., child of a Negro and Ind. woman.

**Zamenhof**, Ludw. (1859-1917), Pol. physician; inv. of Esperanto (q.v.).

**Zamora**, Alcalá (1877- ), Span. statesm., 1st Pres. of Republic, Dec., 1931.

**Zamora**, 1) prov., Sp.; 4,080 sq.m.; pop.,



Zambezi, Victoria Falls

268,600. 2) Cap. of prov., on Riv. Douro; pop., 18,300; corn and wine. 3) State, Venezuela; 13,590 sq.m.; pop., 57,300; agric., cattle-breeding; cap., *Barinas*.

**Zangwill**, Israel (1864-1926), Anglo-Jewish author: *Children of the Ghetto*.

**Zankle**: see MESSINA.

**Zante**, **Zacynthus**, one of the Ionian Isls., Greece, 161 sq.m.; pop., 40,495; very fertile (olives, currants); textiles; cap., *Zanti*, pop., 11,610; harbour.

**Zanzibar**, Brit. protectorate, E. Africa, comprising isls. of *Zanzibar* (640 sq.m.), *Pemba* (380 sq.m.), and adjacent small isls., off coast Tanganyika Terr.; pop., 235,400 (mainly Negroes; 300 Europeans, 14,000 Indians, 33,000 Arabs); cap., *Zanzibar*, on W. coast, pop., 45,300; exports cloves (main world supply), copra. Ger. protectorate, 1885; Brit. (in exch. for Heligoland), 1890.

**Zapolya**, Joh. (1487-1540), Kg. of Hung., 1526, under Turk. suzerainty.

**Zapotecs**, Inds. from Oaxaca (Mexico) with their own language and civilisation (c.  $\frac{1}{2}$  mill.).

**Zar**, Pers. unit of linear measurement, either 40.95 in. or 44.09 in.; see FARSAKH.

**Zara**, Ital. port in Dalmatia, on Adriatic, pop., 18,780; R.C. abpric., Gr. Orthodox Metropolitan; fruit farming, shipping. Till 1918 cap. Dalmatian Crownland.

**Zaragoza**: see SARAGOSSA.

**Zarathustra**: see ZOROASTER.

**Zealand**, largest isl. Denmark; 2,400 sq.m.; pop., 1,340,000; separated from Sweden by the Sound; extensive beech forests; many lakes: cap., *Copenhagen*.

**Zebedee**, (N.T.) fisherman of Galilee, father of Apostles James and John; husband of Salome (*q.v.*).

**Zebra**, ass-like mammal of the genus *Equus*, native of S. and W. Africa; striped (whitish yellow and brown); can be tamed, but of uncertain temper and useless for draught purposes. Three existing species, 1) true, or **mountain z.** (*Equus zebra*); 2) **Grevy's z.** (*E. grevyi*); 3) **Burchell's z.** (*E. burchelli*); a fourth S. African species, the quagga (*q.v.*), is now extinct.



Zebra colt

**Zebu**, domesticated cattle of India with fat hump on the front of the back.



Zebu

**Zebulun**, (O.T.) 10th son of Jacob; forefather of tribe of Zebulun.

**Zechariah**, (O.T.) post-exilic prophet. Book of Z., 1st part attrib. to Z.; 2nd part, composite authorship (c. 200-165 B.C.).

**Zechstein**, grey limestone of Upper Permian formation; see GEOLOG. FORMATIONS.

**Zedekiah**, (O.T.) last kg. of Judah, died a prisoner in Babylon (c. 586 B.C.).

**Zedoary**, *Curcuma zedoaria*, Indian plant; aromatic root used in native med. as a tonic. Also used in Eur. folk medicine.

**Zeebrugge**, port of Bruges (canal 9 m.), W. Flanders, Belgium; steamer service to Harwich, Hull, etc. (E. England). Ger. submarine base in World War; harbour blocked by Brit. naval forces 23 Apr., 1918, (memorial, 1925).

**Zeeland**, prov., S. Holland; 1,054 sq.m.; pop., 247,950; mainly isls.; fertile marshland; cap., *Middelburg*; port, *Flushing*.

**Zeeman**, Pieter (1865- ), Dut. physicist; Nobel Prize (Physics), 1902; **Zeeman effect**, splitting up of spectral lines (see SPECTRUM) into several components in strong magnetic-field.

**Zeesen**, vill. nr. Königs-Wusterhausen, Brandenburg, Ger.; wireless broadcasting station.

**Zegrze**, fortress tn., Poland, on Riv. Bug, N. of Warsaw; pop., 15,890; arsenal.

**Zeiss**, Karl (1816-88), fndd. optical works Jena; *Karl Zeiss Institute*.

**Zeitblom**, Barth. (c. 1460-1517), Ger. painter.

**Zeitgeist** (Ger.), spirit of the times.

**Zeitz**, tn., dist. of Merseburg, Saxony, Ger., on the White Elster; pop., 35,000; machinery, textiles, lignite.

**Zella**, tn., Thuringia, Ger., in Thuringian Forest; pop., 15,000; metal industry.

**Zell-am-See**, health resort, Pinzgau, Austria; winter sports.

**Zeltinger**, Ger. white wine from Moselle district.

**Zemstvo**, elective district assemblies in Czarist Russ., establd. 1864.

**Zenana**, apartments in Indian native house in which women are secluded. *Z. Mission*, one for relig., medic., and educat. reform among Indian women.

**Zendavesta**, sacred books of the Zoroastrians (*q.v.*), ascribed to their founder; incl. *Yasna* and *Gâthas* (sacrificial hymns), *Visparad* (litanies), *Vendidad* (exorcisms, laws, etc.), *Tashls* (hymns and invocations).

**Zenith**, point of the heavens directly above the observer; (fig.) culminating point, highest degree of intensity, strength, success, etc. Cf. NADIR.

**Zeno**, 1) E. Rom. Emp. (474-91); induced Theodoric, E. Goth Kg., to withdraw from Pannonia. 2) Gr. philos. (c. 500 B.C.); see ELEATIC SCHOOL. 3) Gr. philos. (336-264 B.C.); see STOIC; *Politeia*.

**Zenobia**, Qn. of Palmyra (*q.v.*) c. 266-272; defied Rome, annexed Egypt, but was deftd. and capt'd. by Aurelian, 272, Palmyra being destroyed.

**Zenta**, **Senta**, **Zeta**, tn., Voyvodina, Jugoslavia, on Riv. Tisa (Theiss); pop., 30,695; victory of Prince Eugene over Turks, 1697.

**Zentner**, Ger. wt., 50 kg. (0.984 cwt.).

**Zeolites**, minerals of varying composition, but all hydrated aluminosilicates or ferrosilicates of alkali and/or alkaline earth metals. Very important owing to "base-exchange" property, i.e., surface atoms of alkali metal are replaced by alkaline earth metal when in contact with solution of latter, without change in mineral; contact with strong solution of alkali metal causes latter to displace alkaline earth metal. Hard water (solution of bicarbonates of calcium and magnesium) can be softened by simple contact with a zeolite sand (see GREENSAND); the Ca and Mg are retained by the sand, which gives up sodium to water to replace them. When sand is exhausted, it is regenerated by contact with strong solution of common salt (sodium chloride). Water so softened contains bicarbonate of soda; and hence is not suitable for all purposes, but harmless for all culinary and domestic purposes, washing, etc.

**Zephaniah**, (O.T.) prophet, descendant of Hezekiah; lived temp. Josiah (c. 630 B.C.). **Book of Z.** prophesies judgment of world and universal salvation.

**Zephyr**, linen-bound cotton matl., in delicate colours, usu. striped or checked, sometimes with corded and woven figured effects, used for light summer skirts and dresses.

**Zephyrinus**, St., Pope (202-217).

**Zephyrus** (Gr. myth.), personification of the West Wind.

**Zeppelin**, Ferd., Ct. von (1838-1917), Ger. gen.; inventor and blder. of dirigible rigid airships; see AIRSHIP; AVIATION.

**Zermatt**, health resort at foot of Matterhorn, Valais, Switzerland; alt., 5,315 feet; pop., 830.

**Zero**, nought, nil; mathematically defined as a number which if added to or subtracted from a further number gives that number as answer; if multiplied by another number the answer is still zero.

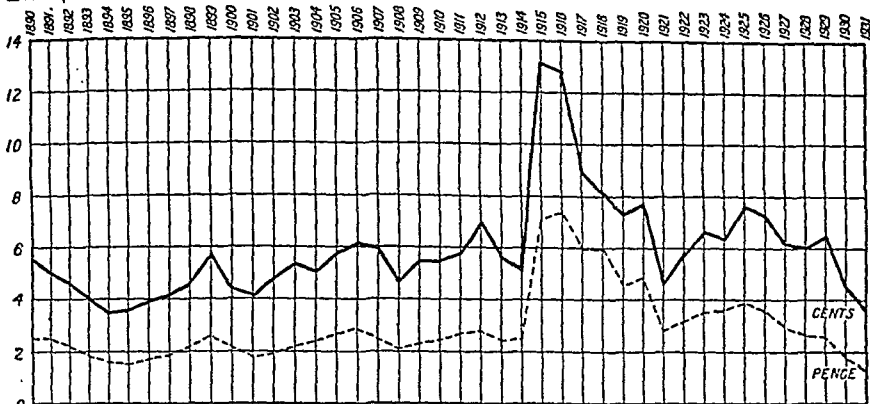
**Zero-meridian**: see GREENWICH MERIDIAN. **Z.-point**, beginning point of a scale, dividing positive and negative values. **Absolute z.**: see TEMPERATURE. **Z. hour**, (milit.) precise time from which the times of

at. wt., 65.38; sp. gr. 7.2; m. p., 419.4°C.; bluish-white, crystalline, brittle at normal



temp., malleable from 100°-200° C., very brittle at higher temps.; seldom found native.

**ZINC** (AVERAGE PRICE PER LB IN LONDON & NEW YORK)



the various operations in an offensive are calculated.

**Zeta, Zetska**, dist., Montenegro, S. Jugoslavia; 11,766 sq.m.; pop., 783,000; barren mountainous country; fruit, sheep; cap., *Cetinje*.

**Zeus**, in Gr. myth. chief god (Rom. *Jupiter*), repsntd. with thunderbolt.

**Zeuxis** (420-380 B.C.), Gr. painter; believed to have introd. use of light and shadow in painting, rendering his works realistic; hence the legend that birds attempted to peck at a bunch of grapes painted by him:



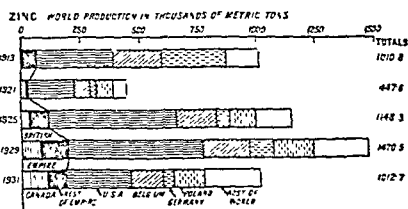
Zeus (Greek: 4th cent. B. C.)

**Zimbabwe**, collection of ruins, nr. Victoria, S. Rhodesia; three groups of buildings of uncertain but early date (possibly 14-15th cent.); massive walls; possibly a gold-distributing centre; disc. 1868.

**Zimri**, (O.T.) 5th Kg. of Israel; murdered Kg. Elah and reigned for a week; deposed and slain by Omri (c. 930 B.C.).

**Zinc**, chem. element; metal; symb., Zn;

Chief sources are *sphalerite* or *blende*, the sulphide, and *calamine*, the carbonate, also the monoxide, *red zinc ore*; ores occur in



Serious contraction of world prodn. during World War, with consequent rise of price, but by 1929 prodn. nearly 50% above 1913 figure. Fall of pr. since 1929 caused another large decline in all important prodg. countries except Canada, U.S.A. (the largest producers by far) reducing her prodn. to less than half her 1929 total.

Cornwall, N. Wales, Derbysh., Cumberland, in Europe, U.S.A., and Australia; tarnishes slowly, and is used for roofs and gutters, for galvanising iron-wire, as a chemical reagent, and in electric batteries; forms one of the constituents of brass, etc.; world production in 1930, 1,400,000 tons. Trade name spelter (q.v.). **Z. bloom**, hydrozincite, a

natural carbonate of zinc. **Zincspar**, calamine: *see* ZINC. **Z. white**, zinc oxide, formula,  $\text{ZnO}$ ; used as a pigment, being less liable to discolouration than white lead, but lacks toughness as an oil-colour; as water-colour, used in condensed form known as *Chinese white*.

**Zinnia**, genus of plant of aster family; indigenous to southern U.S. and Mexico, bearing handsome, bright-coloured flowers; cultivated in colder regions in greenhouses or hotbeds.

**Zinovievsk, Elisavetgrad**, tn., Ukraine S.S.R. on Riv. Ingul; pop., 66,570; agric. machinery, tools.

**Zinsendorf**, Nic. Ludwig, Ct. von (1700-60), Ger. pietist and social reformer; fndd. Moravian Brotherhood.

**Zion**, 1) citadel of Jerusalem. Taken by David and known as "City of David"; name also applied to the whole of Jerus. 2) Nat. park (1919) in Utah, U.S.A.; 148 sq.m.; Z. Canyon, 1,500-2,500 ft. deep. **Zionism**, nat. movement for resettlement of the Jewish people in a home of its own in Palestine; revived by Theodor Herzl, of Vienna, in 1896, but little was done until close of World War; *see* BALFOUR DECLARATION.

**Zircon**, hard silicate of zirconium; of various colours, opaque to transparent; crystallises in tetragonal system (*see* CRYSTALS); some varieties cut as gems, e.g., jargoon, hyacinth. **Zirconium**, metallic chem. element, sym. Zr; at. wt. 91.22; sp. gr. 6.4; found in min. zircon, combined with silicic acid; used for hardening steel.

**Ziska**, John (1360-1424), Bohem. gen.; leader of Hussites; chamberlain to Wenceslaus, Kg. of Bohemia, whom he urged to avenge death of John Huss (*q.v.*); on death of W., Hussites refused to recog. Sigismund, Emp. of Ger., as his successor, and, led by Z., deftd. Imp. army near Prague, 1420. Z. is said to have been victorious in 13 battles.

**Zither**, *cithar*, mus. instr., with fret-board and strings, played by plucking.

**Ziu**: *see* TYR.

**Zlin**, tn., Czechoslovakia, created by Bata, boot manufacturer, who died in air crash there, July, 1932; pop., 36,000—all employed in Bata undertakings.

**Zlot**, 1) obsolete Polish gold coin = 1-25 ducat or abt. 5 $\frac{1}{2}$ d. 2) (Zloty) Current monetary unit; 43.38Z = £1 at par.

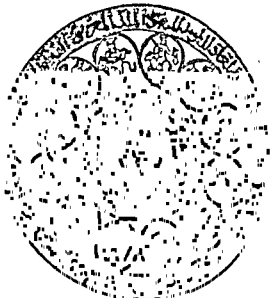
**Zn**, (chem.) symbol of zinc.

**Znojmo, Znaim**, tn., S. Moravia, Czechoslovakia, on Riv. Thaya; pop., 21,200; fruit, wines, breweries, textiles, leather.

**Zoar**, (O.T.) city saved, at Lot's request,

from destruction wh. involved Sodom and Gomorrah (*qq.v.*).

**Zodiac**, imaginary belt extending to c. 8° on either side of the Ecliptic (*q.v.*), in wh. the sun, moon, and principal planets revolve; divided into 12 equal parts, occupied by the 12 *Signs of the Z.*; *Spring Z.*: Aries ♈, Taurus ♉, Gemini ♊, *Summer Z.*: Cancer ♋, Leo ♌, Virgo ♍; *Autumn Z.*: Libra ♎, Scorpio ♏, Sagittarius ♐; *Winter Z.*: Capricorn ♐, Aquarius ♑ = Pisces ♓. The signs of the Z. no longer correspond to their titulary constellations as they did 2,000 yrs. ago; thus sign of the Ram now nearly corresponds to constell. Pisces, each of the signs having moved, as it were, one step backwards; *see* PRECESSION.



Old Arabian Zodiac

**Zodiacal light**, luminous triangle in sky near ecliptic, with base on horizon; visible in W. only after sunset in spring, and in E. before sunrise in autumn; prob. due to sunlight reflected from multitudes of meteoroids revolving about sun in plane of ecliptic.

**Zoetrope**, toy with revolving cylinder showing series of apparently moving pictures; *see* STROBOSCOPE.

**Zoffany**, Johann (1725-1810), Brit. portr. painter; born at Ratisbon; came to Eng., 1758; an orig. member of R.A., 1768.

**Zogu**, Ahmed (1895- ), Kg. of Albania; of a powerful Mohammedan family; fought with Austria during the World War: Pr. Min., Dec., 1922-Feb., 1924; Pres. of Repub., 1925; proc. Kg., 1928.

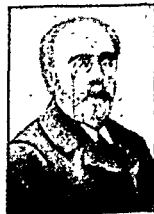
**Zohar**, the leading work dealing with the Cabbala (*q.v.*), prob. by the Span. Cabbalist, Moses of Leon, who pub. it c. 1300, but ascribed it to Simon Ben Yohai of the 2nd century.

**Zola**, Émile (1840-1902), Fr. novelist; took leading part in struggle to rehabilitate Captain Dreyfus. *Thérèse Raquin*; *Rougon-Macquart* cycle; *Vérité*; founded school of realistic fiction.

**Zombor**: *see* SOMBOR.

**Zonam solvere** (Lat.), to loose the (maiden) girdle; to marry a woman.

**Zone**, belt or area. 1) (Geog.) one of 5 regions into wh. surface of earth is divided by imaginary lines parallel to the Equator; viz., 2 **frigid zones** within Arctic and Ant-



Zola

arctic Circles, **torrid zone**, betw. tropics of Cancer and Capricorn (*see* TROPICS), and 2 **temperate zones**, betw. torrid and frigid zones. 2) (Math.) Portion of surface of sphere betw. 2 parallel planes. **Z. standard time**, system of local time computation in general international use, based on division of world by meridians  $15^\circ$  apart into zones, in each of which time is an integral number of hours (in a few cases half-hours) fast or slow on Greenwich Mean Time (*q.v.*). Europe has three time zones, Greenwich, Mid-European (1 hr. fast on Greenwich) and East European (2 hrs. fast on Greenwich); the U.S. and Canada five, 4 to 8 hrs. slow on Greenwich, called resp. Atlantic, Eastern, Central, Mountain, Pacific. *See* INTERNATIONAL DATE LINE, and inset Map.

**Zoological Gardens**, the "Zoo"; occupies 34 ac. in Regent's Park (*q.v.*), London; property of Zool. Society of London. First opened 1828; now contain one of finest collection of animals in the world; Aquarium (1924), Mappin Terraces (1913-14), in wh. animals (bears, antelopes, etc.) are exhibited uncaged. In 1930 Whipsnade (*q.v.*) estate was acquired by Society for purpose of forming a zoological park, to give animals the benefit of greater freedom and fresher air, and to exhibit them—so far as poss.—in natural surroundings. **Z. system**, scientific classification of the animal kingdom. Principal divisions: *Protozoa* (simplest forms of life); *Porifera* (sponges); *Coelenterata* (corals, hydroids); *Vermes* (worms); *Echinodermata* (sea-urchins, starfishes); *Mollusca* (marine fresh-water and land shell-bearers and slugs); *Crustacea* (crabs, prawns, lobsters, etc.); *Arachnida* (spiders, scorpions); *Insecta* (insects); *Pisces* (fishes); *Reptilia* and *Amphibia* (snakes, crocodiles, tortoises, turtles, frogs, toads); *Aves* (birds); *Mammalia* (apes, monkeys, and all animals that suckle their young).

**Zooming**, action of bringing an aeroplane into a steep climb by an abrupt movement of the elevator (*q.v.*), having previously acquired extra flying speed by running engine very fast or by a steep dive.

**Zoon politikon** (Gr.), political animal, a definition of man.

**Zoophytes**, polyp animals, chfly. marine, wh. comprise the Hydrozoa. The stem and branches are made up of a series of cells, each containing a tentacle-crowned polyp, all united by a centr. pith; certain of the polyps are modified as the sexual units, and may develop into free-swimming Medusae (jellyfish) or, remaining attached to the colony, send forth ciliated larvae which in turn become the founders of new colonies.

**Zoppot**, tn., Free State of Danzig, on W. coast of Bay of Danzig; pop., 30,850, bathing resort.

**Zorn, Anders** (1860-1920), Swed. painter. **Z., Philipp** (1850-1928), Ger. jurist; Ger. rep. at Hague Peace Confer. of 1899, 1907; *Das Staatsrecht des Deutschen Reichs*.

**Zorndorf**, vill., Prussia, Ger.; victory of Frederick the Great over the Russians, 1758.

**Zoroaster**, *Zarathustra*, Pers. prophet, fndd. ancient Pers. relig. (*see* below); believed to have fl. in 19th cent. B.C., but date uncertain.

**Zoroastrianism**, named from Zoroaster; ancient Persian dualistic religion; emphasizing worship of fire and sun as emblematic of struggle of light against darkness; still followed by Parsees (*q.v.*) in Bombay dist.; *see* AHRIMAN; ORMUZD; ZENDAVESTA.

**Zoser**, Kg. of Egy. fl. betw. 2700 and 3000 B.C.; blt. 1st pyramid (Sakkhara).

**Zosimus**, St., Pope (417-18).

**Zouaves**, orig. a Berber tribe; Fr. infantry regts. of Berbers and Europeans dressed in oriental style.

**Zr**, (chem.) symbol of zirconium.

**Zrinyi**, Miklos, Ct. (c. 1500-66), Hung. soldier, defndd. Szigeth agst. Suleiman (*q.v.*).

**Zschopau**, tn., Saxony, Ger., on the Z.; pop., 8,000; textiles and machinery.

**Zsigmondy**, Rich. (1865- ), Ger. chemist; colloidal chemistry; Nobel Prize (Chem.), 1925.

**Zug**, canton (92 sq.m.), centr. Switzerland, betw. the Four Forest Cantons (Lucerne) and L. of Zürich; pop., 34,500; fertile plateau; cap., Zug, on L. of Zug (14½ sq.m.), at the foot of the Rigi; pop., 10,000.

**Zugspitze**, mtn., highest in Ger.; 9,722 ft.; on borders of Tyrol; mtn. railways.

**Zuider Zee**, shallow bay, Holland, on coast N. Sea; 2,026 sq.m.; formed 8th-13th cent.; reclamation work, begun 1918, practically completed; an inland lake, the Yssel See (444 sq.m.), is to remain.

**Zukertort**, John Hermann (1842-88), Russ. chess master (nat. Brit. subject, 1872).

**Zuloaga**, Ignacio (1870- ), Span. painter.

**Zululand**, N.E. part of Natal, S. Africa; 10,400 sq.m.; riv. Tugela; inhabts., Zulu-Kafirs; sugar-cane cultivation. **Z. War**, 1879, result

of a rebellion agst. Brit. suzerainty. A Brit. regiment was annihilated at Isandlwana, but eventually the Zulus were deftd. and their chief, Cetewayo, captured.

**Zum Beispiel** (Ger.), *Z.B.*, for example.

**Zurbarán**, Francisco de (1598-1662), Span. painter.



Zürich

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## DATE LABEL

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**Zürich**, cap., canton of Z. (667 sq.m.; pop., 573,000), N.E. Switzerland; largest Swiss tn. (pop., 251,000); at N. end **L. of Z.** (34 sq.m.; max. depth, 470 ft.; drained by Riv. Limmat); 11th-cent. cathed.; Swiss Nat. Museum; univ.; manuf. cotton, silk. Swiss Reformation (Zwingli), 1519. **Peace of Z.**, betw. France and Sardinia and Austria, 1859, at wh. Austria surrendered Lombardy to Sardinia.

**Zutphen**, tn., Gelderland, Holland, on the Yssel; pop. 19,500; 12th-cent. ch.; corn trade. Spaniards besieged here by English, 1586, Sir Philip Sidney (*q.v.*) slain.

**Zweig**, Ger. novelists: 1) **Arnold** (1887- ), *The Case of Sergeant Grischa*. 2) **Stefan** (1881- ), essays: *Three Masters*; short stories *Amok*; dramas, translations (*Verhaeren*).

**Zwickau**, tn., Saxony, Ger., at ft. of Erzgebirge and on the Zwickau Mulde; pop., 80,500; coal, iron, textiles, porcelain, chemicals.

**Zwingli**, Ulrich (1484-1531), Swiss Reformer, estab. Calvin. Ch. in Switzerland.

His pamphlet on the Eucharist began the quarrel with Luther. Calvinist standard-bearer of Sw. Prot. army at Kappel, where he was killed. **Zwinglians**, early Swiss Protestants, followers of Zwingli; differ from Lutherans (*q.v.*) in holding presence of Christ in the Eucharist to be merely symbolical; see SACRAMENTARIAN.

**Zwolle**, cap., Overijssel, Holland; 40,500; St. Michael's Church (15th cent.); Thomas à Kempis, d. 1471; iron cotton mills; centre canal trade.

**Zygomatic bone**, (anat.) the cheekbone. **Zygos**, pass (5,085 ft.), N. Pindus Mts., Greece, betw. Epirus and Thessaly.

**Zymase**, ferment in yeast which changes sugars into alcohol and carbon dioxide.

**Zythus**, earliest recorded form of beer made in anc. Egypt; reported by Greeks to be very palatable.





# WEIGHTS AND MEASURES

## TROY

ins .....	1 pennyweight
ennywts. (480 grains) ...	1 ounce
nces (5760 grains) .....	1 pound

## APOTHECARIES

ains troy.....	1 scruple $\mathfrak{S}$
ruples (60 grains) .....	1 dram $\mathfrak{D}$
rams (480 grains) .....	1 ounce troy $\mathfrak{Z}$
nces (5760 gr.) .....	1 pound troy lb.

## APOTHECARIES

### Fluid Measure

inims .....	1 fluid dram
uid drams .....	1 fluid ounce
uid ounces .....	1 pint
ints .....	1 gallon

## AVOIRDUPOIS

rams .....	1 ounce
nces .....	1 pound (7000 troy gr.)
ounds .....	1 stone
tones (or 28 lb.) .....	1 quarter
quarters .....	1 cwt.
wt. ....	1 ton.

## CAPACITY

### Liquids

gills .....	1 pint
pints .....	1 quart
quarts .....	1 gallon (277 $\frac{1}{4}$ cubic in.)

### Contents of Casks

3 gallons .....	1 firkin
3 " .....	1 kilderkin
5 " .....	1 barrel
4 " .....	1 hogshead
4 " .....	1 butt
6 " .....	1 tun

## CAPACITY

### Dry Goods

1 pints, or 2 gallons .....	1 peck
1 pecks .....	1 bushel
1 bushels .....	1 coom
1 cooms, or 8 bushels .....	1 quarter
5 quarters .....	1 load

## HEAPED MEASURE

4 gills .....	1 pint
2 pints .....	1 quart
2 quarts .....	1 pottle
2 pottles .....	1 gallon
2 gallons .....	1 peck
4 pecks .....	1 bushel
3 bushels .....	1 sack
12 sacks .....	1 chaldron

## LENGTH

12 inches .....	1 foot
3 feet .....	1 yard
5 $\frac{1}{2}$ yards (16 $\frac{1}{2}$ feet) .....	1 rod or pole
22 yards .....	1 chain
40 poles (220 yards) .....	1 furlong
8 furlongs .....	1 mile
(1760 yards, or 5280 feet.)	

## GEOGRAPHICAL OR NAUTICAL

6 feet .....	1 fathom
110 fathoms .....	1 furlong
6075 $\frac{1}{2}$ feet .....	1 nautical mile
3 nautical miles .....	1 league
20 leagues .....	1 degree
360 degrees = the Earth's circumference	

## SURFACE

### For Fields, Estates, etc.

144 square inches .....	1 square foot
9 square feet .....	1 square yard
30 $\frac{1}{4}$ square yards .....	1 square perch or pole
40 square perches .....	1 square rood
4 square roods .....	1 acre
640 acres .....	1 square mile

## SOLIDITY

1728 cubic inches .....	1 cubic foot
27 cubic feet .....	1 cubic yard
40 cu. feet of rough timber or 50 cu. ft. hewn do. ....	1 ton or load
42 cubic feet of timber ...	1 ton of shipping

### Precious Stones and Pearls

The metric carat of 200 milligrams is the legal standard of weight by Order in Council, Oct. 14th, 1913.

## ANGULAR MEASURE

60 seconds " .....	1 minute
60 minutes " .....	1 degree
30 degrees " .....	1 sign
90 degrees " .....	1 quadrant
4 quadrants, or 360° .....	1 circumference or circle

## WATCHES ON BOARD SHIP

Afternoon .....	Noon to 4 p.m.
First Dog .....	4 p.m. to 6 p.m.
Last or Second Dog .....	6 p.m. to 8 p.m.
First .....	8 p.m. to midnight
Middle .....	Midnight to 4 a.m.
Morning .....	4 a.m. to 8 a.m.
Forenoon .....	8 a.m. to noon

## REGULAR SIZES OF PRINTING PAPER

Foolscap .....	13 $\frac{1}{2}$ × 17 inches
Crown .....	15 × 20 "
Double Crown .....	20 × 30 "
Large Post .....	16 $\frac{1}{2}$ × 21 "
Demy .....	17 $\frac{1}{2}$ × 22 $\frac{1}{2}$ "
Double Demy .....	22 $\frac{1}{2}$ × 35 "
Medium .....	18 × 23 "
Royal .....	20 × 25 "
Super Royal .....	20 $\frac{1}{2}$ × 27 $\frac{1}{2}$ "
Imperial .....	22 × 30 "

## HANDY WEIGHTS AND MEASURES

A new half-crown ..	weighs $\frac{3}{4}$ ounce avoirdupois
Three new pennies or five halfpennies ..	weigh 1 ounce avoirdupois
Three pennies and one farthing .....	" 1 ounce troy or apothecaries

A pint of pure water . weighs 1 lb. 4 oz. avoirdupois

A halfpenny measures in diameter 1 inch

A tumbler contains 10 ounces or half a pint; a teacup 3 ounces or 1 gill; a wineglass, 2 ounces; a tablespoon, 4 drachms; a dessertspoon, 2 drachms; a teaspoon, 1 drachm—all approximately only.

# THE METRIC SYSTEM

## AND THE EQUIVALENT IN ORDINARY ENGLISH WEIGHTS AND MEASURES

The exact value of the unit is given in various denominations, and the values of the multiples and divisions of the unit can be found by altering the place of the decimal point.

### 1. MEASURES OF LENGTH

The unit is the Mètre. It is the ten-millionth part of a meridian arc from the Pole to the Equator.

A Mètre is equal to 39·370113 inches, 3·280843 feet, 1·0936143 yards, 0·1988 pole, 0·04971 chain, 0·004971 furlong, 0·0006213 mile.

Proportion to the Mètre.			M.	Fur.	Yd.	Ft.	In.
Millimètre	1000	.....	0·03937011	0	0	0	abt. $\frac{1}{32}$
Centimètre	100	.....	0·3937011	0	0	0	$\frac{1}{8}$
Décimètre	10	.....	3·937011	0	0	0	$\frac{1}{2}$
Mètre	1	.....	39·37011	0	0	0	3
Décamètre	10	.....	32·80843	0	0	10	2·808
Hectomètre	100	.....	109·361	0	0	109	1
Kilomètre	1000	.....	1093·61	0	4	213	1·8
Myriamètre	10000	.....	6·21372	6	1	156	0·4

### 2. MEASURES OF SURFACE OF LAND

The unit is the Are, which is a square dékamètre.

The are is equal to 1076·39 square feet, 119·6 square yards, 3·95376 perches, 0·2471 square chain, 0·00855 rood, 0·024711 acre.

Proportion to the Are.			Ac.	Rd.	Pch.	Sq. Yd.
Centaire	100	10·7639 square feet	0	0	0	1·196
Décaire	10	107·639 square feet	0	0	0	11·96
Are	1	1076·39 square feet	0	0	3	28·35
Décaire	10	2·4711 acre	0	0	39	16·25
Hectaire	100	2·4711 acres	2	1	35	11·25
Sq. Kilo-mètre	10,000	247·11 acres	247	0	17	—

### 3. MEASURES OF CAPACITY

The unit is the Litre, which is a cubic décimètre.

The Litre is equal to 61·02577 cubic inches, 1·75980 imperial pint, 0·219975 imperial gallon, 0·02750 imperial bushel.

Proportion to the Litre.						
Millilitre	1000	.....				568 to a pint.
Centilitre	100	.....				about 56 "
Déclilitre	10	.....				" 5 $\frac{1}{2}$ "
Litre	1	.....				" 1 $\frac{1}{2}$ pints.
			LIQUID.			
			Gal.		DRY.	
Dékalitre	10	.....	2·19978		Qr.	Bshl. Pck. Gal.
Hectolitre	100	.....	21·9978		0	2 1 0·2993
Kilolitre	1000	.....	219·978		0	2 1 1·993
Myrialitre	10000	.....	2199·78		3 3 1 1·98	
					34 2 3 1·8	

### 4. MEASURES OF SOLIDITY

The unit is the Stère, which is a cubic mètre.

The Stère is equal to 61·024 cubic inches, 35·3148 cubic feet, 1·307954 cubic yards.

Proportion to the Stère.				Same in contents as			
Centistère	100	.....	610·24 cubic inches				Décalitre.
Décistère	10	.....	3·53148 cubic feet				Hectolitre
Stère	1	.....	1·307954 cubic yards				Kilolitre
Dékastère	10	.....	13·0795 cubic yards				Myrialitre

### 5. MEASURES OF WEIGHT

The unit is the Gramme (or "Gram," Metric Act), which is the weight of a cubic centimètre of water.

The Gram weighs 15·4323 grains, 0·0321507 troy ounces, 0·0352739 avoirdupois ounce, 0·0026792 troy pound, 0·00220462 avoirdupois pound.

Proportion to the Gram.			TROY.			AVOIRDUPOIS.			
			lb.	oz.	dwt.	gr.	cwt. qr.	lb.	oz.
Milligram	1000	..	0	0	0	0·0154	..	0	0
Centigram	100	..	0	0	0	0·1543	..	0	0
Déigram	10	..	0	0	0	1·5432	..	0	0
Gram	1	..	0	0	0	15·4323	..	0	0
Déagram	10	..	0	0	6	10·323	..	0	0
Hectogram	100	..	0	3	4	7·23	..	0	0
Kilogram	1000	..	2	8	3	0·3	..	0	0
Myriagram	10000	..	26	9	10	3	..	0	22
Quintal	100000	..	267	11	1	10	..	1	3
Millier	1000000	..	2679	2	14	12	..	19	2
								20	9
									15·04

UNIVERSITY OF JODHPUR LIBRARY

## DATE LABEL

Accn. No..... Date of Release for loan

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